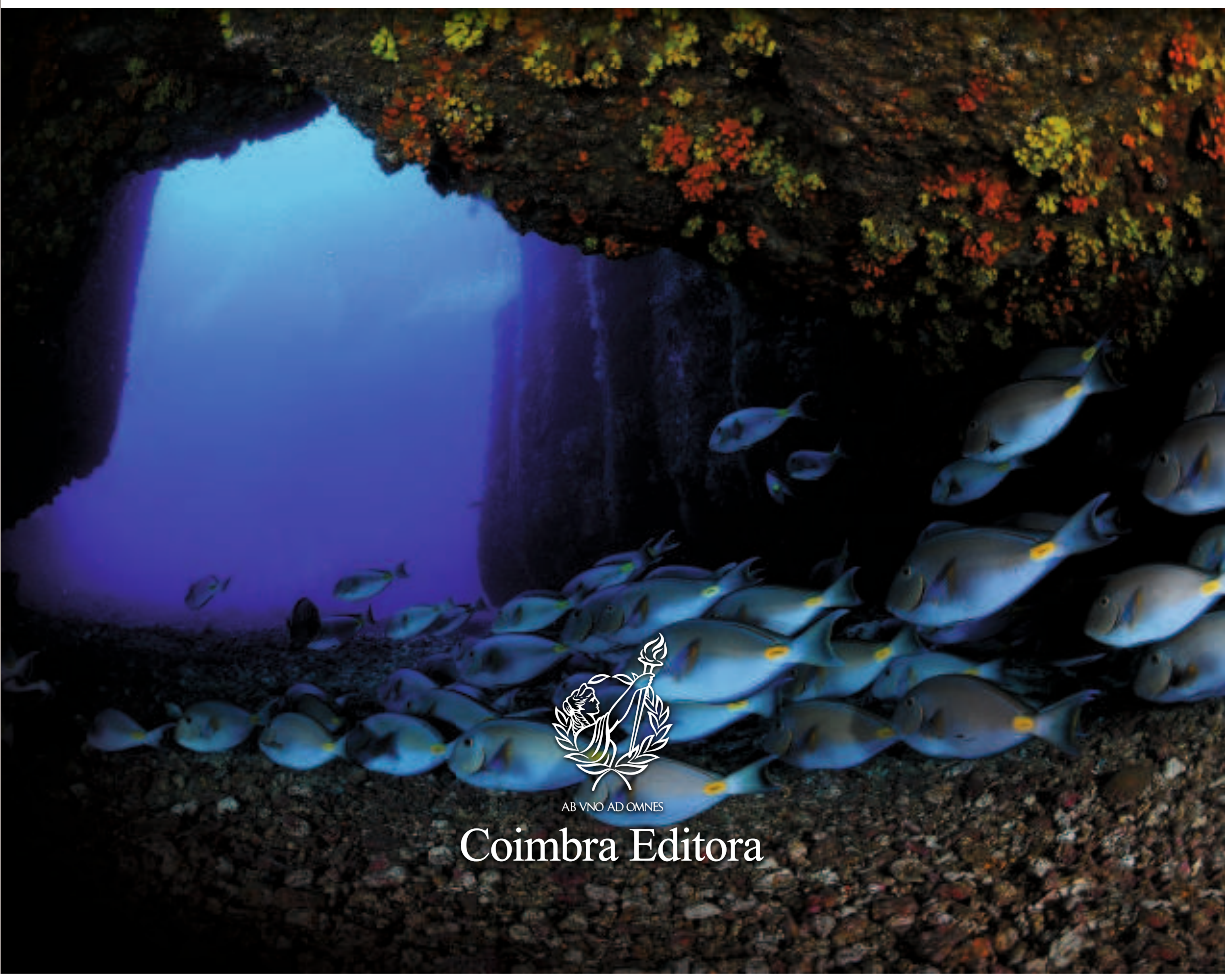


**30 ANOS DA ASSINATURA
DA CONVENÇÃO DAS NAÇÕES
UNIDAS SOBRE O DIREITO DO MAR:
PROTECÇÃO DO AMBIENTE E O FUTURO DO
DIREITO DO MAR**

**30 YEARS AFTER THE
SIGNATURE OF THE UNITED NATIONS
CONVENTION ON THE LAW OF THE SEA:
THE PROTECTION OF THE ENVIRONMENT AND THE
FUTURE OF THE LAW OF THE SEA**

Coordenação de / Coordinated by

MARTA CHANTAL RIBEIRO



Coimbra Editora

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FACULDADE DE DIREITO DA UNIVERSIDADE DO PORTO
15-17 DE NOVEMBRO DE 2012

Coordenação de MARTA CHANTAL RIBEIRO



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FACULTY OF LAW, UNIVERSITY OF PORTO
15-17 NOVEMBER 2012

Coordinated by MARTA CHANTAL RIBEIRO

APRESENTAÇÃO ⁽¹⁾

Com este livro publicam-se as Actas da Conferência Internacional ‘30 anos da assinatura da Convenção das Nações Unidas sobre o Direito do Mar: protecção do ambiente e o futuro do Direito do Mar’, que se realizou na Faculdade de Direito da Universidade do Porto, nos dias 15 a 17 de Novembro de 2012. A escolha da data teve o significado de se celebrar os 30 anos da assinatura da CNUDM (Montego Bay, 10 de Dezembro de 1982) por ocasião do Dia Nacional do Mar. Este dia foi fixado em 16 de Novembro para homenagear a entrada em vigor da CNUDM a 16 de Novembro de 1994.

A Conferência foi resultado de uma iniciativa conjunta da Faculdade de Direito da Universidade do Porto (FDUP), o Centro Interdisciplinar de Investigação Marinha e Ambiental (CIIMAR), a Estrutura de Missão para a Extensão da Plataforma Continental (EMEPC) e o Parque de Ciência e Tecnologia da Universidade do Porto (UPTEC). Agradecemos ao Director da FDUP, Cândido da Agra, ao Presidente do CIIMAR, João Coimbra, ao Responsável pela EMEPC, Miguel Sequeira, aos membros da Comissão Organizadora, Paulo das Neves Coelho (EMEPC), Isabel Sousa Pinto (CIIMAR) e Maria Ana Martins (EMEPC), ao *staff*, assim como à UPTEC, na pessoa do seu Director, Jorge Gonçalves, e da colaboradora Susana Pinheiro, a todos pelo apoio incondicional.

⁽¹⁾ Nesta publicação optou-se por manter a grafia anterior à entrada em vigor, em 13 de Maio de 2009, do Acordo Ortográfico da Língua Portuguesa, de 16 de Dezembro de 1990.

A Conferência desenvolveu-se em quatro sessões temáticas:

Sessão I: Retrato actual da protecção do ambiente marinho: ambiente marinho *v.* pesca, navegação, exploração e aproveitamento de recursos minerais

Sessão II: Novos rumos do Direito do Mar: áreas marinhas protegidas, recursos genéticos e plataforma continental ('estendida' e Ártico)

Sessão III: Desafios da investigação científica marinha

Sessão IV: Modelos de 'governança'

A que acresceu uma Sessão Comemorativa do Dia Nacional do Mar.

Nos dias 15 a 17 de Novembro de 2012 reuniram-se, no Salão Nobre da FDUP, eminentes académicos, membros renomados do Tribunal Internacional do Direito do Mar, directores de centros de investigação de excelência na área do Direito do Mar, reputados representantes de organismos internacionais criados no âmbito da CNUDM, bem como responsáveis políticos e ilustres representantes do sector empresarial e da economia do mar. Como resultado final, a Conferência contou com 29 oradores, 13 representantes políticos e institucionais e um total de 172 participantes. Os oradores provieram de 12 países: Alemanha, Argentina, Bélgica, Canadá, Espanha, Estados Unidos da América, Holanda, Itália, Polónia, Portugal, Reino Unido e Turquia. Os outros participantes representaram os seguintes países: Alemanha, Angola, Brasil, Espanha, Estados Unidos da América, Grécia, Holanda, Indonésia, Noruega, Portugal, Suíça e Timor-Leste. A todos dirigimos um agradecimento pelo extraordinário nível das intervenções e pelo aceso e proveitoso debate que proporcionaram. No livro contamos, também, com duas contribuições externas, pelo facto de não ter sido possível, a alguns Autores, integrar o programa da Conferência.

A Conferência foi transmitida em directo via *web*, por gentileza da *Justiça TV*, mantendo-se disponíveis os vídeos das intervenções, por apoio

da TVU, no *website* da Conferência, em concreto na seguinte hiperli-
gação:

<http://www.direito.up.pt/LawoftheSeaConference/confer.html>.

Para o sucesso da Conferência foi imprescindível o apoio financeiro e institucional de diversas entidades. Devemos, por isso, um agradeci-
mento à *Fundação Calouste Gulbenkian*, à *Universidade do Porto*, à *Câmara Municipal do Porto (Fundação Porto Social — Porto Cidade de Ciência)*, à *Vieira de Almeida & Associados*, Sociedade de Advogados, e à *PricewaterhouseCoopers (PwC)*, pelo suporte financeiro concedido. Do mesmo modo, agradecemos à *Comissão de Coordenação e Desenvolvimento Regional do Norte (CCDR-N)* e ao *Espaço Atlântico*.

As Actas que agora se dão à estampa são produto de um tempo que não se compadece com longas esperas. Por conseguinte, entre o desejo de uma obra perfeita e a publicação imediata das intervenções, de modo a não prejudicar a sua actualidade, optámos pela segunda solução. Assim, uns textos (a maioria) estão publicados em língua inglesa, outros em língua portuguesa. Além disso, não se julgou essencial harmonizar o estilo de citação, atenta a diversa tradição dos Autores e dificuldades que isso suscitaria. Foi concedida, em suma, liberdade aos Autores na configuração dos trabalhos apresentados.

Não podemos terminar sem evidenciar o raro privilégio que nos foi concedido de fazermos a coordenação de uma obra que reúne um verdadeiro grupo de ‘notáveis’. A todos os Autores dirigimos o nosso muito obrigada, por nos terem dito que sim, por nunca terem desistido, apesar das adversidades da greve e vicissitudes de companhias aéreas que ameaçaram a realização da Conferência, por, enfim, participarem neste livro. Acreditamos que Portugal e a sua história nos uniram, porque todos partilhamos uma *alma que é feita de maresia* ⁽²⁾.

⁽²⁾ Poema de Sophia de Mello Breyner Andresen, *Mar, metade da minha alma é feita de maresia*.

E fechamos com as palavras do poeta português que tão eloquentemente nos evoca o mar:

*Deus quer, o homem sonha, a obra nasce.
Deus quis que a terra fosse toda uma,
Que o mar unisse, já não separasse.
Sagrou-te, e foste desvendando a espuma,
E a orla branca foi de ilha em continente,
Clareou, correndo, até ao fim do mundo,
E viu-se a terra inteira, de repente,
Surgir, redonda, do azul profundo*

In *Mensagem*, de Fernando Pessoa.

Porto, 8 de Junho de 2013

MARTA CHANTAL RIBEIRO
Presidente da Comissão Organizadora
Professora Auxiliar da Faculdade de Direito
da Universidade do Porto
Coordenadora do *Marine Environmental Law
Research Group* (CIIMAR)

FOREWORD

This book is based on the proceedings of the International Conference '30 years after the signature of the United Nations Convention on the Law of the Sea: the protection of the environment and the future of the Law of the Sea', held at the Faculty of Law of the University of Porto, from 15th to 17th November 2012. This date was significantly intended to celebrate the 30 years of the opening for signature of UNCLOS ⁽³⁾ (Montego Bay, 10th December 1982) at the time of the Portuguese National Day of the Sea (day of the entry into force of UNCLOS: 16th November 1994).

The conference was a joint initiative of the Faculty of Law of the University of Porto (FDUP), the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR), the Task Group for the Extension of the Continental Shelf (EMEPC) and the Science and Technology Park of University of Porto (UPTEC). We are grateful to the Director of FDUP, Cândido da Agra, the President of CIIMAR, João Coimbra, the Acting Head of EMEPC, Miguel Sequeira, to the members of the Organization Committee, Paulo das Neves Coelho (EMEPC), Isabel Sousa Pinto (CIIMAR) and Maria Ana Martins (EMEPC), to the staff, as well as to UPTEC, represented by its Director, Jorge Gonçalves, and Susana Pinheiro, collaborator, for their unconditional support.

⁽³⁾ Or LOSC.

The conference developed along four thematic sessions:

Session I: Current Status of the Protection of the Marine Environment: marine environment *v.* fisheries, navigation, exploration and exploitation of mineral resources

Session II: Prospects of Evolution of the Law of the Sea: marine protected areas, genetic resources, continental shelf (outer continental shelf and the Arctic)

Session III: Challenges of Marine Scientific Research

Session IV: Models of 'Governance'

This was complemented by a Special Session in commemoration of the Portuguese National Day of the Sea.

From 15th to 17th November 2012, the Main Hall of FDUP brought together eminent academics, distinguished members of the International Tribunal for the Law of the Sea, directors of research centres of excellence in the area of the Law of the Sea, renowned representatives of international organizations established under the framework of UNCLOS, as well as policy-makers and distinguished representatives of the entrepreneurial sector and the blue economy. As a final result, the conference was attended by 29 speakers, 13 political and institutional representatives and a total of 172 participants. The speakers came from 12 countries: Argentina, Belgium, Canada, Germany, Italy, Netherlands, Poland, Portugal, Spain, Turkey, United Kingdom and United States of America, while other participants represented the following countries: Angola, Brazil, East-Timor, Germany, Greece, Indonesia, Netherlands, Norway, Portugal, Spain, Switzerland and United States of America. We would like to thank everyone for the outstanding level of participation and for stimulating a fruitful debate. The book includes two external contributions, since it was not possible for some authors to participate in the conference programme.

The Conference was streamed live via internet with the collaboration of *Justiça TV* (www.justicativ.com). The videos are available at the conference *website* with the collaboration of *TVU*:

http://www.direito.up.pt/LawoftheSeaConference/confer_en.html.

For the success of the conference the financial and institutional support from a number of sources was indispensable. We would like to thank the *Calouste Gulbenkian Foundation*, the *University of Porto*, the *Porto City Council (Porto Social Foundation — Porto, City of Science)*, the Law Firm *Vieira de Almeida & Associados*, and *PricewaterhouseCoopers (PwC)* for their financial support. Likewise, we thank the *North Regional Coordination and Development Commission (CCDR-N)*, and the *Atlantic Area*.

The proceedings are the product of a time that is not compatible with long waits. Therefore, between the desire of a perfect work and the immediate publication of the proceedings, so as not to impair its timeliness, we chose the second solution. Thus, some text (the majority) is published in English, other in Portuguese. Moreover, it was not deemed essential to harmonize the citation style, given the different tradition of the authors and difficulties it would raise.

Before concluding, it should be highlighted the rare privilege given to us of doing the coordination of a work that brings together a true group of ‘remarkable’ persons. We are deeply grateful to all authors for positively responding to our invitation, for never having given up, despite the strike and adversities of airlines which threatened the conference, and for the contributions to this book. We believe that Portugal and its history have brought us together, because we all share a *soul that is made of sea-air* ⁽⁴⁾.

⁽⁴⁾ From the poem of Sophia de Mello Breyner Andresen, *Mar, metade da minha alma é feita de maresia* (“Sea, half of my soul is made of sea-air”).

We close the foreword with a quote from Fernando Pessoa, the legendary Portuguese poet who so eloquently evokes the sea:

*God wills, man dreams, the masterpiece is born.
God wanted the earth be one,
The sea to connect, and no longer divide.
He chose you and you went forth unravelling the foam,
And the white rim went from island to continent,
Lighting, running until the end of the world,
And the whole Earth was suddenly seen,
Emerging, round, from the deep blue*

Translated from *Mensagem* by Fernando Pessoa.

Porto, 8th June 2013

MARTA CHANTAL RIBEIRO

Chair of the Organization Committee
Professor of the Faculdade de Direito
da Universidade do Porto
Coordinator of the *Marine Environmental Law Research Group* (CIIMAR)

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Conclusions: coordinated by Wladimir Brito, with the participation of Francisco Noronha, Maria Ana Martins and Vasco Becker-Weinberg

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SESSÃO I

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DO AMBIENTE MARINHO: AMBIENTE *VERSUS*
PESCA, NAVEGAÇÃO, EXPLORAÇÃO
E APROVEITAMENTO DE RECURSOS MINERAIS**

SESSION I

**CURRENT STATUS OF THE PROTECTION OF THE
MARINE ENVIRONMENT: MARINE ENVIRON-
MENT V. FISHERIES, NAVIGATION, EXPLORATION
AND EXPLOITATION OF MINERAL RESOURCES**

FISHERIES AND THEIR IMPACT ON THE MARINE ENVIRONMENT: UNCLOS AND BEYOND

Robin CHURCHILL

University of Dundee, United Kingdom ⁽¹⁾

Content: *1. Introduction. 2. The Adverse Impact of Fisheries on the Marine Environment. 3. Causes of the Adverse Impact of Fisheries on the Marine Environment. 4. Relevant Provisions of UNCLOS. 5. Beyond UNCLOS; 5.1 Measures relating to the depletion of fish stocks; 5.2 Measures to address the impact of fisheries on species other than fish; 5.3 Measures to address the impact of fisheries on marine habitats. 6. What more could or should be done?*

1. INTRODUCTION

Over the past 40 or 50 years fisheries have had an increasingly adverse impact on the marine environment. The aim of this paper is to identify and elucidate that impact and its causes, and then to assess the adequacy and effectiveness in addressing such impact of the UN Convention on the Law of the Sea (UNCLOS) ⁽²⁾ and the numerous treaties and soft law instruments that have been adopted to supplement it in this respect. Because of the number and extent of such treaties and instruments, this paper cannot do more than provide an introductory overview of the way in which the international community is

⁽¹⁾ I would like to thank Elizabeth Kirk and Daniel Owen for their helpful comments on a preliminary draft of this paper. The usual disclaimer applies.

⁽²⁾ 1833 UNTS 396.

seeking to tackle the adverse impact of fisheries on the marine environment.

The first two substantive sections of this paper identify the various types of adverse impact of fisheries on the marine environment and attempt to explain their causes. The following section (section 4) reviews the relevant provisions of UNCLOS. This is followed by a section reviewing the actions that have been taken outside UNCLOS to address the various types of impact identified in section 2. Finally, the paper considers what more could and should be done to counter the adverse effects of fisheries on the marine environment.

2. THE ADVERSE IMPACT OF FISHERIES ON THE MARINE ENVIRONMENT

The increasingly adverse impact that fisheries have had on the marine environment over the past four or five decades takes three main forms⁽³⁾. The first type of impact is the depletion of fish stocks caused by overfishing. According to the biennial reports on the State of World Fisheries and Aquaculture published by the FAO, for the past decade or more nearly 30% of fish stocks have been over-exploited (a percentage that has trebled since the mid-1970s) and nearly 60% of stocks have been fully exploited and therefore are at risk of over-exploitation without effective management⁽⁴⁾. There are considerable regional variations in this global picture. At one extreme are, for example, Canada and the EU. In the case of Canada, there was a collapse in the stocks of most commercial species on the Grand Banks off Newfoundland in the early

⁽³⁾ See further the UN Secretary-General's report on sustainable fisheries, UN Doc. A/59/298(2004), 20-26, available at http://www.un.org/Depts/los/general_assembly/general_assembly_reports.htm. The Secretary-General lists four forms of impact: his fourth form (impact through food-chain effects) is included in the first here.

⁽⁴⁾ For the latest report, see FAO, *The State of World Fisheries and Aquaculture 2012*, available at <http://www.fao.org/docrep/016/i2727e/i2727e00.htm>.

1990s as a result of persistent overfishing: even after a moratorium on fishing lasting several years, the size of the stocks has not yet been restored to past levels ⁽⁵⁾. In the case of the EU, 88% of fish stocks in the waters of EU Member States, for whose management the EU is responsible, are being fished beyond the level of maximum sustainable yield and 30% are outside safe biological limits ⁽⁶⁾. At the other extreme are, for example, Iceland and Norway, which are generally considered to have managed the fisheries of their exclusive economic zones (EEZs) in a sustainable way ⁽⁷⁾.

Because of the lack of selectivity of much fishing gear, large amounts of non-target fish species may be taken as by-catch, thereby impacting on the well-being of the stocks of such species. Much of this by-catch (which is usually dead or dying) is simply discarded at sea: one estimate is that as much as 20 million tonnes, equivalent to some 20% of the total world marine fish catch, is discarded annually ⁽⁸⁾.

The overfishing of a particular fish stock affects not only that fish stock, but will have an impact on the populations of other species (including other fish, marine mammals and birds) that are either a predator or a the prey of the fish stock in question. For example, if cod in the Barents Sea were to be overfished, this would be likely to lead to an increase in the population of herring, which are eaten by cod, and a decline in the number of seals, which feed on cod. Where species are

⁽⁵⁾ Fisheries and Oceans Canada, *What's holding back the Cod Recovery?* (2013), available at <http://www.dfo-mpo.gc.ca/science/Publications/article/2006/01-11-2006-eng.htm>.

⁽⁶⁾ EU Commission document COM(2009) 163, 7. See also European Environment Agency, *EU 2010 Biodiversity Baseline*, Technical Report No 12/2010, 84, available at <http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline>, which gives a figure of 46% of stocks being fished outside safe biological limits.

⁽⁷⁾ B. C. O'Leary et al, 'Fisheries Mismanagement' (2011) 62 *Marine Pollution Bulletin* 2642, 2646.

⁽⁸⁾ Secretary-General's report, note 3 above, 23.

in competition for the same source of food (e.g. plankton), over-fishing of one species will leave more food for other species, whose populations may thereby increase, with possibly permanent consequences for the ecological balance of a particular marine area.

A second impact of fisheries on the marine environment is the killing or injuring of non-target species other than fish as a result of using non-selective fishing gear. A number of examples of this impact can be given. Many small cetaceans (particularly dolphins and porpoises) and amphibians (such as turtles) are caught in drift nets, purse-seine nets used for tuna fishing, and bottom-set gill nets and consequently drown ⁽⁹⁾. Some sea birds (notably albatrosses) are attracted to the bait used in long line fishing and are then caught on the hooks and die ⁽¹⁰⁾.

Third, fisheries frequently cause an adverse environmental impact by damaging marine habitats. This may be done in various ways. One example is beam trawling, where metal plates attached to a metal beam holding the mouth of the net open are dragged along the bottom of the sea, usually in areas relatively close to the coast, causing considerable damage to seabed habitats, not just of fish but of numerous other species ⁽¹¹⁾. Another example is deep water bottom trawling, which tends to damage, *inter alia*, cold-water coral reefs, hydrothermal vents and

⁽⁹⁾ See further B. Miller, 'Combating Driftnet Fishing in the Pacific', in J. Crawford and D. R. Rothwell (eds.), *The Law of the Sea in the Asian-Pacific Region* (Dordrecht: Martinus Nijhoff Publishers, 1995) 155; and K. Mulvaney and B. McKay, 'Small Cetaceans: Status, Threats and Management' in W. C. G. Burns and A. Gillespie (eds), *The Future of Cetaceans in a Changing World* (Ardsley, NY: Transnational Publishers, 2003) 189, 195-7.

⁽¹⁰⁾ E. Dunn, 'Reducing Seabird Bycatch: From Identifying Problems to Implementing Policy' in D. Vidas and P. J. Schei (eds), *The World Ocean in Globalisation* (Leiden: Martinus Nijhoff Publishers, 2011) 247.

⁽¹¹⁾ See further Greenpeace, *Beam Trawlers — Destroying the Seabed*, available at <http://www.greenpeace.org.uk/oceans/problems/beam-trawlers-destroying-the-seabed>.

seamounts⁽¹²⁾. A third example is the use of explosives in some, mainly developing tropical, countries, often causing substantial damage to, *inter alia*, coral reefs and their biologically rich ecosystems. Lastly, discarded or lost fishing gear and other debris from the fishing industry impacts negatively on the marine environment.

3. CAUSES OF THE ADVERSE IMPACT OF FISHERIES ON THE MARINE ENVIRONMENT⁽¹³⁾

Before considering how UNCLOS and other instruments seek to address the adverse impact of fisheries on the marine environment, it is desirable to have some idea of the causes of such impact. Without some idea of those causes, it is difficult to know what measures to address adverse impacts could or should be taken and to assess the effectiveness of those measures that have been taken. There are a variety of causes of the adverse impact of fisheries, some more immediate, others more underlying. They include (beginning with underlying causes):

- Developments in technology relating to fishing gear, fishing vessels, locating fish and processing fish. Such developments have vastly increased the size, catching-power and efficiency of fishing vessels, so that a single deep-sea fishing vessel today is capable of taking a much larger catch on a fishing trip than its counterpart in times past.

⁽¹²⁾ See the report of the UN Secretary-General on the impacts of bottom fishing, UN Doc A/66/307 (2011), especially at 7-14, available at <http://daccess-ods.un.org/TMP/3162962.79430389.html>; and A. Bensch et., *Worldwide Review of Bottom Fisheries in the High Seas*, FAO Fisheries and Aquaculture Technical Paper 522 (Rev. 1) (2009), available at <http://www.fao.org/docrep/012/i1116e/i1116e00.htm>.

⁽¹³⁾ For more detailed discussion, see, *inter alia*, C. Clover, *The End of the Line* (University of California Press, 2006); C-C. Schmidt, 'Economic Drivers of Illegal, Unreported and Unregulated (IUU) Fishing' (2005) 20 *International Journal of Marine and Coastal Law* (hereafter *IJMCL*) 479; and WWF, *Poorly Managed Fishing* (available at http://wwf.panda.org/about_our_earth/blue_planet/problems/problems_fishing/).

- Increasing consumer demand for fish as a result of rising populations, increases in disposable income in more advanced developing countries, and the promotion of the health benefits of fish.
- Increasing demand for fish for uses other than direct human consumption, such as animal feed (including in aquaculture).
- Increasing difficulty for, and therefore pressure on, fishing vessels to make a profit as a result of, *inter alia*, substantial rises in fuel prices over the past decade and excessive competition caused by over-capacity in fishing fleets (i.e. there are more vessels fishing for particular stocks than are necessary easily to take the allowable catch ⁽¹⁴⁾). Over-capacity, which is arguably the greatest threat to sustainable marine fisheries, has to a large extent been stimulated by Government subsidies. It is estimated that such subsidies are equivalent to about a quarter of the value of the total world marine catch of \$78.8 billion ⁽¹⁵⁾. The drive for profits leads vessels to fish ever more intensively (and unsustainably) and to try to evade measures to restrict their activities.
- The use of non-selective fishing gear leading to excessive catches of non-target species, both of fish and other species. Such unwanted catch is usually discarded, the fish and other species being in most cases dead when returned to the sea.
- Inadequate management measures, caused by, *inter alia*, lack of scientific knowledge and fisheries data, political/industry pressures on fishery managers to adopt less restrictive measures than those recommended by fishery scientists ⁽¹⁶⁾, and lack of co-operation between States over shared stocks ⁽¹⁷⁾.

⁽¹⁴⁾ See further World Bank, *The Sunken Billions: The Economic Justification for Fisheries Reform* (2009), available at <http://siteresources.worldbank.org/EXTARD/Resources/336681-1224775570533/SunkenBillionsFinal.pdf>.

⁽¹⁵⁾ U. R. Sumaila et al., 'A bottom-up re-estimation of global fisheries subsidies' (2010) 12 *Journal of Bioeconomics* 201.

⁽¹⁶⁾ For examples of managers succumbing to such pressures, see O'Leary, note 7 above (on the EU) and S. Korman, 'Institutional Management of a High Seas Fish-

- Lack of capacity and/or unwillingness by coastal, flag and port States to enforce management measures effectively, thus leading to widespread non-compliance with the relevant regulations in many fisheries. It has been estimated that as much as one third of the total global marine fish catch is taken illegally ⁽¹⁸⁾.
- Change of flag (i.e. nationality) by fishing vessels to evade controls, something that is facilitated by the laxness of the international law relating to the nationality of ships. For example, the owner of a fishing vessel that has the nationality of a member State of a regional fisheries management organization (RFMO) may decide to re-register that vessel in, and thereby obtain the nationality of, a State that is not a member of the RFMO in question. In such a case, that vessel will no longer be bound by the conservation and management measures adopted by that RFMO ⁽¹⁹⁾. More generally, many flag States, especially flag of convenience fishing States, do not exercise their responsibilities as flag States properly.

The cumulative effect of the above factors is that fishing frequently takes place at levels that are unsustainable. This bears particularly on the first type of impact identified above, depletion of stocks, but it also contributes in no small measure to the other types of impact.

ery: Political and Property-Rights Solutions and the Atlantic Bluefin' (2011) 51 *Virginia Journal of International Law* 697 (on the International Commission for the Conservation of Atlantic Tuna).

⁽¹⁷⁾ See further R. R. Churchill, 'The Management of Shared Fish Stocks: the Neglected "Other" Paragraph of Article 63 of the UN Convention on the Law of the Sea' in A. Strati, M. Gavouneli and N. Skourtos (eds), *Unresolved Issues and New Challenges to the Law of the Sea* (Leiden: Martinus Nijhoff, 2006) 3.

⁽¹⁸⁾ D. J. Agnew, J. Pearce, G. Pramod, T. Peatman, R. Watson, J. R. Beddington and T. J. Pitcher, 'Estimating the Worldwide Extent of Illegal Fishing' (2009) 4(2) *PLoS ONE*, available at <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0004570>.

⁽¹⁹⁾ For discussion of this issue, see D. S. Calley, *Market Denial and International Fisheries Regulation* (Leiden: Martinus Nijhoff Publishers, 2011), chapters 2-4.

4. RELEVANT PROVISIONS OF UNCLOS

UNCLOS contains a number of provisions that, to some degree, address each of the three types of adverse impact of fisheries on the marine environment. The measures relevant to each type are considered in turn.

Two sets of provisions are relevant to the first type of impact, depletion of fish stocks. The first set deals with areas within national jurisdiction, i.e. the EEZ. Articles 61(2) and (3) require a coastal State to ensure through proper conservation and management measures that maintenance of the living resources in its EEZ is not endangered by over-exploitation. Such measures must be designed to maintain or restore populations of harvested species at levels that can produce the maximum sustainable yield (MSY), as qualified by relevant environmental and economic factors. The second set of provisions deals with the high seas. Articles 117 and 118 require States whose nationals fish on the high seas to take, or to co-operate with other States in taking, measures necessary for the conservation of high seas fisheries resources. Article 119(1)(a) requires such measures to be designed to maintain or restore populations of harvested species at levels that can produce the MSY, as qualified by relevant environmental and economic factors.

Similarly, UNCLOS contains two sets of provisions relevant to the second type of impact, harm to species other than fish. Within the EEZ Article 61(4) requires a coastal State, in taking conservation measures, 'to take into consideration' the effect of such measures on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such species 'above levels at which their reproduction may become seriously threatened.' Article 119(1)(b) lays down a similar obligation on States fishing on the high seas.

There are no UNCLOS provisions directly relevant to the third type of impact, damage to marine habitats. Article 194(5) calls for measures 'taken in accordance with this Part' (i.e. Part XII) to 'include those

necessary to protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species.’ It is debatable whether this requires the measures called for to be directed at fishing. First, Article 194 is headed ‘Measures to prevent, control and reduce *pollution* of the marine environment’ (emphasis added), thus suggesting that the obligation in paragraph 5 relates to protecting ecosystems and habitats from pollution. Secondly, there is no mention of fish or fisheries anywhere in Part XII ⁽²⁰⁾.

On the 30th anniversary of the signature of UNCLOS one should perhaps try to be complimentary about its achievements. However, on the issue being considered in this paper, that is not possible. It is difficult to escape the conclusion that the provisions of UNCLOS outlined above, and UNCLOS generally, have proved almost completely useless to prevent the adverse impacts that fisheries have had on the marine environment. There are a number of reasons for this conclusion. The first reason is normative weaknesses in UNCLOS. The provisions referred to above either lack precision or are heavily qualified. As to the latter, UNCLOS provides that the measures to be taken to restore or maintain fish stocks at the level of MSY may be qualified by, *inter alia*, economic factors. This suggests that catch limits could be set for economic reasons (such as to protect employment in the fishing industry) at a level that would delay or prevent the restoration or maintenance of stocks to MSY. Furthermore, and more fundamentally, the reliance of UNCLOS on MSY as its principal policy tool of fisheries management has been heavily criticised because it is only concerned with limiting catches and does not deal with the need to restrict effort ⁽²¹⁾. The provisions of UNCLOS concerned with the impact of fisheries on non-target species are particularly weak. States are required to do no more than

⁽²⁰⁾ For further discussion as to the scope of Art. 194(5), see Y. Takei, *Filling Regulatory Gaps in High Seas Fisheries* (Leiden: Martinus Nijhoff, 2013), 76-7 and literature cited there.

⁽²¹⁾ See, e.g., E. Hey, ‘The Persistence of a Concept: Maximum Sustainable Yield’ (2012) 27 *IJMCL* 763.

‘take into consideration’ the effect of their measures on such species and are required only to ‘consider’ maintaining or restoring populations of such species ‘above levels at which their reproduction may become seriously threatened’, which is a long way short of an obligation to restore or maintain populations to or at a sustainable level. Finally, in the case of the impact of fisheries on habitats, there are doubts (as explained above) as to whether Article 194(5) of UNCLOS applies to fisheries. If not, this type of impact is not regulated by UNCLOS at all.

A second reason for the failure of UNCLOS to prevent adverse impacts of fisheries on the marine environment is its jurisdictional limitations, particularly in relation to the high seas. It is a significant weakness that under Article 92(1) of UNCLOS ships on the high seas, including fishing vessels, are in principle subject only to the jurisdiction of their flag State. Exceptions may be made under special treaties, and in the case of fisheries a number of such treaties have been concluded, as explained below. However, in the absence of such treaties, it is impossible for States other than the flag State to take enforcement action on the high seas against a vessel that is fishing there in breach of UNCLOS or another treaty that does not provide for non-flag State enforcement. A related weakness of UNCLOS is that its provisions on the nationality of ships, in particular the genuine link requirement, are too imprecise to have prevented the growth of flag of convenience fishing vessels⁽²²⁾. As explained at the end of the previous section, it may be easy for such vessels to avoid being bound by restrictive fisheries regulations.

A third problem with UNCLOS is its limited compliance mechanisms. The only form of compliance mechanism created by UNCLOS that is relevant to fisheries is its system of compulsory dispute settlement. However, the latter excludes completely from its scope disputes relating

⁽²²⁾ See Calley, note 19 above; and R. Churchill, *The Meaning of the ‘Genuine Link’ Requirement in Relation to the Nationality of Ships* (2000), available at <http://www.oceanlaw.net/projects/consultancy/pdf/ITF-Oct2000.pdf>.

to fisheries in the EEZ, where 85% of all fishing takes place ⁽²³⁾. Otherwise only the general mechanisms of international law (retorsion, counter-measures, and suspension of a treaty for material breach) are available where it can be plausibly argued that a State party is not complying with the fisheries obligations of UNCLOS. The lack of any compliance mechanism under UNCLOS contrasts with a number of multilateral environmental agreements (MEAs) which have developed innovative and effective non-compliance mechanisms ⁽²⁴⁾, and some marine pollution treaties (such as the London Dumping Protocol and the Barcelona Convention) which have established compliance committees ⁽²⁵⁾.

A final reason why UNCLOS is a defective instrument for preventing adverse impacts of fisheries on the marine environment is the limited means that it provides for its development, thus making it very difficult to remedy the normative and jurisdictional weaknesses described above. UNCLOS has nothing corresponding to the conferences/meetings of the parties of MEAs, which have driven those agreements forward both normatively and in relation to implementation and compliance ⁽²⁶⁾. It is true that the parties to UNCLOS meet annually but there has been resistance to giving those meetings a greater role than their current one of overseeing the three institutions created by UNCLOS (the Commis-

⁽²³⁾ UNCLOS, Art. 297(3). For the figure of 85% (which is for 2003), see S. Cullis-Suzuki and D. Pauly, 'Failing the High Seas: A Global Evaluation of Regional Fisheries Management Organizations' (2010) 34 *Marine Policy* 1036, 1036.

⁽²⁴⁾ See further G. Ulfstein, T. Marauhn and A. Zimmerman (eds.), *Making Treaties Work: Human Rights, Environment and Arms Control* (Cambridge: Cambridge University Press, 2007).

⁽²⁵⁾ On which, see R. Churchill, 'Compliance Mechanisms in the Law of the Sea: From the Individual to the Collective' in H. Hestermayer et al (eds.), *Coexistence, Cooperation and Solidarity: Liber Amicorum Rüdiger Wolfrum* (Leiden: Martinus Nijhoff, 2012), vol. I, 777, 801-4.

⁽²⁶⁾ See further R. R. Churchill and G. Ulfstein, 'Autonomous Institutional Arrangements in Multilateral Environmental Agreements: A Little-Noticed Phenomenon in International Law' (2000) 94 *American Journal of International Law* 623.

sion on the Limits on the Continental Shelf, the International Tribunal for the Law of the Sea and the International Seabed Authority) ⁽²⁷⁾. An alternative way of developing UNCLOS would be through its amendment procedures ⁽²⁸⁾, but those are generally regarded as being too cumbersome to be useful ⁽²⁹⁾. In practice, the only way to develop UNCLOS has been through the conclusion of supplementary agreements, known as implementation agreements. Two such agreements were concluded in the mid-1990s, one of which develops the provisions of UNCLOS relating to straddling and highly migratory fish stocks and is discussed briefly in the following section. Since then there appears to have been little appetite for considering any further such agreements, although there have recently been reports that many States are now in favour of drawing up an implementation agreement for the protection of biodiversity for areas beyond the limits of national jurisdiction.

5. BEYOND UNCLOS

Given the inability of UNCLOS to prevent the adverse impacts of fisheries on the marine environment, action has had to be taken in other fora to try to mitigate such impacts. Those fora include the UN General Assembly, the UN's Food and Agriculture Organization, regional fisheries management organizations (RFMOs), the Bonn Convention on Migratory Species (CMS) ⁽³⁰⁾, the Convention on International Trade in Endangered Species (CITES) ⁽³¹⁾, and the Convention on Biological

⁽²⁷⁾ T. Treves, 'The General Assembly and the Meeting of States Parties in the Implementation of the LOS Convention' in A. G. Oude Elferink (ed), *Stability and Change in the Law of the Sea: The Role of the LOS Convention* (Martinus Nijhoff, Leiden, 2005) 55.

⁽²⁸⁾ Arts 312-316.

⁽²⁹⁾ D. Freestone and A. G. Oude Elferink, 'Flexibility and Innovation in the Law of the Sea — Will the LOS Convention Amendment Procedures Ever be Used?' in Oude Elferink, note 27 above, 169.

⁽³⁰⁾ 1651 UNTS 333.

⁽³¹⁾ 993 UNTS 243.

Diversity (CBD)⁽³²⁾. Under them a considerable number of treaties and soft law instruments have been adopted to address the impact of fisheries on the marine environment. An overview of such measures will be given below, considering in turn each of the three types of impact identified in section 2. Because of the number of such measures and the constraints of space, only the barest outline of each measure can be given here.

5.1. Measures relating to the depletion of fish stocks

As mentioned above, an implementing agreement to develop the provisions of UNCLOS relating to the management of straddling and high migratory stocks, the UN Fish Stocks Agreement⁽³³⁾, was adopted in 1995. The Agreement is largely concerned with management on the high seas. Three sets of its provisions are particularly relevant in the present context and go some way to remedying some of the weaknesses in UNCLOS identified above. First, the Agreement sets out, in Article 5, the principles that should govern the conservation and management of straddling and highly migratory stocks both on the high seas and in the EEZ. Those principles include ensuring the long-term sustainability of the stocks concerned; applying the precautionary approach; minimising pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependent

⁽³²⁾ 1760 UNTS 79.

⁽³³⁾ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 1995, 2167 UNTS 3. The Agreement entered into force in December 2001. For detailed discussion of the Agreement, see, *inter alia*, M. W. Lodge, and S. N. Nandan, 'Some Suggestions towards Better Implementation of the United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks of 1995' (2005) 20 *IJMCL* 345; and A. Tahindro, 'Conservation and Management of Transboundary Fish Stocks: Comments in Light of the Adoption of the 1995 Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks' (1997) 28 *ODIL* 1.

species; protecting biodiversity; preventing or eliminating overfishing and excess fishing capacity; collecting data concerning fishing activities; promoting scientific research; and implementing and enforcing measures through effective monitoring, control and surveillance. Secondly, States are to give effect to their duty to co-operate over fisheries management through regional fisheries management organizations or arrangements ⁽³⁴⁾. If a State does not become a member of such a body or apply its measures, it must prohibit its vessels from fishing on the high seas. Thirdly, the Agreement permits a degree of enforcement on the high seas by States other than the flag State and also provides for enforcement by port States ⁽³⁵⁾. At the time of writing (April 2013), the Agreement had 80 parties, but the latter did not include a number of major high seas fishing States (such as China and Thailand) or a number of significant coastal States (such as Argentina, Chile, Ecuador, and Peru). The Agreement has nevertheless had a significant impact since it was adopted in 1995. Several treaties establishing new regional fisheries management organizations or arrangements have been concluded that show many influences of, and incorporate principles from, the Agreement, and many existing organizations have changed their practices to accord with the provisions of the Agreement ⁽³⁶⁾.

As mentioned above, UNCLOS requires States fishing on the high seas to co-operate over the conservation and management of fisheries there. Such co-operation has become institutionalised in many regions, and also for some species (notably tuna), through the establishment of regional fisheries management organizations (RFMOs). Such bodies have been able to adopt the precise conservation and management measures that are lacking in UNCLOS and have also adopted innovative measures of enforcement to overcome the UNCLOS system of exclusive

⁽³⁴⁾ Art. 8 (1).

⁽³⁵⁾ Arts 20-23.

⁽³⁶⁾ For details, see the reports of the UN Secretary-General to the General Assembly on sustainable fisheries, available at http://www.un.org/Depts/los/general_assembly/general_assembly_reports.htm.

flag State jurisdiction on the high seas, including international systems of inspection and observers, port State control and trade measures ⁽³⁷⁾. Nevertheless, RFMOs have so far had a somewhat chequered history: the catch limits that they have set have frequently been in excess of those recommended by scientists; at times their members have used the objection procedure to opt out of RFMO measures; there have been problems of compliance with such measures by members' vessels (prompting the adoption of some of the enforcement measures referred to above); and RFMO measures have been undermined by free riders (a problem which the UN Fish Stocks Agreement attempts to address) ⁽³⁸⁾. Overall, during the 30 or more years that many RFMOs have been in existence, there has been no improvement in the status of high seas fish stocks ⁽³⁹⁾.

The FAO, not surprisingly, has adopted a wide range of measures, both hard and soft law, that are designed to address some of the weaknesses of UNCLOS identified above. As hard law, there are two treaties. The first is the Compliance Agreement, which was adopted in 1993 ⁽⁴⁰⁾.

⁽³⁷⁾ For studies of RFMOs and their activities, see, *inter alia*, T. Henriksen, G. Hönneland, and A. Sydnes, *Law and Politics in Ocean Governance: the UN Fish Stocks Agreement and Regional Fisheries Management Regimes* (Leiden: Martinus Nijhoff, 2006); M. Lodge, D. Anderson, T. Löbach, G. Munro, K. Sainsbury and A. Willock, *Recommended Best Practices for Regional Fisheries Management Organizations* (London: Chatham House, 2007); and G. Lugten, *The Role of International Fishery Organizations and Other Bodies in the Conservation and Management of Living Aquatic Resources*, FAO Fisheries and Aquaculture Circular No. 1054 (2010).

⁽³⁸⁾ See further Lodge et al, previous note. A number of RFMOs, including the International Commission for the Conservation of Atlantic Tunas, the North-East Atlantic Fisheries Commission and the Northwest Atlantic Fisheries Organisation, have had their performances reviewed: the reports of such performance reviews may be found on their websites.

⁽³⁹⁾ Cullis-Suzuki and Pauly, note 23 above.

⁽⁴⁰⁾ Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, 2221 UNTS 91. For discussion of the Agreement, see, *inter alia*, D. A. Balton, 'The Compliance Agreement' in E. Hey, *Developments in International Fisheries Law* (The Hague: Kluwer, 1999) 31.

The main obligations that it lays down concern the requirement for vessels fishing on the high seas to be authorised and the duties of flag States. The latter are similar to, but less far-reaching than, those of the subsequent Fish Stocks Agreement. The Agreement does not appear to have been very successful, partly because it overlaps to a considerable degree with the more rigorous Fish Stocks Agreement and partly because it has not been widely ratified: as of April 2013 it had only 39 parties, which did not include some important high seas fishing States, such as China and Thailand. The other FAO treaty is the Port State Measures Agreement, adopted in 2009 ⁽⁴¹⁾. The Agreement requires its parties to deny entry to their ports of foreign vessels that are suspected of having engaged in illegal, unreported and unregulated (IUU) fishing and to prohibit vessels lacking a valid authorization to fish from landing their catches. The Agreement has the potential to be very effective if widely ratified and properly implemented. However, that is a long way from being the position at present as the Agreement has not yet entered into force and seems unlikely to do so in the immediate future because as of April 2013 it had received only five of the 25 ratifications necessary for its entry into force.

Of the soft law measures so far adopted by the FAO, the most important are the Code of Conduct for Responsible Fisheries (1995) ⁽⁴²⁾ and three of its associated International Plans of Action (IPOAs) — on illegal, unreported and unregulated fishing (adopted in 2001), fishing

⁽⁴¹⁾ Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, available at http://www.fao.org/fileadmin/user_upload/legal/docs/1_037t-e.pdf.

⁽⁴²⁾ Code of Conduct for Responsible Fisheries, FAO Doc. 95/20/Rev. 1 (1995), available at <http://www.fao.org/docrep/005/v9878e/v9878e00.htm>. Further on the Code, see G. Moore, 'The Code of Conduct for Responsible Fisheries' in Hey, note 40 above, 85-105; and D. Doulman, 'Code of Conduct for Responsible Fisheries: Development and Implementation Considerations' in M. N. Nordquist and J. N. Moore (eds), *Current Fisheries Issues and the Food and Agriculture Organization of the United Nations* (The Hague: Martinus Nijhoff, 2000) 307-330.

capacity (1999) and sharks (1999). The Code, in Articles 6, 7, and 8, sets out various principles for fisheries conservation and management. They specify that conservation should be on a long-term and sustainable basis, founded on a precautionary approach and the best scientific advice available; management measures should ensure the conservation not only of target species but also of associated or dependent species or species belonging to the same ecosystem; States should prevent over-fishing and eliminate excess fishing capacity; selective and environmentally safe fishing gear should be developed and applied, and waste and catches of non-target species should be minimised; and States should effectively monitor and control the activities of fishing vessels so as to ensure compliance with their management measures, and impose sanctions of adequate severity for violations of those measures. The principles, guidance and best practice set out in the Code are very sound, if at a considerable level of generality, but are not legally binding. There is, however, an expectation that States and others will apply and implement the Code, notwithstanding its voluntary nature; the FAO will monitor such implementation⁽⁴³⁾. The Code has been supplemented by a considerable number of technical guidelines relating to its implementation which are more detailed and precise but still hortatory in nature⁽⁴⁴⁾. Perhaps the most significant guidelines relate to the ecosystem approach to fisheries management⁽⁴⁵⁾. The crucial question is whether States will follow the Code. As Doulman explains, the Code assumes that governments desire better managed fisheries and are prepared to take the difficult decisions necessary to that end. Governments, however, may have short-term planning and policy horizons and therefore may seek 'to minimize social and economic disruption through their fishery policy interventions, even when it is recognized that such intervention is

⁽⁴³⁾ Code, Art. 4.

⁽⁴⁴⁾ Available at <http://www.fao.org/fishery/code/publications/guidelines/en>.

⁽⁴⁵⁾ Further on the ecosystem approach, see J. Morishita, 'What is the Ecosystem Approach for Fisheries Management?' (2008) 32 *Marine Policy* 19; and Takei, note 20 above, 85-91.

required to improve' management ⁽⁴⁶⁾. Nevertheless, in 2012 the FAO reported that nearly 60 per cent of its members had national policies and legislation in place that conformed to the Code, and most of the remainder had policies and legislation in partial conformity ⁽⁴⁷⁾.

Turning now to the IPOAs, that for illegal, unreported and unregulated (IUU) fishing ⁽⁴⁸⁾ aims to 'prevent, deter and eliminate IUU fishing by providing all States with comprehensive, effective and transparent measures by which to act, including through appropriate' RFMOs ⁽⁴⁹⁾. To that end, all States should, *inter alia*, take all possible steps to discourage their nationals and vessels from engaging in IUU fishing; impose sanctions for such fishing of sufficient severity effectively to deter, and deprive offenders of the benefits of, such fishing; undertake comprehensive and effective monitoring, control and surveillance of fishing from its commencement, through the point of landing, to final destination; develop by 2004 national plans of action to further achieve the objectives of the IPOA and give full effect to its provisions; and cooperate with other States to prevent, deter and eliminate IUU fishing. More specific measures are then set out for flag States (including provisions on the registration, authorisation, and maintenance of records of their vessels); coastal States; port States; RFMOs; and the FAO. Implementation of the IPOA has been slow. Only three States met the 2004 target for

⁽⁴⁶⁾ Doulman, note 42 above, 320-321.

⁽⁴⁷⁾ FAO Committee on Fisheries, *Progress in the Implementation of the 1995 Code of Conduct for Responsible Fisheries and Related Instruments*, COFI/2012/3, paras 8 and 9, available at <http://www.fao.org/fishery/code/publications/guidelines/en>.

⁽⁴⁸⁾ Available at <http://www.fao.org/fishery/ipoa-iuu/legal-text/en>. For commentary, see W. R. Edeson, 'The International Plan of Action on Illegal, Unreported and Unregulated Fishing: The Legal Context of a Non-Legally Binding Instrument' (2001) 16 *IJMCL* 603 On the problems of IUU fishing, see R. Baird, 'Illegal, Unregulated and Unreported Fishing: An Analysis of the Legal, Economic and Historical Factors Relevant to its Development and Persistence' (2004) 5 *Melbourne Journal of International Law* 299; and K. Bray, 'Illegal, Unreported and Unregulated (IUU) Fishing' in Nordquist and Moore, note 42 above, 115.

⁽⁴⁹⁾ Para. 8.

adopting the national plan of action to combat IUU fishing called for by the IPOA ⁽⁵⁰⁾; by 2012 only 58% of the FAO's members had developed such a plan and most of those members had yet to fully implement their plans ⁽⁵¹⁾. A second IPOA, on the Management of Fishing Capacity ⁽⁵²⁾, addresses the problem of over-capacity, which, as explained in section 3 above, is a major driver of the adverse impacts of fisheries on the marine environment. Its principal provision is that by 2003 (and 2005 at latest) States should have adopted and implemented a national plan for the management of fishing capacity, including gradually reducing over-capacity. To that end, States should reduce and eliminate all factors, including subsidies and economic incentives, that contribute to the build-up of excess capacity. If properly implemented, the IPOA would lead to a major reduction of excess capacity. Unfortunately, however, implementation of the IPOA has been weak. Only one State met the 2005 target for implementing the national plan of action called for by the IPOA ⁽⁵³⁾; by 2012 only 64% of FAO members had formulated and begun to implement such plans ⁽⁵⁴⁾. The third IPOA, on sharks ⁽⁵⁵⁾, was prompted by concerns over the substantial increase in shark catches. It exhorts States whose vessels conduct directed fisheries for sharks or regularly take sharks as by-catch to adopt a national plan of action for the conservation and management of shark stocks, guidance for which is set out in an appendix. Although implementation of the IPOA was initially slow, with only four States having met the 2001 target for adopting the national plan of action called for by the IPOA ⁽⁵⁶⁾, by 2012 most States with vessels whose

⁽⁵⁰⁾ UN Secretary-General's report, note 3 above, 9.

⁽⁵¹⁾ FAO Committee on Fisheries, note 47 above, para. 40.

⁽⁵²⁾ Available at <http://www.fao.org/fishery/ipoa-capacity/legal-text/en>. For comment, see D. Gréboval, 'The International Plan of Action for the Management of Fishing Capacity: Retrospect and Prospect' in Nordquist and Moore, note 42 above, 561.

⁽⁵³⁾ UN Secretary-General's report, note 3 above, 9.

⁽⁵⁴⁾ FAO Committee on Fisheries, note 47 above, para. 36.

⁽⁵⁵⁾ Available at <http://www.fao.org/fishery/ipoa-sharks/legal-text/en>.

⁽⁵⁶⁾ UN Secretary-General's report, note 3 above, 9.

activities fell within the scope of the IPOA had adopted national plans ⁽⁵⁷⁾. Other soft law measures adopted by the FAO include its Guidelines on Bycatch Management and Reduction of Discards (adopted in 2011) ⁽⁵⁸⁾ and Voluntary Guidelines for Flag State Performance (adopted in 2013) ⁽⁵⁹⁾.

The inability of UNCLOS and many of the instruments listed above significantly to improve the status of many fish stocks has led some States to seek to use CITES as an alternative or additional means of taking conservation action. As a result, a number of commercial fish species have been added to the list of species in Appendix II of CITES, which requires trade in such species (defined as including their ‘introduction from the sea’ ⁽⁶⁰⁾) to be strictly regulated ⁽⁶¹⁾.

For reasons of space, no further analysis of the above instruments will be attempted here, and in any case such analysis has been done many times before by others ⁽⁶²⁾. However, two general points may be made here. First, most hard law measures relate exclusively or very largely to the high seas. In relation to EEZ fisheries, only soft law measures (notably the Code of Conduct and IPOAs) have been adopted, even though some of the worst instances of depleted fish stocks are found in the EEZ (e.g. in the waters of EU Member States and off the Atlantic

⁽⁵⁷⁾ FAO Committee on Fisheries, note 47 above, para. 36.

⁽⁵⁸⁾ Available at <http://www.fao.org/docrep/015/ba0022t/ba0022t00.htm>.

⁽⁵⁹⁾ Available at ftp://ftp.fao.org/FI/DOCUMENT/tc-fsp/2013/VolGuidelines_adopted.pdf.

⁽⁶⁰⁾ CITES, Art. I (c).

⁽⁶¹⁾ CITES, Art. IV. An up to date text of Appendix II may be found at <http://www.cites.org/eng/app/appendices.php>. For further discussion of the listing of fish under CITES, see Calley, note 19 above, chapter 6; and R. Churchill and D. Owen, *The EC Common Fisheries Policy* (Oxford: Oxford University Press, 2010) 386-91.

⁽⁶²⁾ See, for example, P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment*, third edition (Oxford: Oxford University Press, 2009), chapter 12; Churchill and Owen, previous note, chapter 3; Hey, note 40 above; and Nordquist and Moore, note 42 above.

coast of Canada, as mentioned in section 2 above). The lack of hard law measures for the EEZ, the vagueness of the relevant UNCLOS provisions, and the exclusion of EEZ fisheries from compulsory dispute settlement are all due to coastal State sensibilities. While one might have hoped that enlightened self-interest would have led to better management in the EEZ (at least in coastal States with the capacity effectively to adopt, implement and enforce appropriate management measures), this has frequently not been the case. Secondly, the measures listed above have so far had little or no effect in reducing the percentage of fish stocks that are over or fully exploited. It therefore seems extremely unlikely that the target set by the Plan of Implementation adopted by the Johannesburg World Summit on Sustainable Development in 2002 ⁽⁶³⁾ (and repeated at Rio + 20 in 2012 ⁽⁶⁴⁾), that depleted stocks should be restored to levels that can produce the maximum sustainable yield by 2015, will be met.

5.2. Measures to address the impact of fisheries on species other than fish

A first group of measures is concerned with driftnet fishing, which, as mentioned in section 2 above, results in the death of a wide variety of species other than the target fish species (including small cetaceans and turtles). Such measures generally prohibit fishing, or urge States not to fish, with driftnets in excess of 2.5 km in length on the high seas. They include the Wellington Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, 1989 ⁽⁶⁵⁾; UN General Assem-

⁽⁶³⁾ Plan of Implementation of the World Summit on Sustainable Development, UN Doc. A/CONF.199/20, para. 31(a), available at <http://www.un-documents.net/jburgpln.htm>.

⁽⁶⁴⁾ Report of the United Nations Conference on Sustainable Development, Rio, 2012, UN Doc. A/CONF.212/16, Resolution 1, 'The Future We Want', para. 168, available at <http://www.uncsd2012.org/content/documents/814UNCSD%20REPORT%20final%20revs.pdf>.

⁽⁶⁵⁾ (1990) 29 *ILM* 1449.

bly resolutions 44/225 (1989) and 46/215 (1991); and measures adopted by various RFMOs ⁽⁶⁶⁾.

A second group of measures is concerned with the issue, mentioned in section 2 above, of the incidental taking of seabirds in long-line fishing. The main such measure is the FAO's IPOA for Reducing Incidental Catch of Seabirds in Longline Fisheries ⁽⁶⁷⁾. The IPOA, which is not legally binding, urges States with longline fisheries that have a significant incidental catch of seabirds to adopt a national plan of action for reducing such catch. Initially implementation of the IPOA was slow ⁽⁶⁸⁾, but now around two-thirds of FAO members having fisheries falling within the scope of the IPOA have adopted such a plan ⁽⁶⁹⁾. The IPOA also calls on States to cooperate, including through RFMOs, to reduce incidental seabird catches. In response, a number of RFMOs have adopted measures to this end ⁽⁷⁰⁾.

There are a few other FAO measures concerned with addressing the impact of fisheries on species other than fish. The Code of Conduct for Responsible Fisheries, referred to above, contains some references to the issue, especially in Article 8.5, but these provisions are too broadly and generally formulated to be of much practical significance. The Guidelines to Reduce Sea Turtle Mortality in Fishing Operations ⁽⁷¹⁾, adopted in 2004, are much more detailed and precise, but, like the Code, they are not legally binding.

⁽⁶⁶⁾ For an overview of RFMO measures, see the UN Secretary General's annual reports on sustainable fisheries, available at http://www.un.org/Depts/los/general_assembly/general_assembly_reports.htm. See further Takei, note 20 above, chapters 4 and 5.

⁽⁶⁷⁾ Available at <http://www.fao.org/fishery/ipoa-seabirds/legal-text/en>.

⁽⁶⁸⁾ UN Secretary-General's report, note 3 above, 9.

⁽⁶⁹⁾ FAO Committee on Fisheries, note 47 above, para. 40.

⁽⁷⁰⁾ For an overview of RFMO measures, see the UN Secretary General's reports, note 66 above.

⁽⁷¹⁾ Available at <http://www.fao.org/docrep/012/i0725e/i0725e00.htm>.

Some of the most far-reaching measures that have been taken to reduce the impact of fishing on non-fish species, although that is not their primary purpose, are a number of agreements and memoranda of understanding adopted under the auspices of the Convention on Migratory Species (CMS). They include instruments for the conservation of small cetaceans⁽⁷²⁾, albatrosses and petrels⁽⁷³⁾, dugongs⁽⁷⁴⁾, Mediterranean monk seals⁽⁷⁵⁾ and turtles⁽⁷⁶⁾. The provisions that these instruments contain to prevent the adverse effects of fishing on the species concerned are often fairly imprecise, but in several cases (especially in relation to small cetaceans) more detailed and effective measures have been adopted by the meetings/conferences of the parties (MOPs/COPs) to these instruments. Such measures have also been adopted by the CMS COP⁽⁷⁷⁾.

Finally mention may be made of the Agreement for the Reduction of Dolphin Mortality in the Eastern Pacific Ocean (1992)⁽⁷⁸⁾ and its successor, the Agreement on the International Dolphin Conservation

⁽⁷²⁾ Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas, 1992, 1772 UNTS 217; and Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Areas, 1996, 2183 UNTS 303.

⁽⁷³⁾ Agreement on the Conservation of Albatrosses and Petrels, 2001, 2258 UNTS 257.

⁽⁷⁴⁾ Memorandum of Understanding concerning the Conservation and Management of Dugongs and their Habitats throughout their Range, 2007, available at http://www.cms.int/species/dugong/dugong_mou.htm.

⁽⁷⁵⁾ Memorandum of Understanding concerning Conservation Measures for the Eastern Atlantic Populations of the Mediterranean Monk Seal, 2007, available at http://www.cms.int/species/monk_seal/Monk_Seal_MoU_with_signatures_En.pdf.

⁽⁷⁶⁾ Memorandum of Understanding concerning the Conservation and Management of Turtles and their Habitats of the Indian Ocean and South-East Asia, 2001, available at http://www.cms.int/species/iosea/IOSEAturtle_mou.htm; and Memorandum of Understanding concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa, 2008, available at http://www.cms.int/species/africa_turtle/AFRICAturtle_mou.htm.

⁽⁷⁷⁾ See further Churchill and Owen, note 61 above, 394-6.

⁽⁷⁸⁾ (1994) 33 ILM 935.

Program (1999) ⁽⁷⁹⁾, which are aimed at substantially reducing the incidental take of dolphins in the tuna purse-seine fishery.

For reasons of space no further analysis of these measures is possible. However, it may be noted that there has been a good deal more success with these measures than the first group. For example, there has been a substantial reduction in the amount of fishing on the high seas with driftnets in excess of 2.5 km (and therefore in the deaths of non-target species), although some such fishing continues ⁽⁸⁰⁾; the 1992 and 1999 Agreements referred to above have led to a substantial decline in dolphin mortality in the Eastern Pacific Ocean ⁽⁸¹⁾; and there has been a reduction in incidental catches of small cetaceans in European waters ⁽⁸²⁾.

5.3. Measures to address the impact of fisheries on marine habitats

Most international measures to address the impact of fisheries on marine habitats concern bottom fishing on the high seas. Such measures include a number of UN General Assembly Resolutions, adopted from 2004 onwards, which call on States and RFMOs to prohibit bottom fishing around vulnerable marine ecosystems (such as seamounts, hydrothermal vents and cold-water coral reefs) unless conservation and management measures have been established to prevent significant adverse impacts on such ecosystems ⁽⁸³⁾; and the FAO International Guidelines

⁽⁷⁹⁾ Text available at <http://www.iattc.org/IDCPENG.htm>.

⁽⁸⁰⁾ See the 2012 Report of UN Secretary-General on sustainable fisheries, UN Doc A/67/315 (2012), 25-27.

⁽⁸¹⁾ Inter-American Tropical Tuna Commission, Updated Scientific Report on the Status of Dolphin in the Eastern Pacific Ocean, January 2013, available at <http://www.iattc.org/PDFFiles2/Update-of-Sec-of-Commerce-letter-22-Feb2013.pdf>. See also Calley, note 19 above, 61-3.

⁽⁸²⁾ See reports on the websites of the two agreements referred to in note 72.

⁽⁸³⁾ Resolutions 59/25 (2004), paras 66-67; 61/105 (2006), paras 80 and 83-87; 64/72 (2009), paras 113-117 and 119-127; and 66/68 (2011), paras 121-137.

for the Management of Deep-Sea Fisheries in the High Seas, adopted in 2008⁽⁸⁴⁾. In response to the General Assembly resolutions, a number of RFMOs have adopted measures to restrict or prohibit fishing in the vicinity of certain specific vulnerable marine ecosystems⁽⁸⁵⁾.

The FAO Code of Conduct for Responsible Fisheries, referred to in section 5.1 above, contains a number of references in Articles 6 and 7 to the need to conserve marine ecosystems and habitats, but these provisions are too broadly and generally formulated to be of much practical significance.

The Conference of the Parties of the Convention on Biological Diversity has adopted a large number of measures that bear on the impact of fisheries on marine habitats. Lack of space precludes further discussion here⁽⁸⁶⁾.

Again for reasons of space no detailed analysis of these measures is possible. It appears that the measures relating to bottom-fishing in the vicinity of vulnerable marine ecosystems have yet to make much impact on reducing the amount of damage being done to such ecosystems by such fishing⁽⁸⁷⁾. Furthermore, they apply only to the high seas. No international measures to protect habitats from the adverse effects of fishing have yet been adopted for waters within national jurisdiction apart from the hortatory provisions of the Code of Conduct and the equally hortatory decisions of the CBD COP.

⁽⁸⁴⁾ *Report of the Technical Consultation on International Guidelines for the Management of Deep-sea Fisheries in the High Seas, Rome, 4-8 February and 25-29 August 2008*, FAO Fisheries and Aquaculture Report No. 881 (2008), Appendix F, available at <http://www.fao.org/docrep/011/i0605t/i0605t00.htm>.

⁽⁸⁵⁾ For a review of such measures, see the UN Secretary-General's report, note 12 above, 15-24.

⁽⁸⁶⁾ For some such discussion, see Birnie, Boyle and Redgwell, note 62 above, 746-50.

⁽⁸⁷⁾ UN Secretary-General's report, note 12 above, 47-48.

6. WHAT MORE COULD OR SHOULD BE DONE?

There has been no shortage of suggestions for actions that the international community could or should take to ameliorate the adverse impact of fisheries on the marine environment, especially the depletion of resources⁽⁸⁸⁾. This section sets out fairly succinctly a number of ideas for action to improve the position that could be taken at the international level, as opposed to measures taken by States for their own waters or fleets. In doing so, it is readily acknowledged that it draws on many of the ideas of others.

The first type of adverse impact of fisheries on the marine environment, depletion of fish stocks, is the most intractable. Adoption of more law/soft law is probably not the answer, although there is a need to increase the potential of existing hard law and soft law instruments, e.g. by encouraging more ratifications of the FAO Compliance and Port State Measures Agreements (especially so as to bring the latter into force) and the effective implementation of the FAO Code of Conduct and IPOAs. Many of the underlying drivers of non-sustainable fishing identified at the beginning of this paper — developments in technology, consumer demand and the economic pressures on fishers to make a profit — are not easily susceptible to legal regulation. In any case, if past practice is anything to go by, any additional law/soft law measures would be likely to be centred exclusively or largely on high seas fishing,

⁽⁸⁸⁾ For a limited selection of more recent suggestions, see Hey, note 21 above; MRAG, *Towards Sustainable Fisheries Management* (2010), available at http://www.pcfisu.org/wp-content/uploads/2010/12/MRAG-report_best-practice-examples1.pdf; Ministerially-led Task Force on IUU Fishing on the High Seas, *Closing the Net* (2006), available at http://www.imcsnet.org/imcs/docs/hstf_final_report.pdf; Pew Environment Group, *Ocean Earth: How Rio + 20 can and must Turn the Tide* (2012), available at <http://www.pewenvironment.org/news-room/other-resources/putting-the-ocean-back-into-the-earth-summit-85899365148>; and B. K. Sovacool, 'A Game of Cat and Fish: How to Restore the Balance in Sustainable Fisheries Management' (2009) 40 *ODIL* 97.

whereas non-sustainable fishing is at least as much a problem in fisheries within national jurisdiction. Instead of further legislation, the following types of action may prove more useful:

- Financial and technical assistance to improve the capacity of poor States to manage their EEZ fisheries more effectively ⁽⁸⁹⁾.
- Tackling subsidies. The negotiations on fisheries subsidies that have been taking place for many years under the WTO's Doha Development Agenda appear unlikely to result in a successful conclusion ⁽⁹⁰⁾. One possibility might be to transfer the negotiations from the auspices of the WTO to those of the FAO. However, there is no reason to suppose that negotiations would be any more successful under the FAO than the WTO, as the same States and issues would be involved. A more fruitful avenue might be to explore the possibility of action under the WTO Agreement on Subsidies and Countervailing Measures (SCM Agreement) ⁽⁹¹⁾. While subsidies to the fishing industry are unlikely to be 'prohibited' subsidies within the meaning of the Agreement ⁽⁹²⁾, they may be 'actionable' subsidies: the latter are where exports of subsidised fishery products from one WTO member to another member cause injury to the domestic industry of the importing WTO member, nullify or impair benefits accruing to it under the General Agreement on Tariffs and Trade

⁽⁸⁹⁾ Calls for such assistance have been regularly made by the UN General Assembly: see, for example, Res. 66/68, paras 146-157.

⁽⁹⁰⁾ See Communication from the Chairman, Negotiating Group on Rules, April 2011, WTO Doc TN/RL/W/254 (21 April 2011), 46-57, available at http://www.wto.org/english/tratop_e/dda_e/chair_texts11_e/chair_texts11_e.htm. No further document appears to have been issued by the chair since then. See further M. Benitah, *Ongoing Negotiations on Fisheries Subsidies*, ASIL Insights 2004, with 2007 addendum, available at <http://www.asil.org/insigh136.cfm>.

⁽⁹¹⁾ Available at http://www.wto.org/english/docs_e/legal_e/legal_e.htm.

⁽⁹²⁾ See SCM Agreement, Art. 3. See further P. Van den Bossche, *The Law and Policy of the World Trade Organization*, 2nd edition (Cambridge: Cambridge University Press, 2008), 571-7.

(GATT), or seriously prejudice its interests⁽⁹³⁾. Where a WTO member considers that another member is subsidising exports of fishery products to it that are actionable, it may challenge the subsidy under the WTO's Dispute Settlement Understanding or impose countervailing duties on the subsidised imports. If the matter were litigated, either directly or indirectly by a challenge to the countervailing duty, one might hope that a WTO panel and/or the Appellate Body would be prepared to interpret and apply the concept of 'actionable subsidies' to include the threats to sustainable fishing that heavily subsidised fishing industries represent⁽⁹⁴⁾. However, one should not exaggerate the potential of the SCM Agreement as a tool for tackling fisheries subsidies. It is available for use only where products caught by subsidised fleets are traded and harm one or more WTO members in the ways described above. Its use would also depend on a State being willing to invoke it. It seems unlikely that a State that also subsidises its fleets would be willing to use it for fear of then being on the receiving end of a challenge itself. Given the prevalence of subsidies world-wide, this will rule out many States as potential complainants.

- Prohibiting imports of fishery products taken in IUU fishing, as, for example, the EU and the USA have been doing for the past three or four years⁽⁹⁵⁾. While prima facie a violation of

⁽⁹³⁾ SCM Agreement, Art. 5. See further Van den Bossche, 578-84.

⁽⁹⁴⁾ For further use of the SCM Agreement in the context of fisheries subsidies, see C. D. Stone, 'Too Many Fishing Boats, Too Few Fish: Can Trade Laws Trim Subsidies and Restore the Balance in Global Fisheries?' (1997) 24 *Ecology Law Quarterly* 505, 523-35; and M. A. Young, 'Fragmentation or Inaction: The WTO, Fisheries Subsidies and International Law' (2009) 8 *World Trade Review* 477, 487-8.

⁽⁹⁵⁾ See, respectively, EU Regulation 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, *Official Journal of the EU*, 2008 L266/1; and the Magnusson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, Public Law 109-479, 16 United States Code §1801 and 1826.

Article XI of the GATT (which prohibits quantitative and similar restrictions on imports), the bans of the EU and USA on imported IUU fishery products have not yet been challenged under the WTO's Dispute Settlement Understanding. If they were, they could probably be justified under Article XX of the GATT, which provides that nothing in the GATT prevents WTO members from adopting national measures to protect human or animal life or to conserve exhaustible natural resources provided that such measures are not discriminatory or an arbitrary restriction on trade. This prediction follows from the jurisprudence of the WTO's Appellate Body, especially its rulings in the two *Shrimp/Turtle* cases ⁽⁹⁶⁾.

- The encouragement of ethical consumerism through development of better labelling and certification schemes (such as that of the Marine Stewardship Council) to indicate which fishery products are from sustainable fisheries. Any government labelling schemes will have to take care not to fall foul of the WTO Agreement on Technical Barriers to Trade, as interpreted by the WTO Appellate Body in *US-Tuna II* (2012) ⁽⁹⁷⁾.

As far as the second and third types of impact (harm to species other than fish and damage to marine habitats) are concerned, the following action is suggested:

- Keeping existing measures under review and assessing their effectiveness in order to see whether more hard or soft law is desirable.

⁽⁹⁶⁾ *United States — Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Appellate Body, WT/DS58/AB/R (1998); and *United States — Import Prohibition of Certain Shrimp and Shrimp Products. Recourse to Article 21.5 by Malaysia*, Report of the Appellate Body, WT/DS58/AB/RW (2001). See further Calley, note 19 above, chapter 7; and Churchill and Owen, note 61, 497-501.

⁽⁹⁷⁾ *United States — Measures concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, Report of the Appellate Body, WT/DS381/AB/R (2012).

- The establishment of more marine protected areas, both within and beyond national jurisdiction ⁽⁹⁸⁾.
- The extension of the ethical consumerism described above from sustainable fishing to fishery products taken in a way that does not damage the wider marine environment.
- Prohibiting imports of fishery products taken in ways that are contrary to agreements designed to prevent the incidental taking of non-fishery species or harm to the marine environment. As explained above, while such import prohibitions would prima facie violate Article XI of the GATT, they would seem justifiable under Article XX.

⁽⁹⁸⁾ See further Hey, note 21 above, 769-70; FAO, *Technical Guidelines for Responsible Fisheries. Fisheries Management 4. Marine Protected Areas and Fisheries* (2011), available at <http://www.fao.org/docrep/015/i2090e/i2090e.pdf>; and Conference of the Parties to the Convention on Biological Diversity Decision VII/5, Marine and coastal biological diversity, para. 30. See also Decisions VII/28; X/29, paras 4, 13 and 33; and Decision X/31, para. 22. Decisions of the Conference of the Parties to the Convention are available on the Convention's website at <http://www.cbd.int/decisions/cop/>.

FISHERIES AND THEIR IMPACT ON THE MARINE ENVIRONMENT: EUROPEAN UNION LAW

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Content: *1. Introduction. 2. Treaty on the Functioning of the European Union; and Treaty on European Union. 3. EU Common Fisheries Policy. 4. Marine Strategy Framework Directive. 5. Habitats Directive and Birds Directive. 6. Some conclusions.*

1. INTRODUCTION

This short paper provides a summary of European Union (EU) law as it relates to the impact of fisheries on the marine environment. It looks first at the two treaties underlying the EU, and identifies legal bases that they provide for environmental protection measures. It then considers the EU Common Fisheries Policy (CFP), with a particular focus on Regulation 2371/2002 and on the reform of the CFP. The next two parts of the paper consider environmental protection Directives, namely the Marine Strategy Framework Directive and the Habitats and Birds Directives. In both cases, the emphasis is on the interaction between these Directives and fishing activities. The paper finishes with some conclusions.

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2. TREATY ON THE FUNCTIONING OF THE EUROPEAN UNION; AND TREATY ON EUROPEAN UNION

The principal legal basis for environmental protection measures under the Treaty on the Functioning of the European Union ⁽²⁾ (hereafter, 'TFEU') is found in Articles 191-193. These provisions comprise Title XX on 'Environment'. However, Article 11 of the TFEU is an important subsidiary legal basis. It states that: 'Environmental protection requirements must be integrated into the definition and implementation of the [EU]'s policies and activities, in particular with a view to promoting sustainable development.' One of the EU's policies as referred to in Article 11 is the CFP ⁽³⁾.

The Treaty on European Union ⁽⁴⁾ also contains provisions on environmental protection. Article 3(3), on the establishment of the internal market, states that the EU shall work for, *inter alia*, 'a high level of protection and improvement of the quality of the environment'. Article 3(5) states that the EU, in its relations with the wider world, shall contribute to, *inter alia*, 'the sustainable development of the Earth' ⁽⁵⁾. Article 37 of the Charter of Fundamental Rights of the European Union ⁽⁶⁾ is also noteworthy, although there is some overlap with Articles 192 and 11 of the TFEU ⁽⁷⁾.

⁽²⁾ OJ 2012 C326/47.

⁽³⁾ For consideration of the interaction between Art. 11 of the TFEU (previously Art. 6 of the Treaty establishing the European Community) and the legal basis for adopting measures under the CFP, see further: Owen, D. *Interaction Between the EU Common Fisheries Policy and the Habitats and Birds Directives*, IEEP Policy Briefing (Brussels: IEEP, 2004), available on the website of the Institute for European Environmental Policy (IEEP).

⁽⁴⁾ OJ 2012 C326/13.

⁽⁵⁾ On international relations and the environment, see further Art 21(2)(d) and (f) of the TEU.

⁽⁶⁾ OJ 2012 C326/391.

⁽⁷⁾ Art 37 of the Charter of Fundamental Rights of the European Union reads as follows: 'A high level of environmental protection and the improvement of the

3. EU COMMON FISHERIES POLICY

The current ‘basic’ Regulation of the CFP is Regulation 2371/2002⁽⁸⁾. It was adopted on the basis of Article 37 of the Treaty establishing the European Community, which was the immediate predecessor to the TFEU. However, the CFP is currently under reform. In July 2011, the European Commission issued a legislative proposal for a new basic Regulation. That proposal, based on Article 43(2) of the TFEU, is currently in the legislative pipeline. At the time of writing (April 2013), the Council of the European Union and the European Parliament are attempting to reconcile their respective positions. This paper will take into account, although not in great detail, the Commission’s legislative proposal (COM(2011) 425)⁽⁹⁾, the Council’s so-called General Approach (dated 14 June 2012 and 28 February 2013)⁽¹⁰⁾ and the amendments adopted by the European Parliament at first reading⁽¹¹⁾.

Article 1(1) of Regulation 2371/2002 defines the scope of the CFP. It states that: ‘The [CFP] shall cover conservation, management and exploitation of living aquatic resources, aquaculture, and the processing and marketing of fishery and aquaculture products where such activities are practised *on the territory of Member States or in Community waters or by Community fishing vessels* or, without prejudice to the primary responsibility of the flag State, *nationals of Member States*’ (emphasis added.)

quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.’

⁽⁸⁾ Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy, OJ 2002 L358/59, as amended and corrected.

⁽⁹⁾ Available via: ec.europa.eu/prelex/rech_simple.cfm?CL=en [last visited on 12 April 2013].

⁽¹⁰⁾ Document no. 11322/12 and document no.11322/1/12 REV 1, as corrected. Available via: register.consilium.europa.eu/ [last visited on 12 April 2013].

⁽¹¹⁾ See: europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P7-TA-2013-40 [last visited on 12 April 2013].

It can be seen that the scope of the CFP is defined in terms of land and waters, vessels and nationals.

Regulation 2371/2002 uses the term ‘Community waters’. With the entry into force of the Lisbon Treaty on 1 December 2009, the term ‘European Community’ has been replaced for all purposes by ‘European Union’. Therefore, since the Lisbon Treaty’s entry into force, legislation on the CFP uses the term ‘Union waters’ instead of ‘Community waters’. Regulation 2371/2002 defines ‘Community waters’ as ‘the waters under the sovereignty or jurisdiction of the Member States ...’⁽¹²⁾. COM(2011) 425 uses the same approach to define ‘Union waters’⁽¹³⁾, as does the Council’s General Approach⁽¹⁴⁾. So ‘Union waters’ (ex-‘Community waters’) include internal waters, the territorial sea and the water column of the exclusive economic zone (or equivalent). The position of the seabed beyond the territorial sea, especially the seabed of the outer continental shelf, is less clear⁽¹⁵⁾.

COM(2011) 425, in Article 1(1) of the proposed Regulation, states that ‘[t]he [CFP] shall cover: [*inter alia*] conservation, management and exploitation of marine biological resources’⁽¹⁶⁾. (The reference to ‘marine biological resources’ reflects the terminology used in the TFEU⁽¹⁷⁾). Article 1(2) adds that: ‘The [CFP] shall cover the activities referred to in paragraph 1 where they are carried out: (a) on the territory of Member States; or (b) in Union waters, including by fishing vessels flying the flag of, and registered in, third countries; or (c) by Union fishing vessels

⁽¹²⁾ Reg 2371/2002, Art. 3(a).

⁽¹³⁾ COM(2011) 425, Art. 5.

⁽¹⁴⁾ Council’s General Approach, Art. 5(1).

⁽¹⁵⁾ See further Churchill, R. and Owen, D. *The EC Common Fisheries Policy*, Oxford University Press, 2010, pp. 63-65.

⁽¹⁶⁾ The Council’s General Approach is the same. But see Amendment 59 of the European Parliament.

⁽¹⁷⁾ TFEU, Arts. 3(1)(d) and 4(2)(d).

outside Union waters; or (d) by nationals of Member States, without prejudice to the primary responsibility of the flag State.’⁽¹⁸⁾ Items ‘(a)’ to ‘(d)’ are repeated in the Council’s General Approach, albeit with one qualification⁽¹⁹⁾, and are not addressed by the European Parliament’s amendments. Items ‘(a)’ to ‘(d)’ are, in effect, a restatement of Article 1(1) of Regulation 2371/2002 where it defines the scope of the CFP in terms of land and waters, vessels and nationals.

Regulation 2371/2002 contains various environmental protection provisions, notably in the following articles: Articles 1, 2 and 3, on scope and objectives; Article 4, on types of measures; Articles 5 and 6 on recovery and management plans; Article 7, on Commission emergency measures; Articles 8 and 9, on Member States’ delegated powers; Article 31, on Regional Advisory Councils; and Article 33, on the Scientific, Technical and Economic Committee for Fisheries (STECF)⁽²⁰⁾.

Regulation 2371/2002 is one of several ‘framework’ Regulations under the CFP. Other CFP framework Regulations also address the environment. These include, *inter alia*: Regulation 1967/2006⁽²¹⁾, on the Mediterranean Sea; Regulation 1198/2006⁽²²⁾, on the European Fisheries Fund; Regulation 199/2008⁽²³⁾, on data; and, to the extent

⁽¹⁸⁾ COM(2011) 425, Art. 1(2).

⁽¹⁹⁾ The Council’s General Approach qualifies item ‘(a)’ as follows: ‘on the territory of Member States *to which the Treaty applies*’ (emphasis added).

⁽²⁰⁾ See further Churchill and Owen, 2010, pp. 259-260.

⁽²¹⁾ Council Regulation (EC) No 1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 1626/94, OJ 2006 L409/11, as amended and corrected.

⁽²²⁾ Council Regulation (EC) No 1198/2006 of 27 July 2006 on the European Fisheries Fund, OJ 2006 L223/1, as amended. See further COM(2011) 804.

⁽²³⁾ Council Regulation (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy, OJ 2008 L60/1, as corrected.

that they relate to ensuring compliance with fisheries management measures aimed at environmental protection, Regulations 1005/2008⁽²⁴⁾ and 1224/2009⁽²⁵⁾.

More specific legislation under the CFP regarding environmental protection in Union waters has addressed cold-water corals, seabirds, certain species and habitats of the Mediterranean Sea, cetaceans and sharks⁽²⁶⁾. A seabird action plan has been a very long time in coming, but one was finally adopted on 16 November 2012⁽²⁷⁾. Specific legislation on environmental protection that extends in scope beyond Union waters includes qualified prohibitions on: the use of driftnets⁽²⁸⁾; shark finning⁽²⁹⁾; and the encircling with purse seines of any school or group of marine mammals⁽³⁰⁾. There has also been legislation to protect vulnerable marine ecosystems in the high seas from the adverse impacts of

⁽²⁴⁾ Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Regulations (EEC) No 2847/93, (EC) No 1936/2001 and EC No 601/2004 and repealing Regulations (EC) No 1093/94 and (EC) No 1447/1999, OJ 2008 L266/1, as amended and corrected.

⁽²⁵⁾ Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006, OJ 2009 L343/1.

⁽²⁶⁾ See further Churchill and Owen, 2010, pp. 261-262.

⁽²⁷⁾ europa.eu/rapid/press-release_IP-12-1222_en.htm [last visited on 12 April 2013]

⁽²⁸⁾ Council Regulation (EC) No 894/97 of 29 April 1997 laying down certain technical measures for the conservation of fishery resources, OJ 1997 L132/1, as amended, Art. 11c.

⁽²⁹⁾ Council Regulation (EC) No 1185/2003 of 26 June 2003 on the removal of fins of sharks on board vessels, OJ 2003 L167/1, Art. 1(2).

⁽³⁰⁾ Council Regulation (EC) No 520/2007 of 7 May 2007 laying down technical measures for the conservation of certain stocks of highly migratory species and repealing Regulation (EC) No 973/2001, OJ 2007 L123/3, as amended, Art. 29.

bottom fishing gears ⁽³¹⁾, and legislation implementing measures on environmental protection that have been adopted by regional fisheries management organisations. However, since the entry into force of the Lisbon Treaty, there has been very little legislative activity under the CFP on protection of the environment.

Like Regulation 2371/2002, COM(2011) 425 contains environmental protection provisions. These are located in the following Articles in particular: Article 2, on general objectives; Article 5, on definitions; Articles 7 and 8, on types of measures; Article 11, on content of multiannual plans; Article 12, on compliance with site protection duties under the Habitats Directive, Birds Directive and Marine Strategy Framework Directive; Article 13, on Commission measures in response to serious threats; Article 14, on technical measures frameworks; Article 26, on Member State measures within 12 nautical miles of the baseline; Article 37, on data requirements; and Article 41, on Sustainable Fisheries Agreements.

All of these provisions in COM(2011) 425, and variations thereon set out in the Council's General Approach and the European Parliament's amendments, merit further comment. However, Article 12 of COM(2011) 425 is of particular interest because of its link to the Marine Strategy Framework Directive and the Habitats and Birds Directives (on which, see sections 4 and 5 below). It is entitled 'Compliance with obligations under Union environmental legislation'.

Article 12(1) states that: 'In special areas of conservation within the meaning of Article 6 of [the Habitats Directive], of Article 4 of [the Birds Directive] and of Article 13(4) of [the Marine Strategy Framework Directive], fishing activities shall be conducted by Member States in

⁽³¹⁾ Council Regulation (EC) No 734/2008 of 15 July 2008 on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing gears, OJ 2008 L201/8.

such a way so as to alleviate the impact from fishing activities in such special areas of conservation.’ Article 12(2) states that: ‘The Commission shall be empowered to adopt delegated acts in accordance with Article 55, to specify fishing related measures to alleviate the impact of fishing activities in special areas of conservation.’

Article 12 has subsequently been a focus of attention for both the Council, in reaching its General Approach, and the European Parliament, in adopting its amendments. Article 12 as set out in COM(2011) 425 does not make it entirely clear whether Member States themselves may adopt measures. In contrast, Article 12 in the Council’s General Approach makes it clear that Member States may indeed adopt measures, albeit only for own-flag vessels ⁽³²⁾. However, the Council’s text then introduces some fairly complex language to deal with other situations ⁽³³⁾. The European Parliament has provided its own re-worked version of Article 12 ⁽³⁴⁾. The ongoing negotiation process for a successor to Regulation 2371/2002 will determine how distinct Article 12 becomes as a source of empowerment for Member States, in comparison to other sources of empowerment, and how constrained it becomes in respect of foreign-flagged vessels. This will in turn determine its true utility.

4. MARINE STRATEGY FRAMEWORK DIRECTIVE

The legal basis for the Marine Strategy Framework Directive ⁽³⁵⁾ (hereafter, ‘MSFD’) is Article 175(1) of the Treaty establishing the European Community (the immediate predecessor to the TFEU), which falls within that treaty’s ‘Environment’ Title. Articles 1(1) and 2(1) of the MSFD state that the Directive ‘establishes a framework within which

⁽³²⁾ Council’s General Approach, Art. 12(1) and (2).

⁽³³⁾ Council’s General Approach, Art. 12(3), first paragraph and Art. 5(33).

⁽³⁴⁾ European Parliament, Amendments 109, 257, 258, 111, 260, 114 and 262.

⁽³⁵⁾ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ 2008 L164/19.

Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest' and 'shall apply to all marine waters as defined in Article 3(1) ...'. Article 3(1) defines 'marine waters' as '(a) waters, the seabed and subsoil on the seaward side of the baseline ... extending to the outmost reach of the area where a Member State has and/or exercises jurisdictional rights ...; and (b) coastal waters ...' ⁽³⁶⁾.

The MSFD establishes deadlines for various steps that need to be undertaken by each Member State on the road to achieving or maintaining good environmental status in its marine waters. A deadline of 15 July 2012 (now past) applied to: 'initial assessment' of status and impacts; 'determination' of good environmental status; and establishment of a series of targets and indicators ⁽³⁷⁾. Later deadlines are established for a monitoring programme and for the development, and then entry into operation, of a 'programme of measures' ⁽³⁸⁾.

The MSFD interacts with fishing activities. This is because a set of characteristics for good environmental status is to be determined by Member States on the basis of qualitative descriptors listed in Annex I ⁽³⁹⁾, and several of those descriptors have links to fishing activities. In particular, descriptor (3) in Annex I states that: '(3) Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.' Other descriptors of particular note in a fisheries context are (1), (4) and (6), all of which relate to aspects of the wider marine environment that could be affected by, *inter alia*, fishing

⁽³⁶⁾ Art. 3(1)(b) of the MSFD, in referring to 'coastal waters', goes on to define the relationship between the MSFD and Directive 2000/60/EC (the Water Framework Directive).

⁽³⁷⁾ MSFD, Art. 5(2)(a)(i)-(iii).

⁽³⁸⁾ MSFD, Art. 5(2)(a)(iv) and 5(2)(b).

⁽³⁹⁾ MSFD, Art. 9(1).

activities ⁽⁴⁰⁾. To assist Member States, details for each of the eleven descriptors set out in Annex I are provided by Commission Decision 2010/477/EU ⁽⁴¹⁾ and various technical discussions at EU level are ongoing ⁽⁴²⁾.

Recitals (39) and (40) in the preamble to the MSFD expressly acknowledge the role of the CFP in helping to achieve or maintain good environmental status ⁽⁴³⁾. In contrast, the operative provisions of the MSFD do not mention the CFP. However, Article 15 is of great relevance in this context. Its paragraph (1) states that: ‘Where a Member State identifies an issue which has an impact on the environmental status of its marine waters and which cannot be tackled by measures adopted at national level, or which is linked to another [EU] policy or international agreement, it shall inform the Commission accordingly and provide a justification to substantiate its view. ...’ Paragraph (2) states that: ‘Where action by [EU] institutions is needed, Member

⁽⁴⁰⁾ Descriptor (1): ‘Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.’ Descriptor (4): ‘All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.’ Descriptor (6): ‘Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.’

⁽⁴¹⁾ Commission Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters (2010/477/EU), OJ 2010 L232/14.

⁽⁴²⁾ See, for example, ‘Marine Strategy Part One’ (December 2012) issued by UK government, pp. 15-16 (available on the website of the UK government’s Department for Food, Environment & Rural Affairs (Defra)).

⁽⁴³⁾ Recital (39): ‘Measures regulating fisheries management can be taken in the context of the [CFP], as set out in [Regulation 2371/2002], based on scientific advice with a view to supporting the achievement of the objectives addressed by this Directive ...’. Recital (40): ‘The [CFP], including in the future reform, should take into account the environmental impacts of fishing and the objectives of this Directive.’

States shall make appropriate recommendations to the Commission and the Council for measures regarding the issues referred to in paragraph 1. ...’

It can be seen that Article 15 does not refer expressly to the CFP. However, Article 15 is intended to apply, *inter alia*, to situations where a Member State’s hands are tied by virtue of it not having the powers to adopt the necessary measures unilaterally. Under the CFP, Member States have transferred the power to make rules for fisheries conservation to the EU. To the extent that Member States have, by this act, transferred the power to restrict the activities of fishing vessels for the purposes of nature conservation, including achieving or maintaining good environmental status under the MSFD, Article 15 provides a means for Member States to seek any restrictions that may be necessary by calling on the EU institutions to step in.

The MSFD was adopted in 2008. It therefore pre-dated COM(2011) 425, i.e. the Commission’s legislative proposal for a successor to Regulation 2371/2002. COM(2011) 425 makes various references to the MSFD. Thus recital (8) in the preamble to the proposed Regulation states that: ‘The [CFP] should contribute to the protection of the marine environment and in particular to the achievement of good environmental status by 2020 the latest [sic] as set out in Article 1(1) of [the MSFD].’ Arguably, this is a stronger formulation than that used in recitals (39) or (40) of the preamble to the MSFD. Article 2(4) of the proposed Regulation states that: ‘The [CFP] shall integrate the [EU] environmental legislation requirements.’ Article 12, on which see section 3 above, deals with compliance with site protection duties under, *inter alia*, Article 13(4) of the MSFD ⁽⁴⁴⁾.

The Council’s General Approach on COM(2011) 425 includes various express references to the MSFD, as follows: (a) a word-for-word

⁽⁴⁴⁾ See also COM(2011) 425, recital (24).

repeat of recital (8) from COM(2011) 425; (b) inclusion of an objective for the CFP whereby: ‘The [CFP] shall in particular: [*inter alia*] be coherent with the Union environmental legislation, in particular the objective of achieving a good environmental status by 2020, as well as with other Union policies’⁽⁴⁵⁾; and (c) mention of the MSFD in the Council’s re-worked version of Article 12⁽⁴⁶⁾.

The European Parliament retained the reference to the MSFD in recital (8). It adopted amendments that mention good environmental status in the specific objectives of the CFP, as follows: ‘For the purpose of achieving the general objectives set out in Article 2, the [CFP] shall in particular: [*inter alia*] contribute to the achievement and maintenance of good environmental status as set out in Article 1(1) of [the MSFD]’⁽⁴⁷⁾. One of the general objectives set out in Article 2 as amended by the European Parliament is that the CFP ‘shall be consistent with the [EU]’s environmental legislation as well as with other Union policies’⁽⁴⁸⁾.

The European Parliament also adopted amendments giving good environmental status an important role in the definition of ‘ecosystem-based approach to fisheries management’⁽⁴⁹⁾ and giving the MSFD a role in the determination of fisheries exploitation rates in certain circumstances⁽⁵⁰⁾. It added a provision whereby ‘[m]easures for the conservation and sustainable exploitation of marine biological resources may include the following: ... adopting measures which help Member States to fulfil obligations under environmental legislation’⁽⁵¹⁾. In addition,

⁽⁴⁵⁾ Council’s General Approach, Art. 2(4)(g).

⁽⁴⁶⁾ See also Council’s General Approach, recital (23). See further a reference in recital (25) to ‘areas protected under environmental law’.

⁽⁴⁷⁾ European Parliament, Amendments 61 and 235.

⁽⁴⁸⁾ European Parliament, Amendment 60.

⁽⁴⁹⁾ European Parliament, Amendment 237.

⁽⁵⁰⁾ European Parliament, Amendments 120, 264, 293 and 301.

⁽⁵¹⁾ European Parliament, Amendment 102.

the European Parliament provided its own re-worked version of Article 12⁽⁵²⁾. It also introduced a requirement that EU financial assistance towards Member States shall be conditional upon compliance not only with the rules of the CFP but also with, *inter alia*, the MSFD⁽⁵³⁾.

5. HABITATS DIRECTIVE AND BIRDS DIRECTIVE

The Habitats Directive⁽⁵⁴⁾ was adopted on the basis of the ‘Environment’ Title of the Treaty establishing the European Economic Community (a predecessor to the TFEU). Like the MSFD, the Birds Directive (in its latest form)⁽⁵⁵⁾ was adopted on the basis of the ‘Environment’ Title of the TFEU. Both the Habitats and Birds Directives deal with site protection and species protection. In terms of the marine environment, it is now clear that both Directives apply to internal waters, the territorial sea and to the exclusive economic zone (or equivalent). Their application to the continental shelf is a little less clear⁽⁵⁶⁾. The European Commission has issued guidance on the interaction between the Directives’ site protection provisions and the CFP, entitled ‘Fisheries Measures for Marine Natura 2000 Sites’⁽⁵⁷⁾.

⁽⁵²⁾ European Parliament, Amendments 109, 257, 258, 111, 260, 114 and 262.

⁽⁵³⁾ European Parliament, Amendment 302. See also Amendment 199.

⁽⁵⁴⁾ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ 1992 L206/7, as amended and corrected.

⁽⁵⁵⁾ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ 2010 L20/7.

⁽⁵⁶⁾ See judgment of the European Court of Justice in *Commission v UK* (Case C-6/04 [2005] ECR I-9017). The Court, after noting that ‘it is common ground between the parties that the United Kingdom exercises sovereign rights in its exclusive economic zone and on the continental shelf and that the Habitats Directive is to that extent applicable beyond the Member States’ territorial waters’, it goes on to conclude that ‘the [Habitats Directive] must be implemented *in that exclusive economic zone*’ (emphasis added; para 117). Its conclusion fails to mention the continental shelf.

⁽⁵⁷⁾ Available on the website of DG Mare. See also Churchill and Owen, p. 263.

The practice of three Member States, namely Ireland, Germany and the Netherlands, provides insights into how these Member States deal with the interaction between site protection under the Habitats and Birds Directives, on the one hand, and the CFP, on the other. The Irish government turned directly to the European Commission for assistance in protecting marine sites, and the European Commission in turn sought advice from the International Council for the Exploration of the Sea (ICES). In contrast, the German and Dutch governments have involved the ICES before getting to the point of making a formal request to the European Commission for fisheries management measures to protect sites. The German project is called ‘EMPAS’⁽⁵⁸⁾. The Dutch project is called ‘FIMPAS’. Through FIMPAS, the Dutch government sought advice recently from the ICES on whether proposed measures developed through the project would meet site conservation objectives⁽⁵⁹⁾, and the ICES has since provided its advice⁽⁶⁰⁾.

COM(2011) 425 makes some references, express or implied, to the Habitats and Birds Directives. Thus Article 2(4) of the proposed Regulation states that: ‘The [CFP] shall integrate the [EU] environmental legislation requirements.’ More specifically, Article 12, on which see section 3

⁽⁵⁸⁾ For the advice received from the ICES, see: [www.ices.dk/sites/pub/Publication Reports/Advice/2008/Special Requests/Germany Advice from the EMPAS project.pdf](http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2008/Special%20Requests/Germany%20Advice%20from%20the%20EMPAS%20project.pdf) [last visited on 12 April 2013]. Regarding Germany and Ireland, see further Churchill and Owen, p. 264.

⁽⁵⁹⁾ See letter dated 10 September 2012 from T. IJlstra and P. Connolly, available at: [www.zeeinzicht.nl/docsN2000/20120910 Letter to fimpas community.pdf](http://www.zeeinzicht.nl/docsN2000/20120910%20Letter%20to%20fimpas%20community.pdf) [last visited on 12 April 2013].

⁽⁶⁰⁾ See: [www.zeeinzicht.nl/docsN2000/6.3.3.9 Doggerbank.pdf](http://www.zeeinzicht.nl/docsN2000/6.3.3.9%20Doggerbank.pdf), [www.zeeinzicht.nl/docsN2000/6.3.3.7 Cleaver Bank.pdf](http://www.zeeinzicht.nl/docsN2000/6.3.3.7%20Cleaver%20Bank.pdf), and [www.zeeinzicht.nl/docsN2000/6.3.3.8 Frisian Front.pdf](http://www.zeeinzicht.nl/docsN2000/6.3.3.8%20Frisian%20Front.pdf) [last visited on 12 April 2013]. Regarding certain coastal sites in the Netherlands, see also Commission Implementing Decision of 24 September 2012 confirming measures proposed by the Netherlands for the protection of marine areas of conservation in the North Sea Coastal Zone, the Vlakte van de Raan and the Voordelta (2012/638/EU), 2012 OJ L291/1.

above, deals with compliance with site protection duties under, *inter alia*, Article 6 of the Habitats Directive and Article 4 of the Birds Directive ⁽⁶¹⁾.

The Council's General Approach does little to embellish these references. Thus it includes a variation on Article 2(4) in COM(2011) 425 whereby: 'The [CFP] shall in particular: [*inter alia*] be coherent with the Union environmental legislation ...⁽⁶²⁾. In addition, it mentions of the Directives in the Council's re-worked version of Article 12 ⁽⁶³⁾.

The European Parliament amended Article 2(4) in COM(2011) 425 to read as follows: 'The [CFP] shall be consistent with the [EU]'s environmental legislation ...' ⁽⁶⁴⁾. It added a provision whereby '[m]easures for the conservation and sustainable exploitation of marine biological resources may include the following: ... adopting measures which help Member States to meet requirements under environmental legislation' ⁽⁶⁵⁾. In addition, the European Parliament provided its own re-worked version of Article 12 ⁽⁶⁶⁾. It also introduced a requirement that EU financial assistance towards Member States shall be conditional upon compliance not only with the rules of the CFP but also with, *inter alia*, the Habitats and Birds Directives ⁽⁶⁷⁾.

6. SOME CONCLUSIONS

Measures to deal with the impact of fisheries on the wider marine environment in Union waters have been piecemeal, and there has been very little legislative activity under the CFP on that subject recently. In

⁽⁶¹⁾ See also COM(2011) 425, recital (24).

⁽⁶²⁾ Council's General Approach, Art. 2(4)(g).

⁽⁶³⁾ See also Council's General Approach, recital (23). See further a reference in recital (25) to 'areas protected under environmental law'.

⁽⁶⁴⁾ European Parliament, Amendment 60.

⁽⁶⁵⁾ European Parliament, Amendment 102.

⁽⁶⁶⁾ European Parliament, Amendments 109, 257, 258, 111, 260, 114 and 262.

⁽⁶⁷⁾ European Parliament, Amendment 302. See also Amendment 199.

future, the main driver for such measures in Union waters is likely to be the MSFD. One of the interesting features of the MSFD is that, through the inclusion of descriptor (3) in its Annex I, the status of populations of commercially exploited fish and shellfish, rather than just that of the wider environment, is relevant to a region or subregion having good environmental status.

The deadline for entry into operation of the programmes of measures required by the MSFD is 2016, unless ‘the status of the sea [in question] is so critical as to necessitate urgent action’⁽⁶⁸⁾. The chances of measures being coherent across regional seas are improved by a duty on relevant Member States to cooperate⁽⁶⁹⁾. However, no matter how fine the words of the MSFD, its success will depend on compliance by the Member States and, failing that, on how committed the Commission will be in bringing non-compliant Member States before the European Court of Justice.

The MSFD, expressly through recitals (39) and (40) and impliedly through Article 15, envisages that the CFP will be the route for the adoption of any restrictions on fishing activities that are necessary for Member States to achieve or maintain good environmental status. Thus cooperation by the EU institutions will be crucial, although delegated powers of Member States, currently undergoing renewal and revision through the reform of the CFP, are likely to have some application too. Article 15 is driven by Member States’ requests to the Commission. So it remains to be seen how often or how promptly this mechanism will be invoked and how long after 2016 it will be before requested measures enter into operation.

In that an engagement between the MSFD and the CFP is likely to be crucial for the MSFD to have any major effect on fisheries impacts

⁽⁶⁸⁾ MSFD, Art. 5(3). See also Art. 6.

⁽⁶⁹⁾ MSFD, Art. 5(2).

on the marine environment, it will be telling to see in due course how much the successor to Regulation 2371/2002 features links to the MSFD. Beyond the recitals and objectives, the proposals by the Commission and the Council for reflecting the importance of the MSFD have been limited to the proposed Article 12. It is clear that the European Parliament wants to go further, in view of amendments that, *inter alia*, give good environmental status an important role in the definition of ‘ecosystem-based approach to fisheries management’ and that make EU financial assistance towards Member States conditional upon compliance with the MSFD. The European Parliament appears to have joined the law-making process under the CFP at a very interesting time.

COMMERCIAL NAVIGATION AND THE PROTECTION OF THE MARINE ENVIRONMENT: FROM CONFLICT OF INTERESTS TO RECONCILIATION THROUGH UNCLOS AND IMO INSTRUMENTS

THE QUESTION OF THE INTERVENTION BY THE COASTAL STATE TO COUNTERACT MARITIME CASUALTIES BEYOND ITS TERRITORIAL SEA

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Content: 1. *Introduction.* 2. *From the Intervention Convention to UNCLOS.* 3. *The political background leading to the adoption of the Intervention Convention.* 4. *A comparison between the Intervention Convention and UNCLOS article 221.* 5. *The case for a treaty on places of refuge.*

1. INTRODUCTION

My talk today particularly bears in mind two momentous dates. Not only are we celebrating the thirtieth anniversary of the adoption of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS), but we are also commemorating the tenth anniversary of the occurrence of the worst maritime environmental casualty in Western Europe, namely the *Prestige*. While the success of UNCLOS is being cheerfully praised worldwide, the painful circumstances of the breaking of the *Prestige* are revisited at a trial for criminal and civil liability now taking place in La Coruña. Persons standing for trial are not only the

master and the chief officer of the *Prestige*, but also the civil servant who took the fateful action of ordering the towing away of the ship towards the high sea, rather than allowing it into a place of refuge.

It is bearing in mind the background of these two commemorations that I am going to revisit the features involved in the right of the coastal State to intervene beyond its territorial sea to counteract pollution arising from maritime casualties. In this regard, I shall refer to the scope of application of two treaties, namely: UNCLOS (article 221) and the *International Convention relating to the Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969* (hereinafter, “the Intervention Convention”).

The Intervention Convention was adopted in the wake of the first major maritime casualty involving a super-tanker carrying heavy crude oil. The *Torrey Canyon* run aground on 18 March 1967 beyond the territorial sea around the Southwest coast of England. The coastal State intervened only ten days later, by means of bombing the wreck and making the oil blaze. However, by then the oil spill had progressed to become a mayor environmental catastrophe: nearly 100,000 tonnes of crude oil are estimated to have spilled into the sea, causing the first man made environmental catastrophe around the South Coast of England and the West Coast of France.

Main reasons for the delayed action taken by the coastal State were legal uncertainties regarding the right of the coastal State to intervene beyond the limits of its territorial sea. These legal uncertainties did not exist at the time of the *Prestige*. In this case the coastal State promptly took over operations and instructed the towing away of the ship to allow its breaking and sinking in the high seas. However, I have already anticipated that the decision not to allow the ship into a place of refuge is now the subject matter of the criminal action against the civil servant involved in that decision.

This background shows that the evolution of the right of intervention by the coastal State beyond its territorial sea is not merely a question

of historical interest. On the contrary, it remains a subject matter that merits to be revisited not only in the light of casualties that occasionally inflict catastrophic damage to the marine environment, but also bearing in mind less serious casualties that further contribute to the degradation of vital natural resources.

An important question to be considered is whether the Intervention Convention has been superseded by article 221 of UNCLOS (Measures to avoid pollution arising from maritime casualties) or whether both the Intervention Convention and UNCLOS article 221 can be read together, so that the old Intervention Convention still can provide a residual or added value to the application of UNCLOS, article 221.

In any case, the rules defining the right of intervention by coastal States beyond their territorial sea contained in both treaties aim at achieving a fundamental purpose, namely the reconciliation of the potentially antagonistic interests behind commercial navigation on the one hand and the protection of the marine environment on the other.

2. FROM THE INTERVENTION CONVENTION TO UNCLOS

In the wake of the Torrey Canyon, both sets of interests clashed at an international conference convened in 1969 by a then relatively unknown intergovernmental UN agency called IMCO (Intergovernmental Maritime Consultative Organization). At this conference the first two treaties aimed at counteracting damage by heavy crude oil transported by sea were adopted. The already referred to Intervention Convention regulated for the first time the right of the coastal State to intervene beyond its territorial sea to counteract catastrophic shipping incidents causing massive pollution. Another treaty, the *International Convention on Civil Liability for Oil Pollution Damage, 1969* (CLC) established a system of strict liability and compulsory insurance to cover the compensation to be paid by the shipowner involved in a catastrophic oil pollution incident.

Further treaties and recommendations were adopted by IMCO before and during the period of the Third Law of the Sea Conference (1973-1982). The International *Convention* on the Establishment of an International Fund for Compensation for Oil Pollution Damage (*FUND*) complemented the system of liability and compensation established by the CLC with a further layer of compensation, to be contributed by the owners of heavy fuel oil carried by sea. The scope of the Intervention Convention was enlarged in 1973 by a Protocol extending intervention for cases of pollution other than oil. The International Convention for the Prevention of Pollution from Ships, *MARPOL*, first adopted in 1973 and substantially amended in 1978, became the first treaty that comprehensively addresses the prevention of marine pollution which may arise not as a result of accidental spills caused by a maritime casualty, but as a consequence of operational discharges, namely discharges into the marine environment related to the normal operation of ships. Further treaties were also adopted in the field of safety of navigation, prevention of marine pollution and liability and compensation in respect of maritime claims.

IMCO became IMO (International Maritime Organization) months before the adoption of UNCLOS in 1982. The change of name was not cosmetic. From being “intergovernmental” and “consultative” the organization had progressed to become an “international” entity, where governments did not only meet to “consult” but to adopt global treaties and recommendations aimed at balancing shipping and environmental interests. These treaties and recommendations have multiplied throughout the last three decades.

In its text UNCLOS not only recognizes the existence of IMO’s work through continuous references to the obligation to abide to rules and standards adopted by “the competent international organization”. It also enhances their effectiveness by incorporating them into a comprehensive jurisdictional framework. UNCLOS is acknowledged to be an “umbrella convention” because most of its provisions, being of a general kind, can be implemented only through specific operative regu-

lations contained in other international agreements. There is widespread consensus that references in UNCLOS to generally accepted shipping international rules and standards on safety of navigation and prevention of marine pollution from vessel source means references to IMO rules and standards ⁽¹⁾.

In the case of prevention of marine pollution from vessels' source the relationship between UNCLOS and IMO rules and standards becomes particularly interdependent due to the peculiar features of UNCLOS Part XII, which deals exclusively with the protection and preservation of the marine environment: UNCLOS Part XII is more than an "umbrella convention" *vis a vis* IMO rules because it contains provisions which are *per se* of an operative kind: they can be directly implemented and, as such, should be read together with other operative provisions contained in IMO treaties and recommendations dealing with the protection of the marine environment. This "reading together" applies to the Intervention Convention and article 221 of UNCLOS.

3. THE POLITICAL BACKGROUND LEADING TO THE ADOPTION OF THE INTERVENTION CONVENTION

Being IMO a specialized agency of the UN exclusively focused in the adoption of shipping rules and standards, most IMO provisions are primarily enforced under the purview of the flag State. Against this basic jurisdictional framework, the main IMO treaties regulate the right for States to control compliance with these provisions by foreign ships voluntarily entering their ports. In this way, port States would be able to ensure that ships do not sail in substandard conditions. The concerted interaction of flag state jurisdiction and port state control is thus at the

⁽¹⁾ See the IMO document on Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization. Study by the Secretariat of the International Maritime Organization (IMO). LEG/MISC.7. www.imo.org.

core of most IMO shipping regulations. But what about coastal State jurisdiction?

The regulation of basic features of coastal State jurisdiction is in principle a law of the sea matter beyond the regulatory purview of IMO. It is in this regard that a distinction between law of the sea and shipping law should be highlighted as a fundamental defining feature of IMO's activities: as an organization devoted to the adoption of rules applicable on board ships, IMO has in principle no mandate to adopt public law regulations defining the general nature and extent of State jurisdiction over maritime spaces. How, then, was this Organization involved in the adoption of a global treaty aimed precisely at regulating these last subjects?

The reason for the incursion of IMO (then IMCO) into a sphere beyond its usual "flag State" regulatory mandate can only be explained by the political context existing at the time of the Torrey Canyon. There was simply no international body or conference dealing with the task of developing law of the sea rules until the Third Law of the Sea Conference started deliberations in 1973.

It is difficult to understand today why a treaty was needed to regulate a right that amounted to no more than self-defence. Why, indeed, should States need a treaty to justify their intervention in the high seas in order to counteract the effects of a catastrophic event menacing to destroy vital coastal interests? The answer is that the Torrey Canyon was the first great man-made catastrophe and accordingly rights and obligations related to coastal State intervention had to be balanced with those of the private parties involved in the incident such as the ship-owner, master, salvors and insurers. Moreover, the features and extent of the right of intervention of the coastal State had to be measured against the rights of the flag State of the ship in distress, this being a major public law issue as long as the ship had not been abandoned as a wreck. International rules to deal with these vital questions were required amidst a historical context where the high sea was still a place where

freedom of navigation was still not conditioned by the need to protect the marine environment. And all this in period of legal uncertainty created by the failure of the 1958 and 1960 law of the sea conventions to define the extent of the territorial sea.

Against this uncertain legal background the right to prompt intervention was further hindered by an interpretation of Admiralty Law according to which any public initiative should take place only after allowing some time for those representing the owner and salvor to take action. This meant that the urgency of preventing damage to the marine environment adjacent to the coast was not straightforwardly recognized as a public law and order matter taking immediate precedence over the deliberations of private parties on how to best deal with their own interests.

Under such circumstances, the concept of freedom of navigation took, in the view of many, precedence over the right of the coastal State to take action beyond the limits of its territorial sea: better to suffer some damage than to invade international waters without a justified ground to do so. Only in case of substantial, grave, and imminent damage could the coastal State interfere in the private domain of shipowners, salvors and insurers in order to effectively counteract the situation. A conceptual vicious circle could therefore develop: damage would not seem significant in the beginning and, accordingly, reasons for immediate coastal State intervention would not become obvious: best way forward to avoid unnecessary interference by the coastal State with private interests was to allow first shipowners, salvors and insurers to negotiate on how to solve the problem and intervene only when negotiations did not progress as they should. Only that by then it could be too late to avoid catastrophic damage.

A further legal uncertainty that played against prompt intervening action by the coastal State was the geographic position of the casualty. The Torrey Canyon run aground on rocks beyond the three miles between Land's End and the Scilly Isles, beyond the British territorial sea but still

within the continuous zone set by the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone. However, it was not clear whether the right of the coastal State to intervene in order to stop pollution damage could be exerted as a means to prevent infringement of “sanitary regulations”, referred to in article 24.1(a) of that treaty as a reason for the coastal State to exert its “control” over the contiguous zone. This last expression seemed too narrow to cover damage to coastal interests.

4. A COMPARISON BETWEEN THE INTERVENTION CONVENTION AND UNCLOS ARTICLE 221

The difficulties to assess the legitimacy of the right of coastal State intervention beyond the territorial sea in the 1960s are illustrated by the language used in the directives issued by the IMCO Council on the tenor of the *travaux préparatoires* leading to the drafting of the Intervention Convention. Deliberations should consider “*The extent to which a State directly threatened or affected by a casualty which takes place outside its territorial sea can, or should be enabled to, take measures to protect its coastline, harbours, territorial sea, or amenities... ..even when such measures may affect the interests of shipowners, salvage companies and insurers and even of a flag government*”⁽²⁾.

The caution and care invested in the consideration of such issues is reflected in the rather restrictive text of the Intervention Convention. In this pre UNCLOS treaty the exercise of the right of intervention by the coastal State beyond its territorial seas is restricted to the need to prevent a grave and imminent danger in face of a casualty which may be reasonably expected to result in major harmful consequences⁽³⁾. In such cases, the Convention imposes the obligation to consult with other

⁽²⁾ See III Extraordinary session of the IMCO Council: *Conclusions of the Council on the action to be taken on the problems brought to light by the loss of the “Torrey Canyon”*.

⁽³⁾ Article I.1.

states, in particular the flag State before the intervention takes place, unless “extreme urgency”⁽⁴⁾ compels to intervention without consultation of any kind. Intervening measures must be proportionate to actual or threatened damage, shall not go beyond what is reasonable necessary and shall cease as soon as its end has been achieved. They shall cease as soon as that end has been achieved and “shall not unnecessarily interfere with the rights and interests of the flag State, third States and of any persons, physical or corporate concerned”⁽⁵⁾. Measures taken by the coastal State should then be notified without delay to the States and all known physical or corporate persons concerned, as well as to the Secretary-General of IMO⁽⁶⁾.

Against the restrictive legal background regulated by the Intervention Convention, the text of UNCLOS article 221 strikes as being more flexible and comprehensive. Rather than defining the right of intervention as a treaty law restrictive exception to the rule of non-intervention, UNCLOS seems to acknowledge the existence of such right in terms of both customary and conventional international law. Certainly, in referring to conventional international law⁽⁷⁾, UNCLOS implicitly refers to the Intervention Convention. However, what about customary law? Here it seems that unlike the Intervention Convention, UNCLOS explicitly recognizes as customary law the right to protect coastline or related interests. *Ergo*, coastal States may intervene beyond their territorial sea irrespective of whether or not they are party to the Intervention Convention or indeed, to UNCLOS:

- If they are party to the Intervention Convention they may apply the mechanism of consultation and notification regulated by this treaty.

⁽⁴⁾ Article III, (d).

⁽⁵⁾ Article V.2.

⁽⁶⁾ Article III (f).

⁽⁷⁾ See UNCLOS, article 221, 1.

- If they are not party to the Intervention Convention but are party to UNCLOS, they may not be restricted by the regulations of the Intervention Convention but nevertheless apply the above referred system of consultation and notification as an obvious mechanism of cooperation, also applicable by operation of UNCLOS article 198 (Notification of imminent or actual damage).
- States not party to UNCLOS or to the Intervention Convention could also apply one or both of them in accordance to customary law, in this case defined by reference to widely accepted treaty law rules.

The major difference between the Intervention Convention and UNCLOS 221 reflects the consequences of the incorporation into UNCLOS of the notion of Exclusive Economic Zone (EEZ). While the Intervention Convention defines the right to intervene beyond the territorial sea as a right of intervention “in the high seas”, UNCLOS article 221 defines the right of the coastal State to intervene within a legal and geographical context fundamentally different, namely to intervention “beyond the territorial sea” without any further distinction, thus including not only the high seas but the EEZ as well.

The importance of this distinction is obvious. In the EEZ the hybrid status of coexistence of sovereign rights over natural resources with a residual high sea status otherwise, works in favour of a robust type of coastal State intervention: up to 200 miles from the coastline the coastal State can intervene to protect resources which have a similar status as those within the territorial sea. Hence, for most coastal States, the high seas beyond the three or twelve miles territorial sea addressed by the Intervention Convention has become, up to 200 miles from the coast, a sea zone over which it has sovereign jurisdiction to exploit and defend its natural resources.

Both the Intervention Convention and UNCLOS include basic limitations aimed at balancing the rights of coastal and flag states:

- Intervention by coastal States beyond the territorial sea can in principle be justified only as an expression of the right of

self-defence in face of actual or threatened damage arising from a maritime casualty. This actual or threatened damage must be significant. Both the Intervention convention, (article I.1) and UNCLOS article 221 refer to the actual or threatened damage as consisting of “major harmful consequences”.

- UNCLOS, article 221 reproduces the definition of maritime casualty contained in article II of the Intervention Convention. Maritime casualty is thus defined in a mainly exemplifying way as “a collision of vessels, stranding or other incident of navigation, or other occurrence on board a vessel or external to it resulting in material damage or imminent threat of material damage to a vessel or cargo”.
- Article 221 of UNCLOS uses more general expressions. It simply refers to the defence of coastal and related interests, including fishing. The Intervention Convention defines these interests in a more precise and exemplifying way. In accordance to article II “related interest” includes such interests as: maritime coastal, port or estuarine activities, including fisheries activities, constituting an essential means of livelihood of the persons concerned; tourist attractions of the area concerned; and the health of the coastal population and the well-being of the area concerned, including conservation of living marine resources and of wildlife.

5. THE CASE FOR A TREATY ON PLACES OF REFUGE

Bearing in mind the preceding considerations, it can be concluded that the restrictive procedural scope regulated by the Intervention Convention can be harmonized with the more ample one regulated in article 221 of UNCLOS so as to optimize the exercise of the right of intervention by coastal States beyond their territorial sea in cases of maritime casualties expected to cause major harmful consequences.

In the case of the *Prestige*, lack of coordination between coastal States affected had been alleged. In face of these allegations, one wonders

whether the application of the system of consultations regulated by the Intervention Convention could not have been properly applied.

A major issue to be considered in connection with the right of intervention by coastal States is the degree to which they should provide places of refuge to counteract, or at least reduce, the damage a maritime casualty can cause not only to the natural resources and related interest of the intervening coastal State but also to those of its neighbours and even to the marine environment in general. In this last regard, it can be suggested that within the wider environmental context established by UNCLOS, the right of intervention by the coastal State should not only be exercised in consideration to the protection of its own natural resources or those of its neighbours, but also bearing in mind the wider environmental context of the high seas and its natural resources. In fact, prevention of marine pollution from vessels cannot be effectively implemented unless protective measures extend beyond the conventional frontiers established under the concept of “sea zones.”

The question of how to relate the right of intervention by the coastal State to the granting of a place of refuge has occupied IMO since the *Erika* incident and became a pressing issue following the *Prestige* casualty. The Guidelines on places of refuge for ships in need of assistance adopted by the IMO Assembly in 2003 clearly reflect the will of IMO’s membership to restrict the issue, at least at present to the domain of soft law.

Not so the *Comité Maritime International* (CMI), a leading organization with consultative status at IMO. At the ninetieth session of the Legal Committee in April 2005, the CMI submitted a document suggesting the adoption of a treaty aimed at effectively binding coastal states to provide refuge under certain circumstances. In considering this document, the IMO Legal Committee noted that the subject of places of refuge was a very important one and needed to be kept under review. It nevertheless agreed that rather than adopting draft a convention dedicated to places of refuge, a more urgent priority would be to implement all the liability and compensation conventions adopted by IMO.

A more informed decision as to whether a convention was necessary might best be taken in the light of the experience acquired through their implementation.

In spite of this decision, the CMI decided to produce a draft instrument dealing with the topic of Places of Refuge. The draft was approved at the CMI Conference held in Athens in October 2008. In commending the draft to the attention the IMO Legal Committee at its 96th session the CMI suggested that it might be unrealistic to wait for the effective and worldwide implementation of all existing liability conventions, and also referred to the fact that the European Union was contemplating regional legislation in this regard.

The alternative of linking the exercise of intervention by the coastal State with any obligation of granting refuge to ships in distress involves several considerations of *jus equum*.

To start with, the obligation of the coastal State to provide refuge to ships in distress should be counterbalanced with the right of the coastal States to protect coastal interests. In this regard, a right of *self-defence* of the coastal State should be recognized: if the *de facto* assessment of a distress situation indicates that the granting of refuge would result in serious environmental damage to the interests of the coastal State, then the coastal State would be entitled to deny the ship access to places of refuge. However, under such circumstances it should also be considered whether the coastal State should be ready to assume the consequences of environmental damage limited to the area of the place of refuge in order to avoid greater damage to other areas and to neighbour countries.

In the end, thus, coastal States have always the right to deny access to places of refuge but this denial does not mean that they could wash their hands. Basic principles of international law would be violated if the coastal State omitted to offer alternatives to ships in distress. In other words, coastal States cannot tell the ship “it’s your problem” or “it’s a problem you have created and therefore I have nothing to do with

it”. Any action by the coastal State designed to compel the ship to “go away” would lead to a greater violation by the coastal State of basic principles of international law. It would reflect a wilful intention by the coastal State to create conditions that would have the direct effect of aggravating the situation of distress at the cost of negatively impacting the ecosystems beyond the EEZ. All this means that the obligation of the coastal States to help removing the situation of distress persists, even in cases where, on account of paramount coastal interests, the coastal State is unable to offer a place of refuge. It is not only an obligation restricted to the saving of human lives but also to the protection of a marine environment necessarily conceived as a universal, and as such beyond the exclusive interests of individual states.

FREEDOM OF NAVIGATION AND RESPONSIBILITY FOR DAMAGE TO THE MARINE ENVIRONMENT

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Abstract: *Freedom of navigation is one of the salient components of the classical concept of freedom of the seas. Although it is recognized as a key element of the current Law of the Sea, its ability to cope adequately with the need to protect and preserve the marine environment is subject to increasing scrutiny. The preeminence of the flag State in controlling pollution by ships seems today ill-prepared to ensure the protection of the marine environment, particularly beyond areas of national jurisdiction. In cases of catastrophic accidents by ships, the existing international responsibility and liability regimes have proved to be unable to provide full compensation to coastal States and other victims of pollution. To ensure a more complete compensation of damages, including environmental damages, some national courts — mainly those of France — have applied their municipal laws on liability in tandem with the IMO Conventions.*

1. INTRODUCTION

The concept of freedom of the seas has deep roots in international maritime law as the outcome of the historical opposition between two contradictory driving forces: *mare liberum* (Grotius, 1609) and *mare clausum* (Selden, 1635).

At the core of freedom of the seas is freedom of navigation, probably the most “sacred” traditional concept in maritime affairs ⁽¹⁾.

⁽¹⁾ See: Tuerk, H., *Reflections on the Contemporary Law of the Sea*, Martin Nijhoff Publishers, 2012, pp. 7-9.

According to its current formulation at the 1982 United Nations Convention on the Law of the Sea (hereinafter UNCLOS), freedom of navigation means that all States “have the right to sail ships flying their flag” under their exclusive jurisdiction on the high seas or, subject to a number of limitations, in the EEZ of other States ⁽²⁾. In this latter zone, these limitations may occur, in particular, when coastal States exercise their jurisdiction with regard to protection and preservation of the marine environment ⁽³⁾. While navigating the territorial sea or the archipelagic waters of another State, foreign vessels must respect the conditions applying to “innocent passage” ⁽⁴⁾ or “archipelagic sea lines passage” ⁽⁵⁾. In Straits used for international navigation all ships enjoy “transit passage” ⁽⁶⁾ except in cases where the regime of innocent passage is applicable ⁽⁷⁾ or where passage is regulated by long-standing conventions ⁽⁸⁾.

In its genuine meaning, navigation refers to sailing and carriage of persons or goods by sea, but not to other vessel activities governed by specific regimes such as fishing, marine scientific research or waste disposal at sea.

2. THE CONCEPT OF FREEDOM OF NAVIGATION REVISITED

In recent years, the ability of freedom of navigation to cope with currently evolving circumstances has been submitted to scrutiny. As has rightly been pointed out by an eminent specialist, to rely in an absolute

(2) UNCLOS, Arts. 87, 90, 92 and 58.

(3) UNCLOS, Art. 56 1, c).

(4) UNCLOS, Arts. 17-26.

(5) UNCLOS, Arts. 52-53.

(6) UNCLOS, Arts. 37-44.

(7) UNCLOS, Art. 45.

(8) UNCLOS, Art. 35 c).

way on the principle of freedom of navigation was justified in circumstances existing in the past, but is probably not today:

“The needs of navigation and of the so-called “other internationally lawful uses of the sea” are still important elements to be taken into consideration. But they have to be balanced with other interests, in particular those which have a collective character, such as the protection of the marine environment and the sound exploitation of marine resources, as they concern the international community as a whole. Far from being an immutable theological dogma, the principle of freedom of the sea is to be understood not in an abstract way but in the light of the peculiar circumstances under which it should apply” ⁽⁹⁾.

The evolutionary trends of the modern law of the sea in reshaping freedom of navigation are particularly evident in certain critical matters, such as: innocent passage through the territorial seas of ships carrying dangerous substances; transit through international Straits; military exercises in the EEZ of other States; coastal State jurisdiction with respect to environmental protection on its territorial sea and EEZ; and suppression of drug trafficking and other crimes on the high seas. Therefore, freedom of navigation should be regarded today as a functional right of flag States, to be exercised with “due regard” for other relevant collective interests in the oceans.

Navigation and maritime transport, although regulated by a number of international conventions, continues nowadays to be a major source of pollution of the marine environment and poses a risk of ocean degradation ⁽¹⁰⁾. Expanding ship traffic is responsible for the daily release of

⁽⁹⁾ Scovazzi, T. “The Evolution of International Law of the Sea: New Issues, New Challenges”, *RCADI*, vol. 286 (2000), pp. 228-229.

⁽¹⁰⁾ In 1990 marine pollution by ships was estimated as 12% of the total marine pollution (GESAMP, *Reports and Studies*, n.º 39 (1990), *The State of the Marine Envi-*

various substances provoking harmful effects in the marine environment. These deleterious effects are caused *inter alia* by intentional and unintentional discharges of oil, chemical cargo residues, garbage and cleaning agents, anti-fouling paint, exhaust and other air emissions and introduction of non-indigenous species from ballast water ⁽¹¹⁾. Recent cases of catastrophic accidents involving oil tankers and ships carrying noxious substances have provoked increasing apprehension about the threats imposed by transport ships to coastal environment and all forms of ocean life.

The report of the Secretary-General on oceans and the law of the sea of 2011 enumerates among the causes of environmental degradation resulting from maritime activities: pollution caused by ships; the introduction of invasive alien species; ocean noise; transportation, disposal and transboundary movements of waste; and the dismantling and recycling of ships. Furthermore, the report emphasizes that not all parties comply with their obligations under the international instruments intended to promote maritime safety and the prevention of pollution from ships, and points out the primary responsibility of the flag States in this regard ⁽¹²⁾.

2.1. UNCLOS and IMO Conventions on safety of navigation

The main provisions of UNCLOS concerning navigation are to be found in Part VII (High Seas). They are essentially grounded in the preeminent role of the flag State and its exclusive jurisdiction over its vessels when they are in the high seas.

ronment, p. 88). See a more recent assessment in UNEP/GPA, *The State of the Marine Environment: Trends and processes*, The Hague, 2006.

⁽¹¹⁾ Leemans, E and Rammelt, L., “Mare Liberum or Mare Restrictum? Challenges for the Maritime Industry”, in VIDAS, D. and SCHEI, PJ. (Ed) *The World Ocean in Globalisation*, Martinus Nijhoff Publishers, 2011, p. 267.

⁽¹²⁾ A/66/70/Add.2, para. 46.

However, it is worth noting that under UNCLOS, flag States vessels must pay “due regard” for the interests or rights of other States when sailing in the high seas, and to the specific rights and duties of the coastal State when sailing in its EEZ ⁽¹³⁾. Moreover, flag States must comply with various and very specific obligations concerning the control of its vessels exercising freedom of navigation. The main duties of a flag State are enumerated in Article 94 of the Convention affirming *inter alia* that it “shall effectively exercise its jurisdiction and control ... over ships flying its flag”, and “take measures to ensure safety at sea”. Flag States must also ensure that the master, officers and crew “observe the applicable international regulations concerning the prevention, reduction and control of marine pollution”. They must maintain regular checks on the seaworthiness of ships flying their flag, ensure that crews are properly qualified and hold inquiries into shipping casualties.

With respect to the protection and preservation of the marine environment against pollution by ships, Part XII of the Convention aims at striking a balance between the rights and duties of the various categories of States involved, namely: flag States, coastal States and port States. However, under current rapidly evolving circumstances, it is open to question whether such a balance is still well defined today. In general, it could be said that the preeminent role granted by the Convention to flag States is often inefficient for the aims of the protection and preservation of the marine environment. The privileged position of flag States regarding pollution by ships is demonstrated by several elements: the loose interpretation of the “genuine link” between the flag State and the vessel ⁽¹⁴⁾; the complete sovereign immunity of States ships ⁽¹⁵⁾; the duty of prompt release of foreign vessels and its crew ⁽¹⁶⁾; the prohibition of criminal penalties other than monetary ones for violations of applicable

⁽¹³⁾ UNCLOS, Arts. 87, 2 and 58, 3.

⁽¹⁴⁾ See: ITLOS, The M/V “SAIGA” (No. 2) Case (Saint Vincent and the Grenadines v. Guinea), Judgment of 1 July 1999, para. 75-88.

⁽¹⁵⁾ UNCLOS, Art. 236.

⁽¹⁶⁾ UNCLOS, Art. 226 b) and c) in relation to Art. 292.

international environmental rules and standards in the EEZ and in the territorial sea, except in the case of a willful and serious act of pollution⁽¹⁷⁾; the priority of the flag State's exercise of jurisdiction in case of pollution incidents by ships⁽¹⁸⁾; and the ambiguity of the provisions concerning submission of disputes on alleged environmental violations by foreign ships in the EEZ to compulsory jurisdictional procedures⁽¹⁹⁾.

Faced with the predominant position of the flag State, the regulatory and enforcement powers of coastal States on environmental matters under UNCLOS are limited and weak. In their territorial sea, coastal States' environmental legislation cannot apply to the "design, construction, manning or equipment" of foreign ships⁽²⁰⁾ and its enforcement must not hamper innocent passage, except when foreign ships are committing an act of "willful and serious" pollution contrary to UNCLOS⁽²¹⁾. In the EEZ, the regulatory powers of the coastal States with regard to environmental matters are limited to "giving effect" to internationally agreed rules and standards, except in particular special areas approved by IMO⁽²²⁾. Enforcement jurisdiction by coastal States in the EEZ is limited to cases in which a foreign ship has violated international rules and standards resulting in a "substantial discharge" causing "major damage" or threat of major damage. In fact, in accordance with Article 221 of UNCLOS, coastal States may only take full control of the situation after a catastrophic accident by a foreign ship has occurred. This *ex post facto* intervention does not seem fully in line with the preventive orientation which should nowadays characterize action against environmental disasters in light of the precautionary principle.

On the other hand, IMO has been instrumental in developing a number of international maritime conventions regarding, *inter alia*, safety

(17) UNCLOS, Art. 230.

(18) UNCLOS, Art. 228 (in relation to Art. 292).

(19) UNCLOS, Art. 297, 1 b).

(20) UNCLOS, Art. 21, 2.

(21) UNCLOS, Art. 221, 2, in relation to 19, 2.

(22) UNCLOS, Art. 211, 5 and 6.

of navigation, prevention of accidents, regulation of ship-source pollution, pollution by dumping, and liability and compensation for damages caused by certain types of ships. In spite of their important contribution to improving marine safety these IMO Conventions have not fully ensured the protection of the seas against environmental damages resulting from navigation. As two specialists on the Law of the Sea wrote in 1999:

“There is no shortage of legislation on ship safety. The problem today is with implementation and enforcement of this legislation. The primary responsibility for such implementation and enforcement lies with flag States. It is a widely held view that a number of flag States (some, but by no means all, of them flags of convenience) are unable or unwilling to enforce the provisions of IMO conventions to which they are parties: evidence for this view is the fact that the casualty rate for ships of some States is much greater (up to one hundredfold some cases) than for ships of other States” ⁽²³⁾.

In summary, several contributing elements to the continuing environmental problems of shipping are: the outdated foundation of the principle of freedom of navigation, the proliferation of open registers, the limited jurisdiction of coastal States under UNCLOS, and the incompleteness and slow pace of the international regulation process ⁽²⁴⁾.

2.2. New principles and responsibilities of involved States

The increasing impact of maritime activities on oceans health has clarified the need for new guiding principles better adapted to the pro-

⁽²³⁾ Churchill, R. R. and Lowe, A.V., *The Law of the Sea*, Manchester U. Press, Third Edition, 1999, p. 273.

⁽²⁴⁾ Leemans, E. and Rammelt, L., *op. cit.*, pp. 272-290.

tection and preservation of the marine environment ⁽²⁵⁾. Some of these principles, such as the ecosystem approach, the precautionary approach and the “polluter pays” principle are also relevant for navigation and vessel-source pollution. In fact, modern international regulation of maritime activities is progressively responding to the requirements of the new principles of sustainable development. In applying these principles, new management tools are also implemented, such as environmental impact assessments ⁽²⁶⁾, surveillance and monitoring of maritime activities ⁽²⁷⁾ and the preservation of fragile ecosystems and habitats ⁽²⁸⁾. Among the new principles and rules imposing limitations on freedom of navigation, authors have listed: the designation of Marpol “special areas” where no discharges of oil are permitted; the establishment of Particular Sensitive Sea Areas (PSSA) subject to special protective regimes; the introduction of mandatory traffic separation schemes and pilotage systems; and the establishment of Marine Protected Areas, even on the high seas ⁽²⁹⁾. According to the polluter pays principle, the costs of dealing with pollution from maritime casualties are to be borne by the polluter rather than the public authorities.

Taking this evolving legal framework into account, the responsibilities of the States involved in navigation should be reapportioned in order to achieve better oceans governance ⁽³⁰⁾. The current drawbacks of flag States enforcement, which are compounded by the proliferation of classifications societies, many of questionable competence, should be

⁽²⁵⁾ Freestone, D., “Problems of High Seas Governance”, in VIDAS, D. and SCHEI, P.J. (Ed), *The World Ocean in Globalisation ...*, *op. cit.*, pp. 121-129.

⁽²⁶⁾ UNCLOS, Art. 206.

⁽²⁷⁾ UNCLOS, Art. 204.

⁽²⁸⁾ UNCLOS, Art. 194, 5 and 211, 6.

⁽²⁹⁾ See *passim*: Scovazzi, T., “Marine Protected Areas on the High Seas: Some Legal and Policy Considerations”, 19/1 *The International Journal of Maritime and Coastal Law* (2004), pp. 1-17.

⁽³⁰⁾ See Vidas, D., “Responsibility for the Seas”, in D. Vidas (editor), *Law, Technology and Science for Oceans Globalisation*, Martinus Nijhoff Publishers, 2010, pp. 34-40.

compensated by enhancing the powers of coastal and port States. The UNGA Resolution 2011 on oceans and the law of the sea, while reaffirming the responsibility of flag, port and coastal States, proclaims that “flag States have primary responsibility that requires further strengthening”. The same resolution:

Urges flag States without an effective maritime administration and appropriate legal frameworks to establish or enhance the necessary infrastructure, legislative and enforcement capabilities to ensure effective compliance with, and implementation and enforcement of, their responsibilities under international law, in particular the Convention, and, until such action is taken, to consider declining the granting of the right to fly their flag to new vessels, suspending their registry or not opening a registry, and calls upon flag and port States to take all measures consistent with international law necessary to prevent the operation of substandard vessels ⁽³¹⁾.

At the same time, the responsibilities of port States, which enjoy a privileged position to monitor, control and enforce implementing measures on vessels in its ports and offshore installations, should be reinforced. Modeled on the 1971 Paris Memorandum of Understanding on Port State Control, various similar schemes have been adopted by several regions of the world ⁽³²⁾. The UNGA resolution 66/231 of 24 December 2011 “recognizes that maritime safety can also be improved through effective port State control, the strengthening of regional arrangements and increased coordination and cooperation, and increased information-sharing, including between safety and security sectors” ⁽³³⁾.

⁽³¹⁾ A/RES/66/231, para. 127-128.

⁽³²⁾ Castillo Daudí, M., “Prevención de la conminación causada por buques: control del Estado de abanderamiento y control del Estado del puerto”, in *Nuevas fronteras del Derecho de la Unión Europea, Liber Amicorum José Luis Iglesias Buhigues*, Valencia, Tirant lo Blanch, 2012.

⁽³³⁾ *Ibid.*, para. 131. An example related to fisheries is the Agreement on port State measures to prevent, deter and eliminate illegal, unreported or unregulated

3. RESPONSIBILITY AND LIABILITY FOR ENVIRONMENTAL DAMAGE BY SHIPS

3.1. The UNCLOS provisions on environmental responsibility and liability

The main provisions of UNCLOS regarding responsibility and liability for damage to the marine environment are contained in Article 235⁽³⁴⁾, which reflects the scope and limits of the existing legal framework in this field:

“Article 235

Responsibility and liability

1. States are responsible for the fulfilment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law.

2. States shall ensure that recourse is available in accordance with their legal systems for prompt and adequate compensation or other relief in respect of the damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction.

3. With the objective of assuring prompt and adequate compensation in respect of all damage caused by pollution of the marine environment, States shall cooperate in the implementation of existing international law and the further development of international law relating to responsibility and liability for the assessment of and

fishing, approved by the FAO Conference, through resolution 11/2009 of 22 November 2009.

⁽³⁴⁾ Other provisions of UNCLOS also relate to issues of responsibility and liability: Arts. 31, 42, 97, 106, 139, 187, 232, 263, and 304.

compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.”

The reminder in Article 235, paragraph 1, is certainly important since it reaffirms that States engage their international responsibility when they breach an obligation concerning the protection of the marine environment. Therefore, while not supporting direct responsibility for their vessels’ wrong-doings, States are legally liable for breaches of their own international obligations with respect to exercising jurisdiction and control over vessels flying their flag.

However, current international practice clearly shows that States avoid making claims against other States for breaches of their international obligations concerning the protection and preservation of the marine environment, especially in cases of pollution by ships. Thus, the trend in international practice is for States to agree to transfer the problem of compensation of damages caused by marine pollution to the private inter-personal level, thus replacing international State responsibility by direct compensation between polluter and victims under civil liability schemes⁽³⁵⁾. In this light, Article 235, 2, of UNCLOS binds States to provide, in their national legal systems, for available recourses for prompt and adequate compensation or other relief for pollution damage of the marine environment by natural or juridical persons under their jurisdiction, including by ships flying their flag.

The final paragraph of Article 235 calls States to cooperate in the implementation and further development of international law relating to their responsibility and liability for damage to the marine environ-

⁽³⁵⁾ Kiss, A & Shelton, D., *International Environmental Law*, Transnational Publishers Inc., 1991, pp. 360-363.

ment. With the object of assuring adequate compensation for victims, States are called to develop, where appropriate, criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds. An outstanding example of such cooperation, as we will see in the next section, is the international compensation regime established under IMO Conventions for certain categories of pollution damage by ships.

3.2. The IMO Conventions on Liability and Compensation

After the shock caused by the Liberian tanker “Torrey Canyon” accident in 1967 off the United Kingdom coastline, member States of the International Maritime Organization (IMO) established a special international regime aiming at ensuring adequate compensation for victims of pollution damage caused by oil spills from ships. Other similar regimes on liability and compensation have been subsequently established by IMO Conventions relating to maritime carriage of nuclear material (Nuclear 1971), and carriage of hazardous and noxious substances by sea (HNS 1996 and HNS PROT 2010, not yet in force). However, the responsibility and liability provisions of the 1972 London Convention on dumping (Art. X) and its 1996 Protocol (Art. 15) have not yet been implemented.

The first instrument concerning tanker pollution was the International Convention on Civil Liability for Oil Pollution Damage, adopted in Brussels on 29 November 1969⁽³⁶⁾. Later on, the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage was signed in Brussels on 18 December 1971⁽³⁷⁾. After a failed attempt by the Protocols of 1984, the Conventions were amended by two Protocols adopted in 1992, which entered into force on 30 May 1996. The resulting instruments are known today

⁽³⁶⁾ The 1969 CL Convention entered into force on 19 June, 1975.

⁽³⁷⁾ The 1971 Fund Convention entered into force on 16 October 1978.

as the 1992 Civil Liability Convention (hereinafter CLC) and the 1992 Fund Convention (hereinafter the Fund Convention) ⁽³⁸⁾. On 23 March 2001 the regime was completed with an International Convention on Civil Liability for Damage caused by pollution from bunker oil from ships ⁽³⁹⁾. In May 2003, a new Protocol to the 1992 Fund Convention was adopted, establishing a supplementary fund which provided for a third tier of compensation for damages, bringing the maximum amount currently payable to US\$ 1160 million ⁽⁴⁰⁾.

This conventional package provides for a uniform international civil liability regime applicable to States parties irrespective of the flag State of the tanker and the nationality of the shipowner. It aims at ensuring that appropriate compensation is awarded to victims of pollution damage resulting from accidental escapes or voluntary discharges at sea from ships, caused by oil carried in bulk as cargo or in the bunkers of the ship. The resulting pollution damage must affect the territory of a State party, including the territorial sea or, following the amendments introduced by the 1992 Protocols, the exclusive economic zone or equivalent 200 mile area specified by the coastal State ⁽⁴¹⁾.

The essential legal elements of the international regime established by the 1992 CLC can be summarized as follows. First, the Convention

⁽³⁸⁾ As of 1 July 2009, 122 States had ratified the 1992 Civil Liability Convention, and 104 States had ratified the 1992 Fund Convention.

⁽³⁹⁾ The bunkers Convention entered into force on 21 November 2008.

⁽⁴⁰⁾ The 2003 Protocol entered into force on 3 March 2005 and so far has 24 States Parties. In order to address the imbalance created by the establishment of the Supplementary Fund between the shipping and oil industries, two voluntary agreements were introduced by the International Group of P&I Clubs: the Small Tanker Oil Pollution Indemnification Agreement (STOPIA) 2006, and the Tanker Oil Pollution Indemnification Agreement (TOPIA) 2006, which entered into force on 20 February 2006. For a description of the functioning of these agreements see: The International Regime for Compensation for Oil Pollution Damage, Explanatory note prepared by the Secretariat of the International Oil Pollution Compensation Funds, July 2009, p. 6.

⁽⁴¹⁾ CLC, Art. II, and Fund Convention Art. 3.

sets up an international civil liability scheme operating between the natural or legal persons affected whose claims for compensation of pollution damage, if not settled otherwise, should be submitted to the competent national court of the State where the polluting damage occurred or preventive measures were taken ⁽⁴²⁾. Secondly, it provides for a “strict”, no-fault or objective liability regime, arising from the mere establishment of a causal relationship between the tanker incident and the resulting pollution damage, thus excluding the need to prove fault or negligence on the part of the persons involved. Thirdly, the liability is “channelled” to the registered owner of the vessel, which becomes responsible *ope legis* for any pollution damage caused by the ship. The ship-owner’s liability can only be exonerated if he proves that the damage resulted from acts of war or similar *force majeure* situations, from wilful acts or omissions of a third party, or from negligence or other wrongful act of the authority responsible for the maintenance of navigational aids in the exercise of its functions ⁽⁴³⁾. Fourth, the owner’s liability is limited to a maximum amount established by the Convention which is linked to the ship’s tonnage, currently rising up to US\$132 million for the larger tankers. The limitation of liability may disappear where it can be proved that the accident resulted from a personal act or omission of the ship-owner, committed recklessly or with intent to cause damage, and with knowledge that such damage would probably occur ⁽⁴⁴⁾. Finally, the liability shall be insured, as the owner of a ship carrying over 2000 tons of oil is required to maintain the appropriate insurance or other financial security to cover its liability for pollution damage. A certificate of insurance shall be carried on board ⁽⁴⁵⁾. In practice, this certificate is often required by ships flying the flag of a State not party to the Convention, when entering or leaving a port or terminal installation of a State party.

⁽⁴²⁾ CL Art. IX.

⁽⁴³⁾ CLC Art. III.

⁽⁴⁴⁾ CLC Art. V.

⁽⁴⁵⁾ CLC Art. VII.

The 1992 Fund Convention established a compensatory regime supplementary to the Civil Liability Convention, operating under the same geographical and legal framework. Its aim is to ensure compensation for damage not adequately covered by the shipowner under the 1992 CLC. This may happen, either when one of the exceptions to the regime of “channelling” of the liability applies, when the owner’s liability insurer is unable to comply fully with its financial obligations, or when the cost of compensating pollution damage exceeds the liability limits set by the 1992 CLC. In such cases, the 1992 Fund Convention provides for a supplementary compensation scheme based on the establishment of an International Oil Pollution Compensation Fund (the IOPC Fund), which is financed by contributions levied on entities receiving an annual amount exceeding 150 000 tons of oil by sea in a State Party to the Fund Convention ⁽⁴⁶⁾.

After many years of activity, the international civil liability regime established by the 1992 Conventions is generally considered as a model in the field. Indeed, its operational record shows that the system works efficiently in compensating pollution damage caused by minor accidents, settled through non-contentious arrangements between the victims and the IOPC Fund. However, the system is much less efficient in cases of major accidents in which claims for compensation give rise to legal proceedings before the competent national courts ⁽⁴⁷⁾. The main inherent limitations of the system are the narrow definition of pollution damage ⁽⁴⁸⁾, the restricted scope of the losses qualifying for compensation

⁽⁴⁶⁾ FUND Convention Art. 10.

⁽⁴⁷⁾ This was stated by the French Senate report, prepared after the “Erika” accident, stressing that the limitations of the IOPC Fund system does not guarantee adequate compensation for victims in cases of major disasters (Richemond Report 2000).

⁽⁴⁸⁾ The concept of “pollution damage”, defined in Article I, 6 of the CLC, has led to extensive debates both within and outside the IOPC Fund and, despite having been extended by the Protocol of 1992, it is still considered by many as too narrow. See: Ibrahima, D. “Recovering Damage to the Environment per se Following an Oil

which exclude environmental damage *per se* ⁽⁴⁹⁾, the considerable number of parties involved in tanker's navigation whose liability is excluded *ope legis* ⁽⁵⁰⁾, and the relatively small amount of money available to pay compensation ⁽⁵¹⁾. Finally, there is another major shortcoming of the

Spill: the Shadows and Lights of the Civil Liability and Fund Conventions”, *RECIEL*, 14-1, 2005, p. 64.

⁽⁴⁹⁾ In the case of environmental damage, compensation is limited to reasonable measures of reinstatement actually undertaken or to be undertaken, other than the loss of profit from such environmental impairment and (arguably) the costs of “preventive measures” taken to prevent or minimize such environmental damage. This narrow approach has the advantage of its pragmatism and ensures that compensation for environmental damage is not used for purposes other than restoration. However, it leads to the exclusion of “natural-resource damage” or environmental damage *per se*, which is not susceptible of compensation beyond “reasonable measures of reinstatement”. The practice of the IOPC Funds has been very restrictive in assessing claims for damage of the environment. See: Lucas, M.L. “Compensation for Damage to the Environment *per se* Under International Civil Liability Regimes”, in Maljean-Dubois, S., Rajomani, L. (2011), *Implementation of Environmental Law*, Center for Study and Research of the Hague Academy of International Law, pp. 419-467.

⁽⁵⁰⁾ Article III, paragraph 4 of the Convention provides that “no claim for compensation for pollution damage under this Convention or otherwise may be made against” a long list of physical and legal persons involved with tankers operations “unless the damage resulted from their personal act or omission, committed with the intent to cause such damage, or recklessly and with knowledge that such damage would probably result.” Although some of these parties, acting under the umbrella of the ship-owner, are appropriately exempted of liability by virtue of the channeling principle, other more independent parties (such as the pilot, the charterer, manager or operator of the ship or the persons performing salvage operations) enjoy an almost absolute immunity from civil liabilities which is not commensurate to their effective control on the accidented tanker. See: Jacobson, M., “The International Oil Pollution Compensation Funds and the International Regime of Compensation for Oil Pollution Damage”, in Basedow, J. & Magnus, U. (Eds), *Pollution of the Sea — Prevention and Compensation*, Berlin-Heidelberg: Springer, 2007, p. 138.

⁽⁵¹⁾ In cases of massive pollution disasters, such as the “Erika” or the “Prestige”, the aggregate sum payable by the owner and its insurer and by the IOPC Funds were € 185 million (“Erika”) and € 171,5 million (“Prestige”), whereas the total cost of damages is far beyond these sums. After the 2003 amendments to the Fund Convention entered into force the compensation ceilings have been increased to around € 1.000.0000.

CLC/Fund regime: it only covers pollution damage caused in areas under the sovereignty or jurisdiction of coastal States, thus excluding damages in areas of the high seas or its seabed ⁽⁵²⁾.

4. GOING BEYOND THE CLC/IOPC FUND REGIME: CURRENT JUDICIAL PRACTICE

In order to overcome the inherent limitations of the CLC/IOPC Fund regime, several attempts have been made to seek further compensation for damages before national Courts, mainly in the USA and in France ⁽⁵³⁾.

4.1. Actions before US Courts

The first precedent in US Courts stems from the “Amoco Cadiz” accident which caused the spill of some 230.000 mt of oil off the coast of Brittany (France) in 1978 ⁽⁵⁴⁾. Given that 20% of the property of the ship pertained to the US holding Amoco and that the US is not a party to the IMO civil liability conventions, a number of claims for compensation were introduced before US Courts by France and other victims of pollution. By a Judgment of 18 April 1984, the District Court of the Northern District of Illinois retained jurisdiction over the case and,

⁽⁵²⁾ UNCLOS refers in Part XII to the protection and preservation of the “marine environment” which undoubtedly includes all marine areas both within and beyond national jurisdiction. More generally, the International Court of Justice has stated that the obligation to prevent damage to areas beyond national jurisdiction is part of contemporary international environmental law (Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion of 8 July 1996, I.C.J. Reports 1996, p. 242, para. 29).

⁽⁵³⁾ See: Juste Ruiz, J., “Compensation for Pollution Damage Caused by Oil Tanker Accidents: from “Erika” to “Prestige”, *Aegean Rev. Law Sea*, Vol I (2010), pp. 37-60.

⁽⁵⁴⁾ See: Scovazzi, T., “Amoco Cádiz”, in J. Juste Ruiz and T. Scovazzi (Coordinadores), *La práctica internacional en materia de responsabilidad por accidentes industriales catastróficos*, Valencia, Tirant lo Blanch, 2004, pp. 23-39.

applying US law, pierced the corporate veil thus holding Amoco liable for pollution damages resulting from negligent behaviour in controlling the safety of the ship. However, in a second judgment of 11 January 1988, the same District Court, after carefully analysing the different categories of damages claimed, excluded compensation for “environmental damage” and reduced the amount to be paid by Amoco from \$769 million to FF 252, 837, 825. A judgment on appeal, pronounced on 24 January 1992, confirmed the main findings of the lower court and, without taking a stand on the exclusion of environmental damage not challenged by the appellants, added interesting precisions about compensable damages.

A more recent case concerns the “Prestige” accident in November 2002 in which a distressed tanker that the Spanish authorities decided to tow from the coast rather than taking it to a place of refuge, eventually sank off the coast of Galicia, releasing over 77.000 mt of crude oil ⁽⁵⁵⁾. In the criminal proceedings pending before the Spanish courts, both the captain, Mr. Mangouras, and the former Spanish General Director of Merchant Shipping, Mr. Lopez Sors, among others, are indicted. The criminal prosecution of the former Spanish General Director is particularly important because his conviction would involve the liability of the State. The judicial instruction of the case in Spain, initiated more than nine years ago, has progressed at a very slow pace and the oral phase of the proceedings has only recently started, in October 2012.

Aware of the fact that the total compensation available under the CLC and Fund Conventions would be far from the total costs of the damage provoked by the Prestige, in 2003 the Government of the Autonomous Community of the Basque Country and the Government

⁽⁵⁵⁾ See: Juste Ruiz, J., “El accidente del Prestige y el Derecho Internacional: de la prevención fallida a la reparación insuficiente”, *Revista Española de Derecho Internacional (REDI)* 2003, 1, vol. LV, pp. 15-42. Juste Ruiz, J. and Bou Franch V., “After the Prestige’s Oil Spill: Measures Taken by Spain in an Evolving Legal Framework”, *Spanish Yearbook of International Law*, Volume X, 2006, pp. 1-37.

of the Kingdom of Spain brought separate actions before the courts of the United States against the classification society of the “Prestige”, the U.S. company American Bureau of Shipping Inc. (hereinafter ABS) ⁽⁵⁶⁾. The application for damages introduced by Spain before the US District Court for the Southern District of New York on 16 May 2003 alleged that the American company was negligent in classifying the tanker suffering structural damage as fit to carry heavy fuel oil. By an order of 4 August 2004, the Federal District Court of New York agreed to hear the lawsuit filed by Spain and dismissed the counterclaim by ABS, which alleged that Spain was negligent in its response to the Prestige disaster, as barred by the Foreign Sovereign Immunities Act (FSIA) ⁽⁵⁷⁾. However, in a summary judgment of 2 January 2008, the Federal District Court of New York held that the CLC provided the exclusive vehicle for Spain's assertion of pollution damage claims against the American society, thus granting ABS's motion to dismiss the Spanish action ⁽⁵⁸⁾. In the discussion, the Court found that under Article III (4) (b) of the CLC the defendant company ABS could be regarded as one of the “others” who, without being members of the crew, perform services for the ship, and against whom no claim for damages can be made unless they have acted recklessly or with intent to cause damage, with knowledge that such damage would probably result. Therefore

⁽⁵⁶⁾ The Basque plaintiffs commenced their action against ABS on 8 May 2003 under the United States District Court for the Southern District of Texas. Following a motion by the defendant, the case was transferred on 17 February 2004 to the Southern District of New York as related to the case filed before this Court on 16 May 2003 by the Kingdom of Spain. After receiving from the Spanish Government €45,603,701 as compensation for damages sustained following the “Prestige” casualty, the Basque plaintiffs entered into a “compensation agreement” under which they accepted to withdraw their lawsuit against ABS (United States District Court. S. D. New York. *Comunidad Autónoma del País Vasco v American Bureau of Shipping Inc.* August 8, 2006. Not reported in F. Supp.2d).

⁽⁵⁷⁾ *Reino de España v. American Bureau of Shipping, Inc.*, 328 F.Supp.2d 489 (S.D.N.Y. 2004).

⁽⁵⁸⁾ *Reino de España v. American Bureau of Shipping, Inc.*, 528 F.Supp.2d 455 (S.D.N.Y. 2008).

the Court, assuming that the standard of knowing and reckless conduct on defendant's part was not proved, held that the classification society ABS was covered by the exclusion of liability contained in Article III.4 (b) of the CLC. In addition, the Court ruled that the Convention was applicable *in toto* especially with regard to the jurisdictional clause contained in Article IX, which provides that the competent courts are those of the Contracting State in which the damage claimed takes place. The Kingdom of Spain unsuccessfully argued that, since the U.S. is not a party to the 1992 Convention on Civil Liability, U.S. courts are not obliged to implement its provisions and could, according to its own legislation, validly exercise jurisdiction against the defendant US company. In conclusion, the judgment held that the U.S. District Court lacked subject matter jurisdiction to entertain the claims introduced by the plaintiff State against the defendant American Company ABS and granted its move to dismiss.

Spain appealed the 2008 District Court summary judgment ⁽⁵⁹⁾ and ABS cross-appealed the 2004 District Court dismissal of its counterclaim as barred by the Foreign Sovereign Immunities Act. The US Court of Appeals for the 2nd Circuit of New York, by a summary order of 12 June 2009, vacated the 2008 District Court of NY judgment and remanded the case ⁽⁶⁰⁾. The appellate Court held that the CLC could

⁽⁵⁹⁾ In its appeal Spain argued that since the United States is not a party to the 1992 CLC, ABS as a United States national had no standing to assert rights under the 1992 CLC in a court of the United States, that the 1992 CLC could not deny jurisdiction to a federal court, and that Article IX.1 of the 1992 CLC applied only to claims under the 1992 CLC compensation regime and not to Spain's claims against ABS, which were governed by other law. Spain has also argued that principles of treaty interpretation required consideration of the text, drafter's intent, judicial rulings from 1992 CLC Contracting States and other authorities, all of which showed that Article III.4(b) of the 1992 CLC did not provide immunity to classification societies such as ABS. Spain further argued that even if Article III.4(b) did apply to classification societies, its immunity did not cover the reckless conduct alleged against ABS.

⁽⁶⁰⁾ *Reino de España v. ABS Consulting, Inc.*, 334 Fed.Appx. 383 C.A.2 (N.Y.), 2009 (Not reported in the Federal Reporter).

not deprive a Federal Court of the United States of jurisdiction, as it was not party to that Convention. However, the higher Court suggests that, on remand, the district judge could decline exercising jurisdiction on the basis of the doctrine of *forum non conveniens* or judicial comity. On the other hand, the appellate Court held that the counterclaims filed by ABS for indemnity and contribution had been improperly dismissed, since they bore a “logical relationship” with Spain’s suit and therefore fell within the scope of the Foreign Sovereign Immunities Act’s (FSIA) counterclaim exception.

In light of the judgment on appeal, the District Court of New York revised its previous decision by summary judgment of 6 August 2010 ⁽⁶¹⁾. The District Court recognized its competence to adjudicate the claims filed by Spain against ABS and its associated companies, according to the maritime law of the United States. However, the District Court found that the relationship between Spain and ABS was insufficient to warrant the society’s exposure to liability for alleged reckless behavior in classifying the ship. Therefore it held that ABS did not owe a tort duty to third party coastal States like Spain to refrain from reckless conduct in conducting classification services. The judgment went on to state that, in any case, such reckless conduct had not been sufficiently proved by the Plaintiff Reino de España. Therefore, the District Court concluded by granting summary judgment in favor of ABS.

After a new appeal by Spain, the US Court of Appeal 2nd Circuit of NY, by a Judgment of 29 August 2012, addressed the merits of the claim and, although based on much more limited grounds, affirmed the lower court’s decision to dismiss the case against ABS ⁽⁶²⁾. The

⁽⁶¹⁾ Reino de España v. American Bureau of Shipping, Inc., 729 F.Supp.2d 635, S.D.N.Y., 2010.

⁽⁶²⁾ Reino de España v. American Bureau of Shipping, Inc., 691 F.3d 461 C.A.2 (N.Y.), 2012.

appellate court felt no need to resolve the question of whether a classification society may be held liable in tort to a third party, such as Spain, for reckless conduct in connection with the classification of vessels. Rather, the Court of Appeals found that even assuming *arguendo* that ABS owed a legal duty to Spain, Spain's evidence failed to create a genuine dispute of material fact concerning whether ABS recklessly breached such a duty. The Court of Appeals addressed each piece of evidence offered by Spain, and for each one, it found a lack of proof that ABS and its subsidiaries recklessly breached any duty of care that may have been owed to Spain through any action or inaction taken in the U.S. Therefore, with no genuine dispute of material fact before it, the Court of Appeals upheld the lower court's decision to dismiss Spain's suit.

4.2. Actions before French and EU Courts

A different outcome results from the judicial procedures following the “Erika” accident in 1999 off the coast of Brittany (France) which spilled some 31.000 mt. of heavy fuel-oil, causing major pollution of the Atlantic coast of France.

A first lawsuit was filed on 9 June 2000 before the Court of Commerce of Saint Nazaire by the French Commune de Mesquer against the Total group companies, seller of the cargo and charterer of the “Erika”. The plaintiff municipality alleged that, in accordance with French law, the companies of the group were responsible for damage caused by pollutant waste spilled at sea. The action was dismissed and the municipality of Mesquer lodged an appeal before the Cour d'appel de Rennes which, by judgment of 13 February 2002, confirmed the decision at first instance. The municipality of Mesquer then introduced an appeal before the Court of Cassation, which, considering that the dispute raised questions of interpretation of the EU Directive 75/442 on waste, stayed the proceedings and referred three questions to the Court of Justice of the European Communities (hereinafter ECJ) for a preliminary ruling.

The ECJ Judgment, rendered on 24 June 2008 ⁽⁶³⁾, held that the heavy fuel oil carried as cargo by the “Prestige” was not waste *per se*, but that once it was mixed with seawater and sediments, it could be classified as waste under European law. The Court also held that in the case of hydrocarbons spilled by accident at sea, the seller of such hydrocarbons and charterer of the ship carrying them might be considered by the Judge as the producer of such wastes within the meaning of the waste Directive, and therefore, the “previous holder”, for purpose of bearing the costs of disposing of waste in accordance with the “polluter pays” principle. Moreover, the Court held that if the cost of disposing of the waste is not or cannot be borne by the regime established under the CLC and Fund Conventions, by which the Community is not bound, the relevant national law will then have to make provision for that cost to be borne by the previous holders or the producer of the product generating the waste “if they have contributed to the risk”, and that national law and judicial authorities are obliged to do everything possible to achieve that outcome ⁽⁶⁴⁾.

In a parallel law suit, the *Tribunal de Grande Instance de Paris* (hereafter TGI), by a historic ruling of 16 January 2008 ⁽⁶⁵⁾, changed the *status quo ante* in applying the French “*droit commun*” in addition to the 1992 CLC/IOPC Fund regime. For the first time in national judiciary practice, the TGI Judgment by-passed the international regime established by the 1992 Conventions, until then considered as self-contained and exclusive, in additionally applying the civil liability scheme established by French law. The Judgment clarifies that this is not a violation of the “special” international regime, since the French “common law” applies in tandem with the 1992 Conventions.

⁽⁶³⁾ Case C-188/07 *Commune de Mesquer v. Total France SA and Total International Ltd.*, Judgment of the Court (Grand Chamber) of 24 June 2008, European Court Reports 2008, p. I-04501.

⁽⁶⁴⁾ *Ibid.*, para. 82-85.

⁽⁶⁵⁾ Tribunal de Grande Instance de Paris, 11ème chambre — 4ème section, Jugement 16 janvier 2008: <http://www.dml-avocats.com/fre/actualites/fiches/procès-de-l-erika-le-jugement.htm>.

The logic of the ruling is based on a number of connecting elements that allow the court to apply the forum law to persons other than those excluded by the treaty regime, and on the basis of different legal grounds. The blame against the natural and legal persons prosecuted is not based on the strict liability regime provided for in the 1992 Conventions, but rather on having committed crimes under French law (mainly the crime of pollution), entailing a corresponding civil liability. As a result, the ruling by the Paris TGI expands the circle of persons liable for the pollution damage caused by the oil spill, by finding that several physical and legal persons, other than those exempted from liability under Article III, 4 of the CLC, exercised control over the activity of the tanker and may have incurred criminal responsibility, which in turn entails civil liability under French law. The list of liable persons includes: the ship's "real" owner, Mr. Savarese (owner of shares in two Liberian companies who controlled the Maltese society appearing as formal owner of the "Erika"); the ship manager, Mr. Pollara; the classification society, the Italian company Rina; and the cargo owner, the French company Total SA. This last finding has attracted some controversy since for the first time in judicial history the company owning the oil transported has been held accountable for a tanker's accident. However, the ruling bases its decision on the negligence of Total SA in approving the seaworthiness of the "Erika" through the vetting procedure, since this vessel was the subject of a prior negative vetting from other oil companies. In conclusion, all these natural and legal persons are declared guilty of the crime of pollution and sentenced to pay fines of varying amounts ⁽⁶⁶⁾. As to the subsequent civil liability, the ruling holds them jointly and severally liable for damage caused by the incident, ordering them to pay compensation totalling € 192.5 million.

The TGI judgment also goes far beyond the IMO civil liability regime in applying the French legal concept of compensable damage

⁽⁶⁶⁾ € 75.000 each Mr. Savarese and Mr. Pollara and € 300.000 each RINA and TOTAL.

which includes not only material damage but also personal injury, moral damage and pure environmental damage. The Court, therefore, considers that the possibility of claiming for purely environmental damage belongs to the French State, to the competent local authorities (departments, but not regions or municipalities) and to NGOs actually performing environmental protection activities. The ruling also gives relevant guidance concerning the methodology for assessing environmental damage caused by the accident, and the kind of remedial measures that can eventually be applied.

The judgment of the TGI was appealed by those convicted and certain civil parties on 5 October 2009. The Court of appeal of Paris, in a judgment of 30 March 2010, endorsed the compatibility of the French punitive legislation with the international conventions of the IMO, confirmed the guilt of the accused Savarese, Pollara, RINA and TOTAL, expanded the cast of parties entitled to obtain compensation (to include also the regions and municipalities), increased the compensation for damages (from € 192,5 million to € 200.6 million) and maintained the compensation for ecological damage. However, to general surprise, the judgment in appeal exonerated Total SA from payment of compensation, by a somewhat surprising reasoning. The ruling confirmed that Total SA, which exercised control of the vessel, had actually committed a criminal fault of negligence in the “Erika” vetting procedure. However, considering that Total SA, and not the subsidiaries of the group, was the true charterer of the vessel, its liability for damage should be excluded pursuant to article III (b) of the CLC because the fault committed could not be characterized as reckless and conscious (*faute inexcusable*)⁽⁶⁷⁾.

The judgment of the Court of appeal of Paris was appealed in cassation by the convicted persons and 36 civil parties. The Attorney General

⁽⁶⁷⁾ CA Paris, 11^e ch. Corr., 30 mars 2010, n.º 08/02278. See : Le Couviour, K. «Erika : décryptage d'un arrêt peu conventionnel. — À propos de l'arrêt de la cour d'appel de Paris du 30 mars 2010», *La Semaine Juridique Edition Générale* n.º 16, 19 Avril 2010, 432.

of the Court of Cassation, in its opinion of 24 May 2012, requested the irrevocable cancellation of all actions by estimating that, in accordance with international law, French jurisdiction lacked competence to decide on possible infractions committed by a foreign ship beyond the territorial sea.⁽⁶⁸⁾ However, the Court of Cassation, by a judgment of 25 September 2012⁽⁶⁹⁾, confirmed the findings of the lower Court except in one point: it declared Total SA guilty of alleged crimes and responsible for damage caused, including ecological damage. In its considerations, the Court of Cassation repeatedly evokes the IMO Conventions and the United Nations Convention on the law of the sea of 1982, which must be interpreted bearing in mind its “object and purpose” according to the provisions of the Vienna Convention on the law of treaties of 1969. Thus, after reading in a new (but orthodox) light the provision in article 221, paragraph 5, in combination with articles 220, paragraph 6 and 228 of UNCLOS, the judgment holds that, in case of serious damage to the marine environment, national courts may impose penalties in accordance with their legislation, to give effect to the provisions of the Marpol Convention. Likewise, and without the need to decide on which of the companies of the Group was the true charterer of the vessel, the judgment rules that, in any case, Total SA has committed a reckless and conscious fault in the vetting procedure and is not therefore exonerated of assuming civil liability in accordance with the CLC. Finally, the judgment confirms the compensable character of the purely ecological damage.

5. CONCLUSION

Freedom of navigation is one of the major principles of the traditional law of the sea and a pivotal element of the provisions of UNCLOS

⁽⁶⁸⁾ The Attorney General opinion has been criticized by several maritime law specialists: P. Bonassies, « Sur l'Erika, avant qu'il ne soit trop tard » *DMF* 2012, n.º 736, p. 403; J.-P. Beurier, « Une interprétation restrictive du droit » *Le Marin*, 8 juin 2012, p. 6.

⁽⁶⁹⁾ Cass. Crim., 25 sept. 2012, n.º 3439, cassation partielle sans renvoi: Juris-Data n.º 2012-021445.

on shipping. However, in applying this principle under present day prevailing circumstances, attention must be paid not only to the individual rights of the States involved in navigation, but also to the collective interest of the international community in the protection and preservation of the marine environment. The relationship between flag States, coastal States and port States should be revised in order to ensure a more efficient and equitable marine governance, especially with respect to the protection of the marine environment. An examination of current maritime practice shows that there are important gaps in the regulation and implementation of responsibilities relating to pollution by vessels, especially in cases of catastrophic accidents such as those of the oil tankers “Erika” in 1999 and “Prestige” in 2002.

The limitations of the international regime established by the IMO Conventions on civil liability for oil pollution damage, especially with respect to compensation for environmental damage *per se*, have prompted actions before national Courts. Such actions sought appropriate reparation from parties other than the shipowner involved in the operations of tankers in cases of catastrophic oil spills. In responding to these actions, US Courts have been reluctant to retain jurisdiction and apply the criteria embodied in the Oil Pollution Act of 1990 with respect to third party claims regarding pollution damages occurring outside the US. In contrast, EU and French Courts have taken a legal stand more committed to the aims of the effective protection of the marine environment and equitable reparation of damages suffered by victims of oil tanker accidents.

In light of this evolutionary trend, it will be interesting to see the reaction of the IOPC Fund and the eventual willingness of its members to reform the international regime on civil liability for oil pollution damage. And in the meantime, an intriguing question might be also raised: why don't victim States ever invoke the responsibility of flag States that may have breached their obligations under UNCLOS regarding pollution damage caused by their vessels?

THE EXPLORATION OF MINERAL RESOURCES IN THE AREA

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Abstract (*): The International Seabed Authority (ISA) is the organization through which States Parties to the 1982 Convention on the Law of the Sea organize and control activities in the Area ⁽¹⁾. The ISA was created in 1994, upon the entry into force of the Convention and following the adoption of the so-called “1994 Agreement”. The set of activities in the Area are governed by the provisions settled in Part XI and Annex III of the Convention, particularly to administer the resources of the Area ⁽²⁾. The Area itself corresponds to “the seabed and the ocean floor and subsoil thereof, beyond the limits of national jurisdiction” (Article 1.1 (1)). Spatially, it is constrained by the outer limits of the continental shelf of coastal states as defined in Article 76 and Annex II of the Convention ⁽³⁾.

(*) The author only provided the abstract.

(1) In accordance with Article 156 of the Convention on the Law of the Sea of 10 December 1982.

(2) Article 157 of the Convention on the Law of the Sea.

(3) Article 76 states that “The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the

“Resources” under the Area regime means “all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed (...)” (Article 133 (a)) and these are considered as the common heritage of mankind ⁽⁴⁾. In the Area, the most promising mineral resources are polymetallic nodules, polymetallic sulphides and ferromanganese crusts. The former were first discovered in the second half of the XIX century and were recognized as a potential source of nickel, copper, cobalt and manganese after the 1960s (Rona, 2008 and references therein). The latter has gained interest as a cobalt rich resource and, more recently, as a possible source for REEs ⁽⁵⁾ capable of supplying global needs (Hein, 2012). Marine deposits of polymetallic sulphides, first discovered in 1979, constitute a valuable potential resource of copper, zinc, lead and gold, and will soon be exploited in some EEZs ⁽⁶⁾ of the Pacific ocean (for more information, see <http://www.nautilusminerals.com>).

Hydrocarbons and gas hydrates may also occur in some parts of the Area and will certainly be a target in the near future, following the recent technological progresses in offshore operations and the increasing demand of modern and emerging economies. However, society’s claim to change the growth paradigm towards a green economy while leading to an increase in efficiency and use of renewable energy sources will also increase metal needs at a global scale. This is easily predicted regarding the production of hybrid and electric cars, wind turbines, solar panels, superconductors and super alloys. Some base metals (like copper) are becoming depleted on land-based deposits and present-day market prices make the search for marine minerals more attractive.

continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.”

⁽⁴⁾ Article 136 of the Convention on the Law of the Sea.

⁽⁵⁾ The REEs acronym stands for Rare Earth Elements forming the lanthanide group (15 elements) in the periodic table. The industrial use of these elements has been increasing in emerging high — and green-technology applications.

⁽⁶⁾ Economic Exclusive Zones.

There are several reasons to consider seabed mining more advantageous when compared to land mining. Land-based mines commonly require the removal of large amounts of barren overburden rock, leaving a significant footprint in the landscape. Conversely, most marine mineral deposits sit at the seabed with little or no overburden to remove. Polymetallic nodules are potatoes sized concretions formed mostly by hydrogenous and biological processes leading to the precipitation of concentric layers of iron and manganese hydroxides around a core (Morgan, 2012). The nodules lie on the sea-bottom sediment, generally half buried, at depths over 4,000-5,000 m. Ferromanganese crusts are mostly composed by manganese oxides and amorphous iron oxyhydroxides that precipitate directly from cold seawater, forming pavements on hard-rock substrates on the flanks and summit of submarine seamounts (e.g. Hein, 2000). They are found at water depths of about 400-4,000 m, but the thickest crusts (up to 25 cm thick) typically occur at depths between 800 and 2,500 m. Polymetallic sulphides of copper, zinc, and lead precipitate at hydrothermal vents (also called black smokers) when high-temperature fluids (heated beneath the oceanic crust and up to 400.°C) ascend and mix with the cold surrounding seawater (e.g. Herzig and Petersen, 2000). These deposits are related with ocean spreading centres at water depths generally lower than 3,500 m.

Since its foundation the ISA ⁽⁷⁾ has so far elaborated three sets of regulations governing prospecting and exploration for polymetallic nodules (adopted in 2000), polymetallic sulphides (adopted in 2010) and ferromanganese crusts (adopted in 2012). Contracts for exploration are approved for a period of 15 years, but following the end of the first contracts for exploration of polymetallic nodules in the Pacific, signed in 2001, the ISA is scheduling a work plan to be able to present an exploitation code in the next 2-3 years. The set of rules, regulations and procedures adopted for prospecting, exploration and exploitation of marine minerals in the Area — as the common heritage of mankind —

⁽⁷⁾ Through the Council, the executive body of the ISA.

must take into account the effective protection and preservation of the marine environment ⁽⁸⁾. Since there is broad consensus in that the current stage of knowledge prevents any definite risk assessment of the effects of large-scale seabed mining (e.g. Van Dover, 2010), contractors are required to collect oceanographic and environmental baseline data as an integral part of their exploration programs (see also ISA Technical Study: No. 10). The type of baseline data to be collected and the methods used to do it should be revised from time to time in order to incorporate state of the art scientific knowledge, technology and best environmental practices. Contractors are also compelled to present a preliminary assessment of the possible impact of the proposed exploration activities on the marine environment. This includes mining tests, which would be used to assess and evaluate their impacts on the marine environment prior to the issue of licenses for mineral exploitation.

According to the regulations on prospecting and exploration issued by the ISA, each contractor needs to “take necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from its activities in the Area as far as reasonably possible using the best technology available to it”. Moreover, the Authority and sponsoring States are also engaged to apply a precautionary approach, as reflected in principle 15 of the Rio Declaration ⁽⁹⁾.

Regarding the protection of the marine environment and in order to ensure compliance by the contractor with its obligations and to exempt the sponsoring State from liability as predicted by the Convention on the Law of the Sea, the Advisory Opinion of the Seabed Disputes Chamber of 1 February 2011 states that the “laws and regulations

⁽⁸⁾ Article 145 of the Convention on the Law of the Sea.

⁽⁹⁾ Principle 15 of the Rio Declaration 1992 states that: “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

and administrative measures of the sponsoring State cannot be less stringent than those adopted by the Authority, or less effective than international rules, regulations and procedures”. However, as also noted in the Advisory Opinion, the principle 15 of the Rio Declaration declares that States shall apply the precautionary approach “according to their capabilities”. Notwithstanding the combination of this principle with the obligation of contractors to use the “best environmental practices”, the former might indicate a less strict standard for developing States (Lynch, 2011).

The Convention on the Law of the Sea aims to establish a legal order for the seas and the oceans in order to promote their peaceful uses and the equitable and efficient utilizations of their resources. One of the main achievements relies on the effective participation of developing States in activities in the Area ⁽¹⁰⁾. According to the Article 143 of the Convention the ISA “shall promote and encourage the conduct of marine scientific research in the Area, and shall co-ordinate and disseminate the results of such research and analysis when available”. We are convinced that this principle, as well as the exploration activities and cooperation between States and contractors through the ISA, will be the basis to apply the precautionary approach in a constructive way that will enable the developing States to participate in deep seabed mining on an equal footing with developed States while protecting and preserving the marine environment.

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⁽¹⁰⁾ Article 148 of the Convention on the Law of the Sea.

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SETTING THE FIELD FOR FUTURE ‘MINERAL RUSHES’: SOME REFLECTIONS ON THE INTERNATIONAL REGIME FOR THE EXPLORATION AND EXPLOITATION OF MARINE MINERALS

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Sumário: *A presente intervenção pretende apresentar uma panorâmica sobre o estado de preparação do “terreno” para a exploração de recursos minerais marinhos, em particular nos fundos submersos além da jurisdição nacional, tendo em consideração que o aproveitamento destes recursos minerais tem vindo a ser anunciada como indispensável e eminente desde a década de setenta do século passado.*

A preparação do “terreno” para a partilha do Eldorado pode ser entendida a partir de três ideias fundamentais:

- i) Em primeiro lugar, a existência de um processo longo de repartição dos espaços marítimos entre os Estados que foi iniciado em 1945 e ainda não terminou. O final deste processo de partilha dos espaços marítimos só terá previsivelmente lugar, em conformidade com os pressupostos do Direito do Mar em vigor, quando a Comissão de Limites da Plataforma Continental tiver terminado a apreciação de todas as submissões relativas à extensão das plataformas continentais além das duzentas milhas marítimas.*
- ii) Em segundo lugar, a diferença entre as perspectivas que suportam os regimes jurídico-internacionais de exploração de recursos minerais marinhos aplicáveis dentro e fora dos espaços marítimos sujeitos à jurisdição nacional. A contraposição é imposta pelo confronto entre duas concepções e os paradigmas praticamente opostos em que se fundam: de uma banda, a soberania permanente sobre os recursos naturais e, da outra banda, o património comum da humanidade.*

- iii) *Em terceiro lugar, a expressa intenção dos Estados criarem regimes jurídicos (nacionais e internacionais) aplicáveis à exploração de recursos minerais marinhos na Área que garantam a segurança necessária ao seu efectivo aproveitamento.*

O conceito de “recursos minerais marinhos” utilizado tem por referência a alínea a) do artigo 133 ⁽¹⁾, nos termos da qual: “«Recursos» significa todos os recursos minerais sólidos, líquidos ou gasosos (...), incluindo os nódulos polimetálicos”. Em conformidade, a apreciação que será feita seguidamente não inclui nem os recursos marinhos vivos, nem aos recursos genéticos marinhos.

Ao nível do aproveitamento dos recursos minerais marinhos por parte dos Estados costeiros as incertezas quanto à delimitação dos espaços marítimos podem conduzir à paralisa da potencial exploração, tendo em consideração que a prospecção e a exploração de recursos tendencialmente partilhados só poderá ter lugar quando haja autorização expressa por parte dos Estados em cujas plataformas continentais se encontram distribuídos os recursos minerais.

O ponto de partida para o regime jurídico-internacional de exploração dos recursos minerais marinhos nos espaços marítimos sujeitos à soberania ou à jurisdição dos Estados costeiros é o princípio da soberania permanente sobre os recursos naturais. Em conformidade, os artigos das Partes da Convenção dedicadas aos espaços marítimos submetidos à soberania ou à jurisdição dos Estados costeiros prevêm que estes têm:

- i) *Soberania para a exploração dos recursos minerais marinhos que possam ser encontrados nas suas águas interiores, no seu mar territorial e, no caso dos Estados arquipélagos, nas águas arquipelágicas (artigos 2).*
- ii) *Direitos de soberania relativamente à exploração dos recursos minerais marinhos que possam ser encontrados nas suas zonas económicas exclusivas (alínea a) do n.º 1 do artigo 56).*
- iii) *Direitos de soberania relativamente à exploração dos recursos minerais marinhos que possam ser encontrados nas suas plataformas continentais até às 200 milhas marítimas (n.º 1 do artigo 77).*
- iv) *Direitos de soberania relativamente à exploração dos recursos minerais marinhos que possam ser encontrados nas suas plataformas continentais além das 200 milhas marítimas, condicionados ao pagamento das contribuições em espécie previstas no artigo 82.*

Os Estados costeiros não podem interpretar, contudo, a soberania e os direitos de soberania que lhes são reconhecidos para a exploração dos recursos minerais numa perspec-

⁽¹⁾ Os artigos citados correspondem a disposições da Convenção da Nações Unidas sobre o Direito do Mar, assinada em 10 de Dezembro de 1982.

tiva da prossecução de interesses estritamente individuais caso pretendam actuar de acordo com o princípio da boa-fé (artigo 300) no cumprimento das obrigações assumidas ao abrigo da Convenção. O artigo 192 estipula expressamente que o aproveitamento soberano dos recursos naturais deve ser feito “de acordo com a sua política em matéria de meio ambiente e de conformidade com o seu dever de proteger e preservar o meio marinho”.

Em termos distintos, o ponto de partida para o regime jurídico-internacional de exploração dos recursos minerais marinhos no espaço submerso além da jurisdição dos Estados costeiros ou Área é o inovador conceito de património comum da humanidade.

A qualificação da Área como património comum da humanidade é o contraponto da liberdade do alto mar e da sujeição dos espaços marinhos à jurisdição nacional. Daqui decorre que o espaço marinho submerso, ou está sujeito à jurisdição dos Estados no âmbito das plataformas continentais, ou faz parte da Área. A referência a “património comum da humanidade” é, por isso, equivalente a internacionalização do espaço da Área para efeitos do aproveitamento dos seus recursos minerais.

A utilização do património comum da humanidade para qualificar a Área e os seus recursos naturais pode ser apreciada através de dois enfoques diferentes. Por um lado, em termos espaciais, significa que estamos em presença de um espaço submerso situado para além das zonas submetidas à jurisdição nacional, onde existe um regime jurídico-internacional distinto daquele que é normalmente aplicado ao alto mar. Por outro lado, em termos funcionais, a qualificação deste espaço marítimo como património comum da humanidade significa que se trata de um espaço internacionalizado com as características previstas na Convenção relativamente ao aproveitamento dos recursos naturais minerais.

Tendo a exploração de recursos minerais marinhos sido algo de meramente potencial até a primeira década do século vinte e um, situada no domínio do virtual e da “ficção científica”, é particularmente significativa a atenção que os Estados dedicaram nas últimas décadas à elaboração de regimes jurídicos aplicáveis à partilha do Eldorado. No que especificamente respeita ao espaço submerso além da jurisdição nacional podem ser autonomizados quatro regimes jurídicos distintos:

- i) Em primeiro lugar, o regime jurídico da Área constante da versão inicial da Parte XI da Convenção e dos seus anexos, que nunca vigorou enquanto tal.
- ii) Em segundo lugar, os regimes nacionais unilaterais e a sua coordenação através do Reciprocating States Regime, enquanto alternativa encontrada por alguns Estados desenvolvidos ao regime internacional previsto na versão inicial da Convenção.
- iii) Em terceiro lugar, o regime dos investidores pioneiros (Preparatory Investment Protection scheme — PIP), elaborado pela Comissão Preparatória da Autoridade Internacional dos Fundos Marinhos, a partir de 1983.
- iv) Em quarto lugar, o regime jurídico da Área previsto na Convenção com as alterações que lhe foram introduzidas pelo Acordo de 1994.

A partir de 16 de Novembro de 1994, com a entrada em vigor da Convenção, passou a vigorar o regime internacionalizado de aproveitamento dos recursos minerais existentes na Área previsto na Convenção das Nações Unidas com as alterações que lhe foram introduzidas pelo Acordo de 1994. As circunstâncias actuais conduzem à prevalência de facto desse regime jurídico-internacional, dado que a maioria dos Estados especialmente interessados no aproveitamento dos recursos minerais da Área é actualmente parte na Convenção.

A exploração que os Estados venham a fazer de recursos minerais marinhos está dependente de um conjunto de variáveis de natureza muito diversa. Por um lado, de variáveis de natureza jurídica, como as regulamentações ambientais e laborais que sejam aplicadas à exploração mineira terrestre e à exploração mineira marinha, tanto em termos de direito interno como de direito internacional. Por outro lado, variáveis de natureza não jurídica, como a efectiva escassez de minerais terrestres ou a constituição pelos Estados de reservas estratégicas de minerais, e a instabilidade política e social que ocorra em Estados em cujo território terrestre possam ser explorados recursos minerais.

Content: 1. Introduction. 2. Setting the field in accordance with three key ideas and three framework assumptions. 3. The distribution of maritime areas since 1945. 4. The contrast between the interests of individual states and community interests on the exploration and exploitation of marine mineral resources. 5. Legal regimes applicable to the sharing of the Eldorado. 6. Conclusions.

1. INTRODUCTION

The title chosen for the intervention in this International Conference, enthusiastically organized by Professor Marta Chantal Ribeiro, on the thirtieth anniversary of the signing of the United Nations Convention on the Law of the Sea, the protection of the marine environment and the future of the Law of the Sea, is representative of the questions the topic raises.

Are the conditions for the exploration and exploitation of marine mineral resources finally determined in such a way that the matter is going to be more than “virtual” and, also, more than merely the subject of “science fiction”?

The exploration and exploitation of marine minerals in the Area will finally justify all the hard work that was necessary to achieve the creation of an appropriate legal framework for the internationalization of the recovery of its mineral resources?

Will the completion of the extension of the continental shelves beyond two hundred nautical miles allow for the coexistence of these maritime areas subject to national jurisdiction with the Area or will it determine the progressive irrelevance of the maritime space internationalized for the exploration and exploitation of marine mineral resources?

Will the future of the Law of the Sea continue to be primarily dominated by individual and selfish interests of states or will it determine the strengthening of the community vision that underpinned the awareness that “the problems of ocean space are closely interrelated and must be considered as a whole” ⁽²⁾?

There are probably too many questions for such a short intervention, but they synthesize many of the uncertainties of the “field” in which the activities of exploration and exploitation of marine mineral resources will be pursued. One such uncertainty is, above all, the precise content that the law of the maritime delimitation of the continental shelf beyond 200 nautical miles will have. The emergence and consolidation of those rules will be the result of a practice that will begin to establish for the coming decades and to demonstrate effectively the reason for discussing the future of the Law of the Sea thirty years after the signature of the “Constitution of the Oceans”.

It follows that the answers that can be given to the questions raised earlier are fundamentally reflections and are not definitive solutions, since the exploration and exploitation of marine mineral resources cannot be addressed on the basis of a merely technical and neutral legal approach. In addition to the previous remark, it is also necessary to remember that the international legal regimes applicable to the exploration and exploita-

⁽²⁾ Preamble to the United Nations Convention on the Law of the Sea of 10 December 1982 (Convention). The text of the Convention, in the original English language and its translation into Portuguese, was published in the *Diário da República*, Series I, number 238/97, Supplement.

tion of marine mineral resources in the Area and on the continental shelf extending beyond two hundred nautical miles have not yet been tested or even applied, and they may change over the coming decades.

It should be remembered that access to the exploration and exploitation of land mineral resources was one of the main motivations for contacts between peoples and for colonial domination since the early Portuguese discoveries in the mid-fifteenth century. The availability of cheap and abundant minerals in recent centuries has been one of the reasons for the rise of Western powers, and their ownership has led to the destruction of numerous civilizations, particularly in the Americas. In the popular imagination terrestrial mineral rushes are associated with a great number of films made about the conquest of the American West. Those films show how the Western mind can be ruthless when acting with material gain as the sole motivation. South Africa, an African country with a very particular history, justifies many of its social specificities by the history of the discovery and exploitation of gold and diamonds from the second half of the nineteenth century, and, even today, these particular patterns of behaviour result in the extreme social constraints to which the use of mineral resources may lead, verging even on the threshold of “life and death”.

2. SETTING THE FIELD IN ACCORDANCE WITH THREE KEY IDEAS AND THREE FRAMEWORK ASSUMPTIONS

This intervention aims to provide an overview of the state of preparedness of the ‘field’ for the exploration and exploitation of marine mineral resources, particularly in the seabed beyond national jurisdiction, taking into consideration that the use of the marine minerals has been announced as being indispensable and has been poised to happen since the seventies of the last century ⁽³⁾.

⁽³⁾ See on this question, G. P. GLASBY, “Deep seabed mining: past failures and future prospects”, *Marine Georesources & Geotechnology*, vol. 20, n.º 2, pp. 161 to 176.

Until the sixties of the last century, the 'rushes' to the *Eldorado* were exclusively terrestrial. It was after that period that one of the most persistent myths linked to the "mistakes" of the human action on the seas appeared, namely the existence of enormous wealth on the seabed floor and its immediate availability to be used for the benefit of all.

Initially, during the sixties of the last century, with the prominence of the objective of creating the conditions to end existing inequalities among states, the resources of the submerged space beyond national jurisdiction were ready to be treated as a new *Eldorado* ⁽⁴⁾, insofar as little was known about them in scientific terms. The seabed floor was treated as a place of concentrated wealth, which had not been subject to national appropriation and could, therefore, be used to correct the profound inequalities amongst states, particularly the newly-independent states created as a result of the decolonization process. During a second phase, in the seventies and eighties, characterized by an ideological approach, the reduction of the perspectives of exploitation to its proper proportions ⁽⁵⁾ transformed the seabed into one of the fiercest battlegrounds of the opposition between North and South. During a third phase, from the nineties of the last century, when a pragmatic perspective started to prevail and market-based economic organization became virtually hegemonic, the potential use of these marine resources showed

⁽⁴⁾ René-Jean DUPY, *L'Océan partagé. Analyse d'une négociation* (Troisième Conférence des Nations Unies sur le Droit de la Mer), Pedone, Paris, 1979, pp. 137 to 140, called it 'trésor des abysses'.

⁽⁵⁾ In these terms it is understandable that, in the initial version of the Convention, the tax payments imposed on entities authorized to exploit the mineral resources could be considerable, as regarded by Denis Tytgat, "Aspects économiques, financiers et techniques de l'exploitation des grands fonds marins", *Annuaire Suisse de Droit International*, 1983, pp. 138 to 140. However, in 1975 already, Jonathan I. Charney, "The equitable sharing of revenues from seabed mining", in *Policy Issues in Ocean Law*, West Publishing Company, 1975, p. 67, stated that "if revenue sharing is limited to the hard minerals of the deep seabed, its impact would be merely a symbolic victory for the view that the resources of the seas beyond national jurisdiction are the common heritage of mankind."

that the practical implementation of activities on behalf of the International Community can be achieved only with the involvement of all interested States.

The *appetite* of States for the ownership of the oceans, with particular emphasis on the submerged space, was triggered by technological developments. For a long time the sea was not subject to human greed since it was not a space open to permanent occupation. For millennia, navigation and fishing were the only human uses for two thirds of the planet. International Law mirrored this reality, based on the principle of the freedom of the seas.

The possibility of extracting oil offshore was of fundamental importance in relation to a change of perspective on the economic exploration and exploitation of marine resources. It was after those technological advances, from the late fifties that the hypothesis of exploring the mineral deposits on the bottom of the oceans, particularly the metals contained in the manganese nodules began to be considered.

Despite the surveys conducted up to that time, only a very small part of the submerged maritime spaces were covered. But even the early estimates began to mention the existence of enormous reserves of marine minerals. This was based on incomplete data which created a myth of the existence of an infinite wealth, ready to be used, reminiscent of the mythical *Eldorado*. Similarly, based on fragmentary data, the idea of an estate in abeyance that needed only to be harvested started. Resultant discussions also became the basis for the creation, in parallel, of one of the most interesting concepts of twentieth century International Law, the concept of the *common heritage of mankind*.

The preparation of the 'field' for the sharing of the *Eldorado* can be understood by considering three key ideas:

- i) Firstly, there is a long process of division of the maritime spaces amongst the states that started in 1945 and is not yet completed. This process of the sharing of maritime spaces will, predictably,

only come to an end, in accordance with the assumptions of the Law of the Sea in force, when the Commission on the Limits of the Continental Shelf (CLCS) has finished the consideration of all submissions on the extension of the continental shelves beyond 200 hundred nautical miles ⁽⁶⁾.

- ii) Secondly, there is the difference between the perspectives underlying the international legal regimes that underpin the exploration and exploitation of marine mineral resources both in and out of the space subject to national jurisdiction. This contraposition is imposed by the confrontation between two concepts and the virtually opposite paradigms on which they are based, namely the permanent sovereignty over natural resources, on the one hand, and the common heritage of humanity, on the other hand.
- iii) Thirdly, there is the express intention of the states to create legal regimes (domestic and international) applicable to the exploration and exploitation of the marine mineral resources in the Area in order to ensure the necessary security for their effective utilization.

Before starting to develop these three key ideas, it is necessary to clarify three framework assumptions:

- i) Firstly, the concept of “marine mineral resources” which is used refers to subparagraph a) of Article 133 ⁽⁷⁾, according to

⁽⁶⁾ The website of the United Nations (Division for Ocean Affairs and the Law of the Sea) currently makes reference: i) to 61 submissions, submitted between 20 December 2001 and 14 June 2012 (“Submissions, through the Secretary-General of the United Nations, to the Commission on Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United States Convention on the Law of the Sea of 10 December 1982”); and ii) to 45 pieces of preliminary information (“Preliminary information indicative of the outer limits of the continental shelf beyond 200 nautical miles”).

⁽⁷⁾ The articles cited without any other reference correspond to provisions of the Convention.

which: “resources’ means all solid, liquid or gaseous mineral resources (...), including polymetallic nodules”⁽⁸⁾. Accordingly, the following analysis will not cover either the living marine resources or the genetic marine resources⁽⁹⁾.

- ii) Secondly, the use that the states will make of marine mineral resources⁽¹⁰⁾ is dependent of a broad set of variables. On the one hand, there are the legal variables, such as the environ-

⁽⁸⁾ In the *Principles of a Resource/Reserve Classification for Minerals*, published by the U.S. Bureau of Mines and U.S. Geological Survey, in 1980, “resource” is defined as, p. 1, “A concentration of naturally occurring solid, liquid, or gaseous material in or on the Earth’s crust in such form and amount that economic extraction of a commodity from the concentration is currently or potentially feasible.”

⁽⁹⁾ On the question, Pierre-François MERCURE, “Le rejet du concept de patrimoine commun de l’humanité afin d’assurer la gestion de la diversité biologique”, *Canadian Yearbook of International Law*, vol. XXXIII, 1995, pp. 292 to 302; William T. BURKE, “State practice, new ocean uses, and ocean governance under UNCLOS”, in Thomas A. Mensah (editor), *Ocean Governance: Strategies and Approaches for the 21st century*, The Law of the Sea Institute, William S. Richardson School of Law, University of Hawaii, Honolulu, 1996, pp. 229 to 233; and Rüdiger WOLFRUM e Nele MATZ, “The interplay of the United Nations Convention on the Law of the Sea and the Convention on Biological Diversity”, *Max Planck Yearbook of United Nations Law*, vol. 4, 2000, pp. 454 to 459.

⁽¹⁰⁾ The question of the effective exploitation of marine mineral resources is summarized as follows by Steven D. SCOTT, *Marine Minerals: their occurrences, exploration and exploitation*, 2011: “Earth’s oceans and seas, covering 71% of the planet, harbor a myriad of mineral resources both near-shore and at great depths. At present, the only significant commercial exploitation is in shallow water and on beaches for aggregates, diamonds, tin and salt together with minor recovery of heavy minerals containing chromium, rare earths, thorium, titanium and zirconium; lime from coral and shells; and some artisanal recovery of placer gold. There are opportunities for expanding all these activities. The deep sea holds resources up to several thousand meters water depth of copper, nickel and cobalt in manganese nodules; cobalt, nickel, platinum group metals and rare earth elements in ferromanganese crusts on seamounts; copper, zinc, lead, silver and gold in seafloor massive sulfides (SMS) and seafloor sedimentary sulfides (SSS); and recently discovered rare earth elements with Yttrium in deep-sea mud. Except in a few cases where on-land resources are waning such as for phosphate, ocean mining will not replace mining on land but will provide an additional source of raw materials required for rapidly expanding economies in the

mental and labour regulations applicable to land mining and marine mining, both in terms of internal law and International Law ⁽¹¹⁾. On the other hand, there are the non-legal variables, such as the actual scarcity of land minerals ⁽¹²⁾ or the constitution by the states of strategic reserves of minerals, and the political and social instability that may occur in the states where land exploitation of mineral resources can be done.

- iii) Thirdly, the legal regimes for the exploitation of mineral resources are heavily conditioned by political concepts and paradigms of development commonly adopted in a particular historical epoch. This conditioning is particularly evident with regard to the exploration and exploitation of the mineral resources of the Area, as can be seen by the changes introduced by the Agreement on Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (Agreement of 1994) ⁽¹³⁾ to Part XI of the Convention.

We will start by assessing how the preparation of the “ground” for sharing the *Eldorado* is the result of a long process of the allocation of maritime spaces. The intention underlying the various phases of this process seems to be a demonstration of the activities of the states in

developing world” (available on <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=06107119>).

⁽¹¹⁾ A recent example is the Code for Environmental Management of Marine Mining, as amended on 21 August 2009, prepared by the International Marine Minerals Society and disclosed by the Legal and Technical Commission of the International Sea-bed Authority (ISBA/16/LTC/2).

⁽¹²⁾ About this question, Stephan E. KESLER, see “Mineral supply and demand in the 21st century”, in Joseph A. Briskey and Klaus J. Schultz (editors), *Proceedings for a Workshop on Deposit Modelling, Mineral Resource Assessment, and Their Role in Sustainable Development*, USGS, 2007, pp. 55 to 62 (available on <http://pubs.usgs.gov/circ/2007/1294>).

⁽¹³⁾ *Diário da República*, Series I, n.º 238/97, Supplement, pp. 5486 (87) to 5486 (95) and pp. 5486 (183) to 5486 (192).

pursuit of their individual interests, despite having, at the same time, designated the Area as a maritime space subject to an internationalized legal status.

3. THE DISTRIBUTION OF MARITIME AREAS SINCE 1945

The allocation process of maritime areas amongst the states since 1945 seems to be the direct result of the intention of individual appropriation by coastal states of the largest number of the most diverse possible types of natural resources.

Until the end of World War II, the activities of the states on the sea were organized in accordance with a relatively simple division of space. On the one hand, there was a set of relatively small maritime spaces, subject to the sovereignty or jurisdiction of the coastal state (territorial sea, internal waters and, in some cases, contiguous zones) and, on the other hand, there was a very large space of sea open to all states (the high seas). The terms in which the high seas were open to access and use by all states, whether or not coastal, are perfectly synthesized in the concept of the freedom of the high seas, and in the way it still continues to be governed by Article 87.

The following stages in the ongoing process of allocation of maritime spaces should be highlighted:

- i) The claims relative to the continental shelf, which had as their starting point the Truman Proclamation in 1945 (United States of America) and the 1958 Convention of Geneva on the Continental Shelf as turning point for the consolidation of the concept;
- ii) The prediction of new maritime areas subject to the sovereignty or national jurisdiction under the long process of the drafting the Convention, the creation of archipelagic waters (Part IV, articles 46 to 54), and the emergence of the exclusive economic zone, which had already obtained a customary status when the

Convention was signed, taking into consideration the claim of this maritime space by most coastal States during the second half of the seventies of the last century (Part V, articles 55 to 75);

- iii) The possibility of the continental shelf being extended beyond 200 nautical miles, according to a submission to be presented by coastal states in accordance with Article 76 to an international body under the Convention: the Commission on the Limits of the Continental Shelf (Annex II of the Convention); and
- iv) The application of an internationalized regime to space of the Area defined as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction" (subparagraph 1 of paragraph 1 of article 1).

Thirty years after the start of the signing of the Convention, the distribution of maritime spaces presents three situations of uncertainty which are particularly relevant:

- i) The maintenance of a significant number of undefined maritime boundaries amongst coastal states, notably as a result of the need for the delimitation of their respective exclusive economic zones and continental shelf up to the 200 nautical miles;
- ii) The future need to delimitate the continental shelves beyond 200 nautical miles between coastal states, which can take place only after the assessment of the submissions have been concluded by the Commission on the Limits of the Continental Shelf and accepted by coastal States; and
- iii) The uncertainty regarding the effective size of the Area, to the extent that its limits are dependent on the outer limits of the continental shelves beyond 200 nautical miles to be fixed by the Commission on the Limits of the Continental Shelf and accepted by coastal states.

The persistence of areas of uncertainty amongst the coastal states because of the exclusive economic zones, the continental shelf up to 200

nautical miles, and the imminence of the accumulation of new situations of uncertainty that will arise after the fixing of the continental shelf beyond 200 nautical miles will generate a set of uncertainties that could have negative consequences at the level of political and diplomatic relations between states.

At the level of the exploration and exploitation of marine mineral resources by coastal states, the uncertainties relating to the delimitation of maritime spaces can lead to a paralysis of potential exploitation, taking into account that the prospecting, exploration, and exploitation of shared resources can take place only when there is express authorization from the states in whose continental shelves the mineral resources are distributed (Article 77).

4. THE CONTRAST BETWEEN THE INTERESTS OF INDIVIDUAL STATES AND COMMUNITY INTERESTS ON THE EXPLORATION AND EXPLOITATION OF MARINE MINERAL RESOURCES

The Convention, adopting the concept of *package deal*, sought to strike a balance between the interests of individual states and the interests of the International Community. The intention to adopt a comprehensive and balanced approach to the interests of coastal states, of flag states and of the International Community is manifest in the preamble of the Convention.

Specifically, regarding the exploration and exploitation of marine mineral resources the opposition between the individual interests of states and the interests of the International Community is crucial to an understanding of how their use can be achieved.

The starting point for the international legal regime for the exploration and exploitation of marine mineral resources in maritime areas subject to the sovereignty or the jurisdiction of coastal States is the principle of

permanent sovereignty over natural resources, reflected in Article 193 as “sovereign right to exploit their natural resources”. Accordingly, the articles of the Parts of the Convention dedicated to maritime areas subject to the sovereignty or jurisdiction of coastal States provide that States have:

- i) Sovereignty for the exploration and exploitation of marine mineral resources that may be found within their internal waters, territorial sea and, in the case of archipelagic states, in their archipelagic waters (Article 2);
- ii) Sovereign rights with regard to exploration and exploitation of marine mineral resources that can be found in their exclusive economic zones (subparagraph a) of paragraph 1 of Article 56);
- iii) Sovereign rights with regard to the exploration and exploitation of marine mineral resources that can be found on their continental shelves up to 200 nautical miles (paragraph 1 of Article 77);
- iv) Sovereign rights with regard to the exploration and exploitation of marine mineral resources that can be found on the continental shelf beyond 200 nautical miles, conditional upon payments and contributions in kind as provided for in Article 82.

Coastal states cannot, however, interpret the “sovereignty” and “sovereign rights” granted to them for the exploration and exploitation of mineral resources from a perspective of pursuing individual interests if they intend to act strictly in accordance with the principle of good faith (Article 300) in the fulfilment of the obligations under the Convention. Article 192, partially quoted before, expressly provides that the sovereign use of natural resources must be done “pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.”

In this context it is relevant to consider that the Advisory Opinion on the Responsibilities and Obligations of States Sponsoring Persons

and Entities with respect to Activities in the Area, from 1 February 2011, from the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, assigned customary law nature to the obligation to carry out environmental impact assessments.

In different terms, the starting point for the international legal regime for the exploration and exploitation of marine mineral resources in submersed space beyond the jurisdiction of coastal states or Area is the innovative concept of the common heritage of mankind.

The qualification of the Area as the common heritage of mankind is the counterpoint to the concept of the freedom of the high seas and the subjection of marine spaces to national jurisdiction. It follows that the submerged marine space is subject to the jurisdiction of states, within their continental shelves, or it is part of the Area. The reference to “common heritage of mankind” is, therefore, equivalent to the internationalization of the ocean space of the Area for the purpose of the exploration and exploitation of its mineral resources.

The use of the common heritage of mankind to qualify the Area and its mineral resources can be assessed using two different approaches. On the one hand, in spatial terms, it means that we are in the presence of a submerged space located beyond national jurisdiction zones, where there is an international legal regime distinct from that which is normally applied to the high seas. On the other hand, in functional terms, the qualification of this maritime space as the common heritage of humanity means that it is an internationalized space with the characteristics specified in the Convention for the exploitation of mineral resources.

Understanding the legal qualification of the Area as the common heritage of mankind requires that the following structural elements of the concept are considered:

- i) The creation of an international regime aiming at the equitable exploration and exploitation of the natural resources of the

Area (comprising: a) at the level of primary law, Part XI of the Convention, Annexes III and IV of the Convention and Resolution II of Annex I of the Final Act, with the changes made to them by the Agreement of 1994; and b) at the level of secondary legislation, the acts produced by the Preparatory Commission for the International Seabed Authority and the International Tribunal for the Law of the Sea, between 1983 and 1994, under the regime of the pioneer investors, and the International Seabed Authority after 1994. As a result of the creation and entry into force of this legal order, State Parties to the Convention agreed to a limitation of its legislative power and its capacity to engage in international commitments in relation to matters related to the Area. The equitable exploration and exploitation of resources [subparagraphs b), e), f), h) and j) of Article 150] implies that its organization should be structured and based on five fundamental principles: a) the orderly, safe, and rational management of the existing mineral resources; b) the production of minerals needed to ensure market supply; c) just and stable prices remunerative to producers and fair to consumers; d) the protection of developing states in relation to price changes; and e) non-discrimination against minerals extracted from the Area and the commodities produced from these minerals.

- ii) The creation of an international regime for the benefit of all countries, especially of developing States (paragraph i) of Article 150 and 140).
- iii) The existence of an International Seabed Authority to organize, conduct, and control activities in the Area (Articles 156 to 185 and Annex IV of the Convention related to the status of the Enterprise, as amended by the Agreement of 1994). Although there were no guidelines in this matter, the institutional model of the International Seabed Authority, with the changes that were introduced by the Agreement of 1994, is, essentially, with some specificities, an international organization.

- iv) The prohibition of claims or the exercise of sovereignty or sovereignty rights over any part of the Area (Article 137).
- v) The prevention of the monopolization of activities in the Area in order to avoid the possibility of states, which have the necessary technology for the exploration and exploitation of the space submerged beyond national jurisdiction, absorbing all the available spaces suitable for the use of the mineral resources of the Area (subparagraph g) of Article 150 and point *ii*) of subparagraph c) of Article 6 of Annex III).
- vi) The transfer of technology, conceived as an obligation to cooperate, imposed on entities that are entitled to explore and exploit the submerged space beyond national jurisdiction and their state sponsors, so that they collaborate in obtaining mining technology “in commercial terms and conditions fair and reasonable, consistent with the effective protection of industrial property rights” (Article 144 and Section 5 of the Agreement of 1994).
- vii) The conduct of States in the Area and in relation to the maritime internationalized space shall be for the maintenance of peace and security and for the promotion of international cooperation, particularly with regard to scientific research and the transfer of technology (Article 138, paragraph 3 of Article 143, Articles 256 and 273 and paragraph 3 of Section 5 of the Agreement of 1994).
- viii) The use of the Area exclusively for peaceful purposes (Article 141).
- ix) The pursuit of activities of exploration and exploitation of mineral resources in the Area carried out respecting the protection of the marine environment, with the creation of secondary legislation on the matter by the International Seabed Authority (Articles 145, 209, 214, 215, and subparagraph f) of paragraph 2 of Article 17 of Annex III and subparagraphs g) and k) of paragraph 5 and paragraph 7 Section I of the Agreement of 1994), to be applied in conjunction with the national laws and regulations adopted to prevent, reduce, and control pollution of the marine environment as a result of

activities in the Area (paragraph 2 of Article 209 and Article 214). The object of the legislation of the International Seabed Authority should focus on “drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other related devices” ⁽¹⁴⁾.

- x) The pursuit of the activities conducted in the Area in accordance with the effective protection of human life (Article 146).
- xi) The activities of exploration and exploitation of mineral resources of the Area conducted with due regard to the rights and legitimate interests of coastal states and harmonized with other activities in the Area or under the freedom of the seas (Articles 142 and 147).
- xii) The maintenance of the legal status of the superjacent waters to the Area and of the airspace above those waters (Article 135).

The common heritage of mankind is an excellent example of the dialectic between the maintenance of the individual interests of states as the basic principle of acting on the sea and the attempt to overcome this approach through activities that safeguard collective interests. The international regime currently applicable to the submerged spaces beyond national jurisdiction is demonstrative of that opposition of interests, and it has turned out to be organized based on the separation of the property regime and the regime for the exploration and exploitation of its resources.

5. LEGAL REGIMES APPLICABLE TO THE SHARING OF THE *ELDORADO*

The exploration and exploitation of marine mineral resources having been something merely “potential” until the first decade of the twenty-first century, even considered to be in the arena of “science fic-

⁽¹⁴⁾ About this question the considerations of the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea in §§ 82 a 97, 136 to 150 and 227 to 241 of the Advisory Opinion of 1 February 2011 are relevant.

tion”, it is particularly significant to note the attention that states have devoted to the creation of legal regimes applicable to the allocation of the *Eldorado* during the past decades. It is possible to indicate four different legal regimes specifically regarding the submerged space beyond national jurisdiction ⁽¹⁵⁾.

Firstly, the legal regime of the initial version of Part XI of the Convention and its annexes, which was never in force as such, should be referred to.

Secondly, it is necessary to take into consideration the unilateral national regimes and their coordination through the Reciprocating States Regime, as an alternative legal regime to the international regime planned in the initial version of the Convention created by some developed states.

National laws applicable to the exploration and exploitation of the seabed were created by the following countries, the United States of America (1980, amended in 2000) ⁽¹⁶⁾, the Federal Republic of Germany (1980, amended in 1982), the United Kingdom and France in 1981, Japan in 1982 and Italy in 1985 ⁽¹⁷⁾.

⁽¹⁵⁾ On this question, for further developments, see Fernando LOUREIRO BASTOS, *A internacionalização dos recursos naturais marinhos... (The internationalization of marine natural resources...)*, Lisboa, 2005, pp. 798 to 818.

⁽¹⁶⁾ Deep Seabed Mineral Resources Act of 28 August 28 1980 was assumed as an interim regulation until an international regime was not in force. The Deep Seabed Mineral Resources Act of 28 June 1980, as amended on 1 July 2000, can be found in E. D. BROWN, *Sea-Bed Energy and Minerals: the International Legal Regime*, vol. 3, Selected Documents, Martinus Nijhoff Publishers, the Hague — Boston — London, 2001, pp. 313 to 351. On this question, see Robert L. BROOKE, “The current status of deep seabed mining”, *Virginia Journal of International Law*, vol. 24, n.º 2, 1984, pp. 382 to 389.

⁽¹⁷⁾ Furthermore, legislation with similar objectives was also approved by the Union of Soviet Socialist Republics in 1982, which did not integrate the coordinate system of the six states mentioned before. A list of those national laws, updated to October 2000, can be found in E. D. BROWN, *Sea-Bed Energy and Minerals: the International Legal Regime*, vol. 2, Sea-Bed Mining, Martinus Nijhoff Publishers, the Hague — Boston — London, 2001, p. 187, note 1.

As a result of the issuing of these unilateral laws, with the aim of resolving overlaps between the locations selected for mining, the states involved had to complete an extraordinarily complex set of international agreements on the issue, namely: i) the *Agreement Concerning Interim Arrangements Relating to Polymetallic Nodules of Deep Seabed*, signed by the United Kingdom, Germany, France and the United States of America, with entry into force on 2 September; ii) the *Provisional Understanding Regarding Deep Seabed Matters*, signed at Geneva on 3 August 1984, by eight countries, Belgium, the United States of America, France, Holland, Italy, Japan, Germany and the United Kingdom; iii) the *modus vivendi*, which aimed to harmonize the areas claimed by the various interested parties, which acted both under the Reciprocating States Regime and those participating in the regime of the pioneer investors, despite the incompatibility of the respective schemes, the *Arusha Understanding* of 7 February 1986, and the *New York Understanding* of 5 September of the same year (designed to solve the problems between France and the Union of Soviet Socialist Republics and between Japan and the Union of Soviet Socialist Republics), and the *Agreement on the Resolution of Practical Problems with respect to Deep Sea-bed Mining Areas*, or "Midnight Agreement" of 14 August 1987, between Belgium, Canada, Italy, the Netherlands and the Union of Soviet Socialist Republics (which aimed to solve the existing problems between the Union of Soviet Socialist Republics and the consortia recognized under national laws of the United States of America, the United Kingdom and the Federal Republic of Germany); iv) the exchange of notes and the agreement to preserve the confidentiality of data relating to the seabed sites, dated 5 December 1986, which extended the application of the *modus vivendi* to the United States of America, the Federal Republic of Germany and the United Kingdom; and v) the international agreement between the states participating in the Reciprocating States Regime and China, on 22 February 1991, with the aim of avoiding duplication of mining sites, *The Memorandum of Understanding Between Canada, Germany, Italy, the Netherlands, the United Kingdom and the United States, on the one hand, and China, on the other hand, on the Avoidance of Overlaps and Conflicts Relating to Deep Seabed Areas*.

Thirdly, the regime of pioneer investors (Preparatory Investment Protection scheme — PIP), prepared by the Preparatory Commission for the International Seabed Authority from 1983, in accordance with which the entities that had made an investment of over 30 million dollars in the Area could acquire the status of “pioneer investor”.

There were three categories of pioneer investors covered by this regime: i) France, India, Japan and the Union of Soviet Socialist Republics, or public or private companies with the nationality or the effective control of these States; ii) the four consortia that grouped private companies of the developed states, with investments made before 1 January 1983; and iii) developing states, or public or private companies with their nationality, who had made investments in the Area until 1 January 1985 (which allowed the inclusion of China, some States from Eastern Europe, and Cuba).

And, finally and fourthly, the legal regime provided for the Area in the Convention with the changes that were introduced by the Agreement of 1994.

It should be noted that, until the entry into force of the Convention, with the changes that were introduced by the Agreement of 1994, the acceptance of the qualification of the seabed beyond national jurisdiction as the common heritage of mankind did not result in the legal prohibition of the unilateral exploitation of the maritime space in question ⁽¹⁸⁾.

From 16 November 1994, however, owing to the entry into force of the Convention, the reference to a international legal regime for the activities in the Area, applicable to the exploration and exploitation of its

⁽¹⁸⁾ In this sense, Rüdiger WOLFRUM, ‘The Principle of the Common Heritage of Mankind’, *Zeitschrift für Recht und ausländisches öffentliches Völkerrecht*, vol. 43, 1983, p. 335; and Lee GOLDIE, “Title and use (and usufruct) — an ancient distinction too often forgotten”, *American Journal of International Law*, vol. 79, n.º 3, 1985, pp. 712 to 714.

mineral resources, refers to the one contained in the Convention, as amended by the Agreement of 1994, because it is the one subscribed to by the majority of states of the International Community, in particular by the states that are potentially interested in their exploration and exploitation.

Consequently, it is not a proper reading of the international dynamics to affirm that the proposed internationalization regime of the submerged space beyond national jurisdiction set out in the initial version of the Convention has resulted in a failure. Rather the opposite. Despite missing the creation of a certain type of communitarisation of natural resources, the Convention, with the changes that were introduced by the Agreement of 1994, came to create an innovative legal regime for the space submerged beyond national jurisdiction, with characteristics very different from that agreement previously existing under the regime of freedom of the high seas.

The application of the international legal regime provided under the Convention, as amended by the Agreement of 1994, to developed activities related to the exploration and exploitation of natural marine resources, however, raises a very important legal question, taking into account the principle of the relativity of treaties. Is it possible to enforce compliance with this international legal regime regulation against states that are not parties to the Convention but which have the technology necessary for conducting the exploration and exploitation of marine mineral resources?

It is a legal problem limited to the United States of America, because this country has not yet ratified the Convention but signed the Agreement of 1994 on 29 July 1994⁽¹⁹⁾ and could, therefore, claim to act under the aforementioned *modus vivendi*.

⁽¹⁹⁾ This means that, between 16 November 1994 and 28 July 1996, the Agreement of 1994 provisionally produced effects on the United States of America, as the communication of no provisional application under paragraph *b)* of paragraph 1 of the Article 7 of the Agreement of 1994 has not been exercised.

It should be noted that, in 2011, the United States of America continued to publicize the understanding that the international commitments part of the *modus vivendi* are in force and binding on the other Contracting Parties ⁽²⁰⁾.

One possible answer is the imposition on the United States of America of the international legal regime of the Convention owing to its customary law nature. Another approach that seems a more convincing analysis of the issue is based on the law of treaties. In this case, the key question is whether states that are both parties to the Convention and the *modus vivendi* are able to fulfil their obligations under each of these legal regimes, i.e. whether the international commitments in question can be regarded as compatible in relation to each other.

The answer to the question of the compatibility of those two international commitments should be negative for two reasons, on the one hand, given the assumptions upon which was drafted in 1980 and revised in 2000, the United States of America legislation on the subject ignores the existence of an international legal regime in force to the extent that it continues to substantiate the use of mineral resources in the freedom of the seas, on the other hand, to the extent that, in violation of paragraph 2 of Article 311, the legal position of third state parties to the

⁽²⁰⁾ In this sense see the compendium of official origin published by the United States Department of State, *Treaties in Force. A List of Treaties and Other International Agreements of the United States in force on January 1, 2011*, p. 457, which states that: *i)* France, Germany (Federal Republic) and the United Kingdom are parties to the *Agreement Concerning interim arrangements relating to polymetallic nodules of the deep sea bed*, from 2 September 1982; *ii)* Belgium, France, Germany (Federal Republic), Italy, Japan, Netherlands and the United Kingdom are parties of the of the *Provisional understanding regarding deep seabed matters, with memorandum of implementation*, joint record, and related exchanges of notes, from 3 August 1984; and *iii)* Canada, the Czech Republic, Germany, Italy, Poland, the Union of Soviet Socialist Republics and the United Kingdom are parties to the *Memorandum of understanding on the avoidance of overlaps and conflicts relating to deep sea-bed areas*, with annexes from 20 August 1991.

Convention might be affected in relation to a potential exploitation of these mineral resources in the Area.

This means that, despite the reciprocal obligation to respect international treaties by third states, the states participating in the *modus vivendi* must choose, ultimately, between the international commitments to which they are obliged, with the corresponding consequences in terms of international responsibility, because their simultaneous application is incompatible.

It follows that the activities of the United States of America or entities in their nationality, even based on the freedom of the seas, can hardly be carried out in a strictly unilateral way, particularly if they want to avoid conflict situations that can lead to threats to international peace and security ⁽²¹⁾.

Although the United States of America is a third state in relation to the Convention, it is obliged to respect the existence of the international legal regime contained in Part XI. In addition, as a result of the provisional application of the Agreement of 1994, this state has an actual knowledge of the rights and obligations that this legal regime entails for the state parties.

⁽²¹⁾ Accordingly, paragraph (4) of paragraph (b) of Section 102, 30 USC 1412, provides that "in the event of interference with the exploration or commercial recovery activities of the licensee or permittee by nationals of other States, the Secretary of State shall use all peaceful means to resolve the controversy by negotiation, conciliation, arbitration, or resort to the tribunals agreed". Likewise, in extreme situations, in accordance with subparagraph (B) of paragraph 2 of Section 106, 30 USC 1416, "[t]he Administrator may (...) (B) suspend or modify any particular activities under license or permit, if the President determines such suspension or modification that is necessary: (i) to avoid any conflict with any international obligation of the United States established by any treaty or convention in force with respect to the United States, or (ii) to avoid any situation which may reasonably be expected to lead to a breach of international peace and security involving armed conflict".

Accordingly, the pursuit of activities of exploration and exploitation of mineral resources in submerged space beyond national jurisdiction by the United States of America, under its law, seems possible in practice only if some sort of agreement is reached with the states which are party to the Convention. Otherwise, given the location of the resources in question, the security of investments and the safeguarding of exploration and exploitation can be done only by the use of permanent means located in that maritime space, not to proceed with the operation as such but to ensure the safety of the ships which will carry out the exploitation of the natural resources in question. That could be described as an attempt to appropriate a zone of the high seas in violation of the international legal regime of the freedom of the seas.

Accordingly, the present circumstances lead to a *de facto* prevalence of the international legal regime of the Convention ⁽²²⁾, not because the regulation under Part XI of the Convention can be regarded as *ius cogens*, customary law, or is able to produce conventional effects in relation to third states, but because, notwithstanding the strictly conventional nature of its provisions, the majority of states especially interested in the use of mineral resources of the Area are currently parties to the Convention.

6. CONCLUSIONS

Firstly, states are still involved in the distribution of marine spaces that started in 1945 and will end only when the Commission on the Limits of the Continental Shelf has completed the consideration of all

⁽²²⁾ A similar position can be found in Tullio TREVES, 'Codification du Droit International des Etats et pratique dans le Droit de la Mer', Recueil des Cours, vol. 223, 1990, p. 278, stating in 1990 that "[l]a simple évocation des questions et de leur ramifications fait ressortir qu'il serait inutile de se prononcer à leur propos maintenant, sans connaître des données concrètes du problème tel qu'il pourrait se poser à un moment donné. Les préférences politiques finiraient par se révéler décisives pour opter pour l'une ou l'autre solution."

of the submissions concerning the extension of the continental shelf beyond the 200 nautical miles.

It follows that the space where the sharing of the *Eldorado* will be conducted is faced with a set of uncertainties: i) the maintenance of a significant number of undefined maritime borders amongst coastal states; ii) the future need to delimitate the continental shelf beyond 200 nautical miles amongst coastal states; and iii) the actual size of the Area.

Uncertainties relating to the delimitation of maritime spaces can lead to a partial paralysis of the exploration and exploitation of marine mineral resources, taking into account that the prospecting, exploration, and exploitation of shared resources tend to take place only when there is an explicit authorization by those states in whose continental shelves the mineral resources are distributed.

Secondly, the international legal regimes for the exploration and exploitation of marine mineral resources applicable inside and outside marine areas subject to national jurisdiction are organized according with two distinct concepts: i) the permanent sovereignty over natural resources in areas subject to the sovereignty or national jurisdiction; and ii) the common heritage of mankind in the Area.

The qualification of the Area as the common heritage of mankind is the counterpoint to the freedom of the high seas and the subjection of marine spaces to national jurisdiction.

The reference to "the common heritage of mankind" is equivalent to the *internationalization of the maritime space of the Area for the purpose of exploiting its mineral resources*.

Thirdly, states have sought to avoid gaps in the legal regulation governing the exploration and exploitation of marine mineral resources through the creation, since the eighties of the last century, of a number of legal regimes (domestic and international) applicable to the use of the space submerged beyond national jurisdiction.

From 16 November 1994, with the entry into force of the Convention, an internationalized regime for the use of the mineral resources of the Area became effective. The present circumstances lead to the current prevalence of the international legal regime of the Convention, because the majority of the states especially interested in the use of mineral resources of the Area is currently party to the Convention.

Fourthly, coastal states cannot interpret “sovereignty” and “sovereign rights” granted to them for the exploitation of mineral resources in the submerged areas under their sovereignty or jurisdiction using the perspective of the pursuing of strictly individual interests, taking into consideration that Article 193 expressly provides that the sovereign use of natural resources must be done “pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment”.

Fifthly, the exploration and exploitation that states will make of marine mineral resources are dependent on: i) legal variables, such as the environmental and labour regulations that are applied to land mining and marine mining, both in terms of domestic law and international law; and ii) variables of a non-legal nature, as the actual scarcity of any mineral on land or the constitution by states of strategic reserves of minerals, and the political and social instability that occurs in states in which land mineral resources can be exploited.

Sixthly, the dynamics of the Law of the Sea allow the assumption that the applicable international legal regimes for the exploration and exploitation of marine mineral resources in the Area and the extended continental shelves beyond 200 nautical miles will be adapted to the changing needs of future exploration and exploitation of marine mineral resources.

THE SETTLEMENT OF DISPUTES CONCERNING THE PROTECTION OF THE MARINE ENVIRONMENT AND THE EXPLOITATION OF MARINE RESOURCES: THE PRACTICE OF ITLOS

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Abstract: *The rules on the protection of the environment and on the living resources of the seas are connected as stated by the ITLOS in the Southern Bluefin Tuna Order. The rules concerning the settlement of disputes are, however, different as they reflect the particular importance given to the role of the coastal State as regards fisheries. The compulsory mechanism for the judicial or arbitral settlement of disputes set out in UNCLOS has in article 297, paragraph 2, an important limitation that excludes most disputes concerning fisheries in the exclusive economic zone. The exception concerning disputes on pollution violations in article 297, para 1 (c) is much less radical. Disputes concerning fisheries and the protection of the marine environment on the high seas do not encounter limitations. The relevance of the protection of the marine environment in the settlement of disputes is enhanced by article 290, para 1 providing that provisional measures may be requested in order to prevent serious harm to the marine environment. The proceedings for prompt release of vessels of article 292 may be seen, when applied in case of alleged violations of article 73, para 2, as partial compensation given to the fishing interests for the almost complete lack of possibility of submitting to international adjudication the merits of the detention.*

Judicial practice based on UNCLOS is more abundant and more significant as regards the protection of the marine environment than it is as regards fisheries. Fishing in the EEZ has been seen through the lens of prompt release proceedings. Within these proceedings IUU fishing practices have come to judicial notice but have not been the subject-matter of decisions. Disputes concerning fishing on the high seas have been submitted twice to adjudication, without, however, reaching judgments on the merits. As regards disputes concerning the protection of the marine environment, ITLOS has had the opportunity to decide on

issues involving general principles of international environmental law such as the duty to cooperate, and has adopted the distinction between procedural and substantive obligations. The Advisory Opinion of 2011 of the ITLOS Seabed Disputes Chamber has made very relevant statements on the obligation to conduct environmental impact assessments and, developing previous jurisprudence of the Tribunal, on the precautionary principle. The orders prescribing provisional measures have introduced in cases concerning the protection of the marine environment a proactive approach prescribing as a provisional measure the conduct of cooperative activities. This in the Land reclamation case has brought the parties to agree on the settlement of the dispute.

1. INTRODUCTION: CONNECTION AND OPPOSITION BETWEEN THE PROTECTION OF THE MARINE ENVIRONMENT AND THE EXPLOITATION OF MARINE RESOURCES

To consider together the settlement of disputes under the UN Convention on the Law of the Sea (UNCLOS) as regards the exploitation of marine resources and as regards the protection of the marine environment may seem an arbitrary choice, as the two subjects are different and treated differently, from the point of view of the settlement of disputes, in the Convention. Still, the two subjects are not unconnected and the very difference of the dispute settlement regimes is a reflection of the different substantive rules concerning them.

A clear connection between the two subjects concerns the rules on living resources and those on the protection of the marine environment. In fact, the ITLOS in its 1999 Order on the *Southern Bluefin Tuna* cases stated that:

the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment ⁽¹⁾.

This explains why in a case, as the *Southern Bluefin Tuna* one, concerning mostly fisheries, interesting arguments drawn from international

⁽¹⁾ Order of 27 August 1999, ITLOS Reports 1999, p. 280, at paragraph 70.

environmental law have been developed by the Tribunal. This is also a consequence of the approach combining protection of living resources and of the marine environment followed by the 1995 UN Fish Stocks Agreement, which, while not applicable to the case, the Tribunal did not ignore ⁽²⁾.

The above mentioned connection is based on the circumstance that living resources, such as fish stocks, are part of the natural environment and deserve to be protected. Still, it is undeniable that provisions on these resources, even when aimed at securing their conservation, have as their real purpose to ensure their sustainable exploitation for human and animal nutrition.

Provisions like article 194, para 5, of UNCLOS stating that the measures taken for the protection of the marine environment from pollution

shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life

are the exception. And it seems significant that article 294, para 5, is included in Part XII, on the preservation of the marine environment, and not in Parts V or VII where fisheries are dealt with.

The different purposes of the two sets of rules entail that the protection of the interests of the coastal State is paramount as regards the regime of fisheries, while it is less important, although certainly not unimportant, with respect to the protection of the marine environment. This difference is reflected in the rules on the settlement of disputes, as well as in the result of the application of such rules, namely in the decisions of the competent courts and tribunals, mostly of the ITLOS.

⁽²⁾ Separate opinion of Judge Treves, ITLOS Reports 1999, p. 316, at paragraph 11.

2. THE DISPUTE-SETTLEMENT MECHANISM APPLICABLE UNDER UNCLOS

The most significant aspect of the UNCLOS' dispute-settlement system is that the principle adopted is that of compulsory settlement. This means that, by becoming a party to the Convention, a State acquires the right to set in motion a judicial or arbitral proceeding against another State party as regards disputes concerning the interpretation or application of the Convention, and at the same time becomes bound to be submitted to such proceedings when they are set in motion by another State party.

As is well known, articles 297 and 298 provide limitations and optional exceptions to this principle. Especially the limitations set out in article 297 as regards disputes related to the exclusive economic zone and the continental shelf are remarkably different in dealing with living resources and with the protection of the environment.

As regards fisheries disputes, article 297, paragraph 3, excludes from compulsory jurisdiction all disputes relating to the sovereign rights of the coastal State "with respect to the living resources in the exclusive economic zone or their exercise, including its discretionary powers for determining the allowable catch, its harvesting capacity, the allocation of surpluses to other States and the terms and conditions established in its conservation and management laws and regulations". A modest attenuation to such exclusion is that in case gross violations of the coastal State's obligations are claimed, the dispute may unilaterally be submitted to conciliation (art. 297, paragraph 3(b)).

The optional exception to compulsory jurisdiction set out in article 298, paragraph 1 (b) for "disputes concerning law enforcement activities in regard to the exercise of sovereign rights or jurisdiction excluded from jurisdiction of a court or tribunal under article 297 paragraph 2 or 3" may be read *a contrario sensu* (unless a declaration to the contrary is made) as meaning that disputes concerning fishery police activities are submitted to compulsory settlement.

As regards disputes concerning the protection of the marine environment in the exclusive economic zone and the continental shelf, there are no optional exceptions. There is a relevant limitation in article 297, paragraph 1(c). Under this provision disputes concerning the exercise by the coastal State of its sovereign rights or jurisdiction are subject to compulsory jurisdiction when it is alleged that a coastal State has contravened “specified international rules and standards for the protection and preservation of the marine environment which are applicable to the coastal State” and have been internationally established. Consequently, only disputes about violations of non-specified international rules and standards or of rules and standards that are not applicable to the coastal State (whatever this means) are excluded from compulsory jurisdiction. This exclusion concerns only disputes with respect to the exercise of its sovereign rights and jurisdiction by the coastal State. Consequently, remain subject to compulsory jurisdiction disputes concerning alleged contraventions of rules and standards for the protection of the environment by a State different from the coastal one, in particular the flag State of a polluting vessel in another State’s exclusive economic zone.

A comparison between these provisions shows that in the exclusive economic zone and in the continental shelf compulsory jurisdiction is almost completely excluded as regards fisheries, while, for disputes in respect to the protection of the marine environment the exception provided for in article 297, paragraph 1(c) is much less penetrating as it does not include violations by the coastal State of specified international rules and standards, nor violations by flag States.

Contrary to the dispute-settlement regime prevailing in the exclusive economic zone and on the continental shelf, disputes concerning activities on the high seas, are submitted to compulsory jurisdiction without exception or limitation. This applies both for those concerning fisheries and for those concerning the protection of the marine environment. With respect to fisheries, compulsory jurisdiction is broadened by the disputes-settlement provisions in the UN Fish Stocks Agreement and in other fishing agreements, as well as by the extension of the disputes-settlement

system of Part XV UNCLOS to other agreements thorough art 30(2) of the Fish stocks agreement and of other multilateral fisheries agreements ⁽³⁾.

To complete the picture two further aspects of the UNCLOS dispute-settlement system are to be recalled for their relevance, respectively, as regards the protection of the marine environment and fishing activities.

The first is article 290, paragraph 1. Departing from provisions concerning provisional measures in other treaties, such as article 41 of the Statute of the I.C.J., it states that such measures may be requested “to prevent serious harm to the marine environment” and not only to preserve the respective rights of the parties to the dispute.

The second is article 292, providing for a special procedure before the ITLOS for the prompt release of vessels and crews. Such provision applies when a violation is alleged of article 73, paragraph 2, concerning prompt release of detained fishing vessels upon posting of a reasonable bond or other security, or of articles 220, paragraph 7, and 226, paragraph 1(b) concerning prompt release, subject to bonding or other appropriate guarantee, of vessels detained for pollution violations. The possibility of obtaining expeditiously the release of vessels and crews may be seen as a partial compensation given to the fishing interests for the almost complete lack of possibility of submitting a dispute on the merits of the detention to an international court or tribunal.

3. THE PRACTICE: FISHERIES

Judicial practice based on UNCLOS has been much more significant as regards the protection of the marine environment than as regards the

⁽³⁾ T. Treves, “Dispute-Settlement in the Law of the Sea: Disorder or System?”, in M. Kohen (ed.), *Promoting Justice, Human Rights and Conflict Resolution through International Law/ La promotion de la justice, des droits de l’homme et du règlement des conflits par le droit international, Liber Amicorum Lucius Caflisch*, Brill, Leiden, 2007, pp. 927-949, at 936-948.

protection of living resources and fisheries. Fishing activities in the exclusive economic zone have been envisaged only through the lens of prompt release proceedings.

This has permitted to call judicial attention on various practices of fishermen fishing in foreign exclusive economic zones. Among these, one may quote fishing without the coastal State's authorization (the *Camouco*,⁽⁴⁾ the *Monte Confurco*⁽⁵⁾, *Grand Prince*⁽⁶⁾ and other cases) or fishing of species not covered by such authorizations (the *Hoshinmaru*)⁽⁷⁾, lack (or incorrectness) of prescribed reporting (the *Hoshinmaru*)⁽⁸⁾, fishing with vessels which often change of flags (the *Grand Prince*)⁽⁹⁾. Moreover, judicial attention has been raised to particular rules adopted by coastal states in order to fight against illicit foreign fishing: in particular, legislation prescribing notification to the coastal State of entry in the exclusive economic zone by fishing vessels sometimes introducing a presumption that fish found on board and whose presence was not notified when entering the exclusive economic zone is illegally captured in case such vessels allege that they are just crossing through the exclusive economic zone exercising freedom of navigation (the *Camouco*⁽¹⁰⁾, the *Monte Confurco*⁽¹¹⁾ cases). Rules prescribing the use of VMS, and the payment of "good behaviour bonds" have also been considered (the *Volga* case)⁽¹²⁾.

⁽⁴⁾ Panama v. France, Judgment of 7 February 2000, ITLOS Reports 2000, p. 10, at para 29.

⁽⁵⁾ Seychelles v. France, Judgment of 27 November 2000, ITLOS Reports 2000, p. 86, at para 30.

⁽⁶⁾ Belize v. France, Judgment of 20 April 2001, ITLOS Reports 2001, p. 17, at para 36.

⁽⁷⁾ Japan v. Russian Federation, Judgment of 6 August 2007, ITLOS Reports 2005-2007, p.18, at para 30.

⁽⁸⁾ ITLOS Reports 2005-2007, p. 18, at para 31.

⁽⁹⁾ ITLOS Reports 2001, p. 17, at para 32.

⁽¹⁰⁾ ITLOS Reports 2000, p. 10, at paras 29 and 32.

⁽¹¹⁾ ITLOS Reports 2000, p. 86, at paras 30 and 37.

⁽¹²⁾ ITLOS Reports 2002, p. 10, at paras 75-80.

These practices may in most cases be considered as covered by the notion of Illegal, Unreported and Unauthorized Fishing (IUU Fishing)⁽¹³⁾. They have however never come as such to adjudication⁽¹⁴⁾. They have been seen as the background to proceedings for prompt release against coastal States which had detained foreign fishing vessels accused of these illegal fishing practices. As is well known, prompt release proceedings must concern only the question of release from detention and that of the reasonable bond to obtain such release, and not whether the detention was legal or illegal. For instance, as regards the obligation of using a VMS and of posting “good behaviour bond” prescribed by the Australian legislation the Tribunal stated: “it is not appropriate in the present proceedings to consider whether a coastal state is entitled to impose such conditions in the exercise of its sovereign rights under the Convention. In these proceedings, the question to be decided is whether the “bond or other security” mentioned in article 73, paragraph 2, of the Convention may include such conditions”⁽¹⁵⁾.

The specific function of prompt release proceedings was very much in the mind of the ITLOS when it was confronted with arguments of parties having detained fishing vessels allegedly having committed violations of fisheries laws and regulations, to the effect that through the prompt release proceedings the Tribunal was in fact protecting IUU fishing and not joining the fight against it.

In the view of France, the detaining State in the *Monte Confurco* case, and of Australia, the detaining State in the *Volga* case, the need to

⁽¹³⁾ T. Treves, “La pesca ilegal, no declarada y no reglamentada: Estado del pabelón, Estado costero y Estado del Puerto”, in J. Pueyo Losa, J.G. Urbina (coords), *La cooperación internacional en la ordenación de los mares y océanos*, Iustel, Madrid, 2009, pp. 135-158.

⁽¹⁴⁾ See the observations of M. Arenas Meza, “El Tribunal Internacional del Derecho del mar ante la pesca ilegal, no declarada y reglementada”, in J.G. Urbina and M. T. Ponte Iglesias, *Protección de intereses colectivos en el derecho del mar y cooperación internacional*, Iustel, Madrid, 2012, pp. 213-256, in particular pp. 142-155.

⁽¹⁵⁾ ITLOS Reports 2002, p. 10, at para 76.

fight against IUU fishing justified the high penalties imposed and required that the Tribunal engage in the fight against the practices in which the vessels were involved. ITLOS was not insensitive to these arguments. In the *Monte Confurco* case it “took note” of them ⁽¹⁶⁾. In the *Volga* judgment it added: “The Tribunal understands the international concerns about illegal, unregulated and unreported fishing and appreciates the objectives behind the measures taken by States, including the States Parties to CCAMLR, to deal with the problem” ⁽¹⁷⁾. In the same judgment it explained why it could not go beyond taking note and understanding: “The Tribunal must... emphasize that, in the present proceedings, it is called upon to assess whether the bond set by the Respondent is reasonable in terms of article 292 of the Convention. The purpose of the procedure provided for in article 292 of the Convention is to secure the prompt release of the vessel and crew upon the posting of a reasonable bond, pending the completion of the judicial procedure before the courts of the detaining State”. ⁽¹⁸⁾ The constraints of the prompt release proceedings underlie this explanation.

It is further interesting to note that — in light of the limitations in article 297, paragraphs 2 and 3 — coastal State laws, regulations and practices regarding foreign research and fishing activities in the EEZ have never been challenged before judicial and arbitral bodies. Neither, and consequently, has the possibility of resorting to “compulsory conciliation” in case these laws, regulations and practices are particularly abusive.

As regards fishing on the high seas two cases have been brought to adjudication, showing that the UNCLOS provisions relating to high seas fishing may be invoked under the jurisdictional provisions of the Convention. In both cases, however, there was no decision on the

⁽¹⁶⁾ ITLOS Reports 2000, p. 86, at para 79.

⁽¹⁷⁾ ITLOS Reports 2002, p. 10, at para 68.

⁽¹⁸⁾ ITLOS Reports 2002, p. 10, at para 69.

merits. In the *Southern Bluefin Tuna* case the Arbitral Tribunal competent under annex VII of UNCLOS ruled that it lacked jurisdiction because the condition specified in article 281, paragraph 1, was not fulfilled ⁽¹⁹⁾. In the *Swordfish* case between Chile and the European Union, the case was discontinued because the parties had reached an agreement.⁽²⁰⁾In the *Southern Bluefin Tuna* case, New Zealand and Australia claimed that Japan, in undertaking unilateral experimental bluefin tuna fishing, had breached article 64 (obligation to cooperate as regards highly migratory species) and articles 116 to 119 (obligations regarding fishing on the high seas) ⁽²¹⁾. Alleged non-compliance with articles 64 and 116 to 119 was also the key issue submitted to a Chamber of the Law of the Sea Tribunal by Chile and the European Union in the *Swordfish* case, where the EU also claimed non-compliance with article 87 (freedom of fishing on the high seas) and 89 (invalidity of claims of sovereignty over the high seas) ⁽²²⁾.

So far no dispute has been brought to adjudication under the compulsory jurisdiction provisions of the UN Fish Stocks Agreement of 1995. The possibility of such disputes seems however clear. The well-known *Estai* dispute between Spain and Canada and submitted (to no avail) to the ICJ ⁽²³⁾ could — if it arose today — be envisaged within the framework of the 1995 Agreement. So could the *Southern Bluefin Tuna* case. The Arbitral Tribunal in the award of 2000 on the latter case, deciding, as noted above, that it lacked jurisdiction to settle this dispute, stated that under the 1995 Agreement (then not yet in force

⁽¹⁹⁾ Australia and New Zealand v. Japan, Arbitral award of 4 August 2000, 39 International Legal Materials, 2000, p.1359.

⁽²⁰⁾ Order of discontinuance of 16 December 2009, ITLOS Reports 2008-2010, p. 13.

⁽²¹⁾ Arbitral award of 4 August 2000, quoted at note 19, para 32.

⁽²²⁾ ITLOS Order of 20 December 2000, ITLOS Reports 2000, p. 148, at para 2.

⁽²³⁾ *Fisheries Jurisdiction Case, Spain v. Canada*, Judgment of 4 December 1998, ICJ Reports 1998, p. 432.

for the parties) the procedural and substantive issues of the case could be solved on the basis of rules more specific than those of UNCLOS ⁽²⁴⁾.

There have been no cases in which fishery (or research) police activities in the EEZ have been the subject matter of disputes, even though such activities are at the origin of most stopping and detention of foreign fishing vessels considered in prompt release cases.

Non-compliance by coastal States detaining a fishing vessel with article 73, paras 3 and 4, of UNCLOS which prescribes that penalties for fishery violations may not consist in imprisonment and that the detaining State must promptly notify the flag State of the arrest or detention of a vessel, has been argued in prompt release cases. The Tribunal has rejected such claims as not included within the scope of its prompt release jurisdiction ⁽²⁵⁾.

The lack of prompt notification is not, however, considered irrelevant in prompt release cases. As remarked in the *Camouco* case judgment ⁽²⁶⁾ and confirmed in the *Juno Trader* case judgment ⁽²⁷⁾ “there is a connection between paragraphs 2 and 4 of article 73, since absence of prompt notification may have a bearing on the ability of the flag State to invoke article 73, paragraph 2, and article 292 in a timely and efficient manner”. So, non-compliance with the obligation of prompt notification of detention is seen as part of the factual background of prompt release cases.

⁽²⁴⁾ 39 International Legal Materials, 2000, p. 1359, paragraph 71 at p. 1392: see also my Separate Opinion to the provisional measures Order, in ITLOS Reports, 1999, p. 316, at paras 10-11, p. 318-319.

⁽²⁵⁾ *Camouco* judgment of 7 February 2000, ITLOS Reports, 2000, p. 10, para 59 at p. 29; *Monte Confurco* judgment of 18 December 2000, ITLOS Reports 2000, p. 86, para 64 at p. 106.

⁽²⁶⁾ ITLOS Reports 2000, p. 10, at para 59, pp. 29-30.

⁽²⁷⁾ *Saint Vincent and the Grenadines v. Guinea-Bissau*, Judgment of 18 December 2004, ITLOS Reports 2004, p. 17, at paras 76-77.

4. THE PRACTICE: PROTECTION OF THE MARINE ENVIRONMENT

Judicial decisions based on the UNCLOS concerning the protection and preservation of the marine environment are significant. We must refer to some judgements in contentious cases and to the Advisory Opinion of 2 February 2011 of the Seabed Disputes Chamber ⁽²⁸⁾.

There is no limitation or exception to compulsory jurisdiction as regards disputes concerning the environmental rules of general purport included in the initial sections of Part XII of the Law of the Sea Convention. Consequently, it is possible to request a judge or an arbitrator to apply them. Their general formulation notwithstanding, this has been attempted by Ireland with the proceedings it initiated against the United Kingdom in the *Mox Plant* case. The ITLOS Order of 23 December 2001, reports that Ireland's request to the competent Arbitral Tribunal concerned alleged violations of articles 192, 193, 194, 206 and 207 of the UN Law of the Sea Convention.⁽²⁹⁾ All these provisions concern general principles applicable to the protection of the marine environment. While this attempt did not succeed completely, the provisional measures Order of the Tribunal in that case stated that the principle of cooperation in the prevention of pollution is a principle of customary law:

The duty to cooperate is a fundamental principle in the prevention of pollution of the marine environment under part XII of the Convention [The United Nations Convention on the Law of the Sea] and general international law and...rights arise therefrom which the Tribunal may consider appropriate to preserve...” ⁽³⁰⁾.

⁽²⁸⁾ *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion)*, advisory opinion of 1 February 2011, ITLOS Reports 2011, p. 10.

⁽²⁹⁾ *Ireland v. United Kingdom*, Order of 3 December 2001, ITLOS Reports 2001, p. 10, at para 26.

⁽³⁰⁾ *Ibid*, at para 82.

Another general aspect of international environmental law, later emphasized by the ICJ in the *Pulp Mills* judgment⁽³¹⁾, is the distinction between procedural and substantive obligations. This distinction was discussed before the International Tribunal for the Law of the Sea in the *Mox Plant* case. Although the Order of the Tribunal does not explicitly mention it, it is implicitly the basis of the decision taken by the Tribunal to reject the request for an interim measure consisting in suspending the authorization for the Mox plant to operate, while granting a measure consisting in an obligation of information and cooperation⁽³²⁾. The request for the rejected measures was based in the substantive obligation not to pollute, while the measure granted was based in the procedural obligation of cooperation. Separate opinions highlight the distinction⁽³³⁾.

In the Advisory Opinion of 2011, the Seabed Disputes Chamber makes important statements about another general principle of environmental law mentioned in the Convention: the obligation to conduct environmental impact assessments. The Chamber, does not content itself with recalling that this principle is set out in article 206 of UNCLOS as well as in Regulations and Recommendations of the International Seabed Authority. It accepts the position taken by the ICJ in its Judgment on the Pulp Mills on the River Uruguay case, that environmental impact assessment is

a practice, which in recent years has gained so much acceptance among States that it may now be considered a requirement under general international law.⁽³⁴⁾

⁽³¹⁾ *Case concerning pulp mills on the river Uruguay, Argentina v. Uruguay*, Judgment of 20 April 2010, ICJ Reports 2010, at paras 77-79. See also the provisional measures Order of 13 July 2006, ICJ Reports 2006, at paras 68-78.

⁽³²⁾ ITLOS Reports 2001, p. 95, at paras 81-89.

⁽³³⁾ ITLOS Reports 2001, p. 135 (Wolfrum) and 139, at para 7 (Treves).

⁽³⁴⁾ ICJ Reports 2010, p. 14, at para 204.

The Chamber then considers whether the customary nature of the obligation to conduct environmental impact assessments permits to consider this obligation applicable, with respect to activities in the Area, also beyond the scope of the specific regulations that provide for it. The Chamber's answer is in the affirmative and brings it to a broad statement of the scope of the obligation:

Although aimed at the specific situation under discussion by the Court, the language used seems broad enough to cover activities in the Area even beyond the scope of the Regulations. The Court's reasoning in a transboundary context may also apply to activities with an impact on the environment in an area beyond the limits of national jurisdiction; and the Court's references to "shared resources" may also apply to resources that are the common heritage of mankind. Thus, in light of the customary rule mentioned by the ICJ, it may be considered that environmental impact assessments should be included in the system of consultations and prior notifications set out in article 142 of the Convention with respect to "resource deposits in the Area which lie across limits of national jurisdiction" ⁽³⁵⁾.

Of particular interest are the developments concerning the precautionary approach. As is well known, international Courts and Tribunals have avoided to state whether this "approach" corresponds to a customary rule or principle ⁽³⁶⁾. The Law of the Sea Tribunal, starting with Orders on provisional measures in contentious cases, and continuing with the 2011 Advisory Opinion of the Seabed Disputes Chamber, has come the closest to acceptance of the customary nature of the approach.

⁽³⁵⁾ ITLOS Reports 2011, p. 10, at para 148.

⁽³⁶⁾ For a review of pertinent cases, T. Treves, "Judicial Lawmaking in an Era of 'Proliferation' of International Courts and Tribunals: Development or Fragmentation of International Law?", in R. Wolfrum, V. Roeben (eds), *Developments of International Law in Treaty Making*, Berlin, Heidelberg etc., 2005, pp. 587-620, at 615-618.

In the 1999 provisional measures Order on the *Southern Bluefin Tuna* case the International Tribunal for the Law of the Sea avoided to mention the precautionary approach that Australia and New Zealand invoked in order to argue the urgency of a provisional measure consisting in the cessation of an experimental programme conducted by Japan on the dwindling Southern Bluefin Tuna stock. It nevertheless granted the requested provisional measure using a reasoning — and also a terminology — of a precautionary type.

The two paragraphs that follow seem explicit, describing the typical situation in which the precautionary principle applies, and the consequences that one could consider inspired by the principle. Having stated in the first one that

there is scientific uncertainty regarding measures to be taken to conserve the stock of southern bluefin tuna and that there is no agreement among the parties as to whether the conservation measures taken so far have led to the improvement in the stock of southern bluefin tuna,

the Order continues in the second one as follows:

although the Tribunal cannot conclusively assess the scientific evidence presented by the parties, it finds that measures should be taken as a matter of urgency to preserve the rights of the parties and to avert further deterioration of the southern bluefin tuna stock ⁽³⁷⁾.

In the later *Mox Plant* and *Land Reclamation* cases the Tribunal rejected the request of the claimant parties to apply the precautionary principle. The Tribunal, however, referred again in the *Mox* case pro-

⁽³⁷⁾ Order 27 August 1999, *New Zealand v. Japan, Australia v. Japan*, ITLOS Reports 1999, p. 280, at paras. 79, 80 (see also 77).

visional measures Order to the idea of “prudence and caution”⁽³⁸⁾, already used in the *Southern Bluefin Tuna* Order, to support the view that it was urgent that parties conform to the principle of cooperation. Similarly, in the *Land Reclamation* Order the Tribunal stated the following:

given the possible implications of land reclamation on the marine environment, prudence and caution require that Malaysia and Singapore establish mechanisms for exchanging information and assessing the risks or effects of land reclamation works and devising ways to deal with them in the areas concerned⁽³⁹⁾.

In the Advisory Opinion of the Seabed Disputes Chamber of 2 February 2011 a further step forward is made. The Chamber does not content itself by stating that as far as “activities in the Area” are concerned there are written provisions which make the precautionary approach binding law at least within the scope of the provisions. It goes beyond this statement and affirms the general applicability of the precautionary approach as regards the whole field of activities in the Area even beyond the scope of the written provision which incorporate it. And goes even beyond this, in hinting at the existence of a customary rule.

Having recalled that the Nodules and Sulphides Regulations (adopted by the International Seabed Authority 2000 and 2010) make the precautionary approach binding and define it by reference to Principle 15 of the 1992 Rio Declaration, The Opinion states that

The provisions of the aforementioned Regulations transform this non-binding statement of the precautionary approach in the Rio Declaration into a binding obligation. The implementation of

⁽³⁸⁾ ITLOS Reports 2001, p. 95, at para 54.

⁽³⁹⁾ *Malaysia v. Singapore*, Order 27 August 1999, ITLOS Reports 1999, p. 280, at paras. 79, 80 (see also 77).

the precautionary approach as defined in these Regulations is one of the obligations of sponsoring States ⁽⁴⁰⁾.

The Opinion then continues stating that:

it is appropriate to point out that the precautionary approach is also an integral part of the general obligation of due diligence of sponsoring States, which is applicable even outside the scope of the Regulations. The due diligence obligation of the sponsoring States requires them to take all appropriate measures to prevent damage that might result from the activities of contractors that they sponsor ⁽⁴¹⁾.

And gives a definition of the precautionary approach as follows:

This obligation applies in situations where scientific evidence concerning the scope and potential negative impact of the activity in question is insufficient but where there are plausible indications of potential risks. A sponsoring State would not meet its obligation of due diligence if it disregarded those risks. Such disregard would amount to a failure to comply with the precautionary approach ⁽⁴²⁾.

The Opinion, without clearly stating that there exists a customary rule providing for the precautionary approach comes very close to doing so with the following statements:

The Chamber observes that the precautionary approach has been incorporated into a growing number of international treaties and other instruments, many of which reflect the formulation of Principle 15 of the Rio Declaration. In the view of the Chamber,

⁽⁴⁰⁾ Paragraph 127.

⁽⁴¹⁾ Paragraph 131.

⁽⁴²⁾ Paragraph 131.

this has initiated a trend towards making this approach part of customary international law. This trend is clearly reinforced by the inclusion of the precautionary approach in the Regulations and in the “standard clause” contained in Annex 4, section 5.1, of the Sulphides Regulations. So does the following statement in paragraph 164 of the ICJ Judgment in *Pulp Mills on the River Uruguay* that “a precautionary approach may be relevant in the interpretation and application of the provisions of the Statute” (i.e., the environmental bilateral treaty whose interpretation was the main bone of contention between the parties). This statement may be read in light of article 31, paragraph 3(c), of the Vienna Convention, according to which the interpretation of a treaty should take into account not only the context but “any relevant rules of international law applicable in the relations between the parties”⁽⁴³⁾.

Before concluding on the judicial practice concerning the protection of the marine environment we must recall that the possibility of requesting provisional measures in order to prevent serious harm to the marine environment has been invoked in various cases before the Tribunal. These cases concern harm to the environment of waters under the coastal State’s jurisdiction and have nothing to do with harm to the environment of the high seas. Resort to this clause is understandable if one considers preventing serious harm to the marine environment a test less severe than that of “irreparable” damage required by the ICJ as regards the preservation of the rights of the parties.

In the Orders adopted on requests for provisional measures submitted to the Law of the Sea Tribunal in the *Southern Bluefin Tuna*, *Mox Plant*, and *Land Reclamation* cases, in which environmental questions were at the center of the dispute, the Tribunal has set in motion, in a particularly clear manner in the last of the Orders mentioned, an innovative jurisprudential trend. Taking as a basis the obligation to cooperate

⁽⁴³⁾ Paragraph 135.

as regards prevention of pollution, the Tribunal, through its provisional measures Orders, aims at bringing the parties to conduct jointly activities that may permit them to settle the dispute.

In particular, in the Order in the *Land Reclamation* case, taking the cue from indications emerging during the oral pleadings, the Tribunal prescribed, as a provisional measure, that the parties establish a group of independent experts with the specific mandate to propose measures adequate to cope with the possible harmful consequences of the land reclamation work started by Singapore. The parties complied: they established the expert group, took note of the report it submitted, concluded an agreement conforming with the measures proposed in it and declared that the agreement contained the final settlement of the dispute. They instructed the arbitral tribunal to which the case had been submitted under Annex VII to the Law of the Sea Convention to adopt an award agreed between the parties of which the text of the agreement was an integral part. The arbitral Tribunal promptly complied⁽⁴⁴⁾.

5. CONCLUSION

The disputes-settlement mechanism set out in the UN Convention on the Law of the Sea has brought about two noteworthy results. The first is that, notwithstanding the limitations and optional exceptions, which curtail its impact, the basic principle of compulsory adjudication has succeeded, as regards law of the sea disputes, in making resort to a judge or arbitrator something normal. The second is that a sizable judicial and arbitral practice has been produced which interprets and develops the convention.

⁽⁴⁴⁾ For references and details, T. Treves, “The International Tribunal for the Law of the Sea (2004)”, *Italian Yearbook of International Law*, 2004, pp. 289-303, at 300-302; Id. “The International Tribunal for the Law of the Sea (2005)”, *Italian Yearbook of International Law*, 2005, pp. 255-262, at 261-262.

This applies also to the fields which are the specific subject-matter of this paper, disputes concerning living marine resources and the protection of the marine environment. The fact that decisions concerning the protection of the environment are more numerous, and of more general purport, than those on fisheries, depends on the impact of the limitation set out in article 297, para 3. The fact that developments concerning the protection of the environment are more important than those on fisheries is due not only to the fact that the limitation in article 297, para 1 (c) is not as penetrating, but also to the existence of the advisory jurisdiction of the seabed Disputes Chamber and to the specific rule giving relevance to the protection of the environment in proceedings for the granting of provisional measures. It must not be forgotten that the cases concerning fisheries, although in most cases with the limited objective of prompt release of vessels and crews have had the effect of obtaining judicial knowledge of practices that are dangerous for the conservation of living resources.

SESSÃO II

**NOVOS RUMOS DO DIREITO DO MAR: ÁREAS
MARINHAS PROTEGIDAS, RECURSOS
GENÉTICOS, PLATAFORMA CONTINENTAL
(‘ESTENDIDA’ E ÁRTICO)**

SESSION II

**PROSPECTS OF EVOLUTION OF THE LAW OF THE
SEA: MARINE PROTECTED AREAS, GENETIC
RESOURCES, CONTINENTAL SHELF (OUTER
CONTINENTAL SHELF AND THE ARCTIC)**

GAPS IN THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

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Abstract: *The 1982 UN Convention on the Law of the Sea provides a comprehensive and widely accepted legal regime for the world's oceans. Still, there are gaps that have emerged since the formation of the Convention that are not adequately resolved. This paper identifies and comments upon three gaps: the challenges posed by unmanned marine "vessels", the lack of international environmental and safety standards for offshore oil rigs, and contested issues associated with the regime of islands provisions.*

Many colleagues and friends, it is a pleasure and honor to be here in Porto, Portugal. My last visit to Portugal was 20 years ago when our Center for Oceans Law and Policy, University of Virginia School of Law held our annual conference in Portugal, a famous center in world history for international navigation. I am very happy to see a continued high level of interest in the doctrines of the law of the sea as demonstrated by the sponsors and attendees of this meeting. We all are especially thankful to Dr. Marta Chantal Ribeiro for her hard work in bringing this wonderful event together to celebrate the 30th year of the signing of the 1982 Convention.

The topic for my 20 minute presentation might seem a little odd to some of you in that most of us usually speak on how to apply the existing terms of the 1982 Convention to various factual situations. My comments today will focus not on what is fully covered by the Convention but what is not.

We are attending a conference with a carefully constructed agenda here at Porto and several issues that might have qualified as “gaps” in the coverage of the Convention are going to be discussed in detail by other speakers. These include presentations on this panel with respect to marine protected areas and genetic resources. The panel following ours will focus on the extension of the continental shelf and the Arctic. Later in the program we shall hear about technological advances in communications as well as impacts in global climate change. In actuality, none of these topics was fully understood and thus not adequately dealt with during the negotiations at the Third UN Conference on the Law of the Sea. But since others at this conference will discuss these potential candidates as “gap” issues, I decided to concentrate my comments on several issues that are not otherwise addressed. I also selected one that is in the future, one that is in the present and ripe for resolution and one that was tackled at the Third Conference in the past but remains controversial.

The first topic pertains to unmanned marine “vessels” (UMVs). All of us have heard in the news about drones or unmanned aerial vehicles (UAVs). The recent advent of UAVs especially in the context of combating terrorism has been noteworthy, some would say revolutionary. The U.S. policy with respect to the use of UAVs was even brought up in the presidential debates prior to our recently concluded elections. My prediction is that we are on the cusp of a revolution in the near future with respect to seagoing drones or robotic devices. The consequences of having to deal with these objects or devices in the oceans will be as profound as we have seen with respect to UAVs in the air. In sum, I believe that laws and policies will soon be needed to cope with the technological development of UMVs in the oceans. Others see this technology also coming on land as demonstrated in this past month’s *Economist* which featured self-driving cars in its technology quarterly. My expectation is that we shall soon see UMVs operating at sea as the age of unmanned air craft, land vehicles and marine “vessels” emerges.

What does UNCLOS say about UMVs? In truth, it is very little. No definition of “vessel” or “ship” is given in the Convention although

the main rule provided is that “vessels” or “ships” must be registered with a flag State and thereby under its exclusive jurisdiction. Even if UUVs were classified as “vessels” or “ships”, would they thereby be entitled to innocent passage or transit passage rights? Would military related UUVs rate sovereign immunity? What about COLREGS and the definition therein pertaining to “transportation” in Rule 3(a)? What if the UUVs do not transport in the usual sense of the term? Existing law does not seem to really apply to UUVs.

Let us illustrate what I mean by asking you to consider a hypothetical case. Assume that 1,000 UUVs about the size of a newborn turtle are air dropped into a strait used for international navigation. Further assume that the devices or objects have small solar cells and sophisticated digital circuits that are programmed to rise to the surface if the need for recharging power arises. Imagine that the objects or devices can skim over the ocean surface like a beetle or swim underwater like a minnow, perhaps in a circle. Imagine they have magnets or other technology that permits attachment to the hull of passing vessels. Such vessels could be strait State speedboats, minelayers, military vessels, dry cargo carriers or even super tankers. What if the State that dropped the devices can thereby monitor the movements of the UUV host vessel? If desired, by this tracking the precise location of the vessels to which the devices or objects are attached might be found, allowing for monitoring or for other purposes. For example, it might be useful to have air drones spy from the sky to establish whether a speed boat is a pleasure craft or is carrying mounted machine guns.

Clearly such objects or devices are not “vessels” carrying documents and being manned in accordance with UNCLOS and IMO standards. Nor are such objects or devices once released necessarily under the control of any human being: they may be fully autonomous and not just semiautonomous. Knowing their location does not necessarily mean control. Such self-propelled objects or devices are not contemplated by existing international laws and certainly there is no State Practice yet to find customary international law that directly applies. Indeed, even the

usual legal distinctions between manned and unmanned “vessels” are not very helpful. The inadequacy of navigation and collision avoidance rules for such robotic objects or devices as described above lead me to the view that their legal status is a “gap” in UNCLOS doctrine. My belief is that the use of such objects or devices could have significant international impacts and the predictable coming of UMVs merits analysis by international lawyers as this gap will only increase in importance with advances in technology.

The second gap which I have chosen to highlight today pertains to the Convention’s lack of international environmental or safety standards for offshore oil rigs. Articles in the Convention clearly provide the coastal State with the exclusive right to construct and control the operation of offshore rigs in its EEZ or on its continental shelf. In Part XII of the Convention, there are also general articles imposing duties on all States to prevent, reduce and control pollution of the marine environment. In contrast to vessels or ships, however, there is no role contemplated in setting international environmental or safety standards for stationary offshore rigs. As we all know, that role for mobile commercial vessels is, according to UNCLOS, to be played by the International Maritime Organization (IMO).

We can recall that oil rig problems were around in the early 1970s when the negotiations started for the Third Conference but nothing was done to deal with them. One might ask why? Part of the explanation for not setting international standards for oil rig construction was that they were not at the time as numerous world-wide as now. In addition delegates at the Third Conference were intensely concentrating on securing sovereign rights for coastal States over EEZ and continental shelf resources in areas that were at the time mostly in high seas proper. The delegates were negotiating to find a balance between freedom of navigation rights for foreign flag vessels and coastal State living and non-living resource rights. Foreign flag vessels were seen to be operating in the coastal State EEZ or above its continental shelf. The Conference had to address coastal State resource prescriptive and enforcement jurisdiction

as well as the rules of customary law in the same regard pertaining to flag State jurisdiction. There was no argument over national enforcement jurisdiction for petroleum exploration and exploitation being lodged in the coastal State. What was not appreciated fully at that time was the need for international prescriptive jurisdiction to set safety and anti-pollution standards over offshore oil rigs.

The Deep Water Horizon casualty in 2010 on the US continental shelf in the Gulf of Mexico dramatically exposed U.S. domestic law inadequacies in the regulation and management of offshore installations with regard to environmental and safety aspects. Bear in mind that most of the offshore rigs in the world are in the Gulf of Mexico. From the Truman Proclamation in 1946 onward the United States had been gaining experience in regulating offshore oil and gas operations. Serious rig accidents did occur such as in the Santa Barbara Channel in 1969, in the Ixtoc spill in the Gulf of Mexico in 1979 and in the Piper Alpha blow out in the North Sea in 1988. The loss of life, compensation to victims and damage to the marine environment received much publicity but really little effective legal reform in response to these tragedies. The deaths and widespread damages ought to have stimulated a demand for more effective international or domestic legal frameworks.

Most of you are aware of the surging aspirations of coastal States to develop offshore oil and gas deposits in the Arctic and in the extended continental shelf beyond the 200 mile EEZ. Offshore petroleum is ongoing in ever increasingly deeper waters and there is great interest in the Arctic where ice poses an especially sensitive working environment. Will any effective leadership emerge in the international community to take concerted actions to address what I suggest is a serious “gap” for setting acceptable construction standards for offshore rigs under the 1982 Convention?

The delegates to the Third UN Conference had a naïve, idealized notion of the continental shelf, slope and rise with a more or less flat deep seabed area beyond. Almost no discussion was focused on deep

water drilling or petroleum extraction operations in the Arctic. There was serious discussion among delegates about the tanker accidents *Torrey Canyon* and *Amoco Cadiz*. But the prospects for drilling in deep-ocean or Arctic waters were grossly underestimated.

Somewhat curiously, the draftsmen of the Convention did create an often overlooked legal protection for the marine environment itself; this is potentially an important point that merits further attention from scholars. A few experts with no place else to turn have pointed to the IMO to set international construction standards for offshore rigs. But the IMO expertise is focused on commercial shipping and the IMO is not functionally constituted to deal with fixed, offshore rig standards which must be enforced by national jurisdictions owning the seabed, not by flag States or port States. There are occasional flags of convenience granted to mobile platforms mainly for use when underway but these flags become almost irrelevant once the rig is affixed to the sea bottom.

My suggestion is that the framework in the 1982 Convention ought to be the starting point for dealing with the gap pertaining to international safety and anti-pollution standards for offshore rigs. This approach immediately brings over 160 Parties to the table who can start with a common legal framework and foundation. The legal method I would recommend would be to seek an “implementing agreement” that would establish international operation and construction standards for fixed oil rigs. The end result pursued to fill the gap would be a multilateral treaty negotiated at a diplomatic conference akin to the successful process followed in the fish stocks agreement.

To get started, a government such as Norway could take it upon itself to sponsor the development of “guidelines” that would be formulated based on input from real world stakeholders with relevant expertise such as oil companies, oil service companies, insurers, classification societies, environmental groups, labor unions, and other real parties in interest. The development of the code of conduct and construction guidelines would not be an exercise just for lawyers such as those at the International Law

Commission. The process for the first several years that I envision would not be dictated by governments driven by failed domestic offshore regulatory policies. My suggestion of Norway exercising leadership is because Norway does not have an unsatisfactory “command and control” regulatory system such as is found in the United States. Instead, Norway (and the UK) have a performance based rig regulatory system where the industry is told what results to achieve but not told how to achieve the results. Government officials do not guess at blow out valve functions. In the real world the offshore industry knows its business better than any government and, moreover, has a very large stake in ensuring that oil rig disasters, such as Deepwater Horizon, do not happen. Beyond that, an informal process competently coordinated by experienced people could reach out to and tap into the expertise of environmental organizations and labor organizations concerned with combating pollution and worker safety.

A global system of informal construction and operational guidelines could be developed that included providing for inspections and the issuance of certificates by the experts in the classification societies. The standards ought to be based on the use of the best available technology for protecting the environment and enhancing worker safety. Sovereign coastal States, even those with limited experience in governing offshore oil rigs, could then have an option to consider using the guidelines. They could decide, for example, whether they wanted to allow certified or uncertified rigs to be erected on their continental shelves. Rigs built to effective international standards could be deployed world-wide and ought to be welcomed by builders, operators, insurers and governments. My guess is that the oil rig industry is ready to help develop such agreed international construction standards especially as attention shifts increasingly to deeper offshore waters and the Arctic. Accompanying operator guidelines also make sense. As the sayings goes, it would be a shame to let an offshore disaster such as the Deep Water Horizon go to waste.

This brings us to my third and last highlighted “gap” in UNCLOS. This is a different gap in that the issue of regime of islands was extensively negotiated from the beginning to the end of the Third Conference. The

facts about islands or rock are complicated for each involves unique circumstances. Moreover the conflicts that they engender are almost entirely bilateral and therefore they are not particularly suitable for resolution in a multilateral negotiation. Those of us at the Conference certainly heard much about differences over islands, especially from Greece and Turkey. Now the consequences of not fully dealing with this topic at the Conference are evident in the serious confrontations in the South China Sea, the East China Sea, in the Aegean Sea and elsewhere.

In my view, analysis of island/rock disputes begins with three issues: sovereignty or ownership of the island/rock; legal status under the Convention; and legal weight ascribed in a delimitation context. The Convention does not deal with sovereignty or territorial ownership questions which are highly political in nature. And the maritime jurisdictional entitlement of the island/rock in a delimitation context depends greatly on the facts of a particular case. Thus, my comments are directed here to the legal status of the regime of islands/rocks under the Convention and customary international law.

Article 121(1) defines an island as being naturally formed land surrounded by water at high tide. Article 121(2) is actually one of the most telling ocean space entitlements in the 1982 Convention in that it provides that islands are entitled to the same maritime space as other land territory. The reason this provision is striking is that a tiny bit of territory ie "island" in the middle of the Pacific is entitled to a 200-mile EEZ larger in area than the state of California. Indeed, if the provisions of article 76 are applicable, a tiny, isolated island can provide the legal basis under the Convention for an extended continental shelf even beyond 200-miles. This entitlement usually reduces the seabed for the Common Heritage of Mankind, in some cases greatly.

There is an exception to the entitlement of a 121(1) island, however. This is provided in article 121(3) which is expressly labeled as an exception in article 121(2). This has legal meaning because certain treaty interpretation rules are triggered by exceptions. Another side note is that

the regime of islands text was represented when it first appeared in the single text during the negotiations in 1975 as having been taken from proposals before the Third Conference. In fact, it was not. One can say there was a transparent diplomatic fig leaf stated in that several delegations, particularly Romania, had suggested island definition proposals in a delimitation context that contained the words “human habitation” or “economic life”. Romania had in mind Serpent Island which was owned by the USSR at the time but was subsequently given to the Ukraine. What is ironic is that the ICJ in its 2007 *Romania v. Ukraine* case determined that Serpent Island was irrelevant and concluded that the Court did not need to consider whether Serpent fell under article 121(3). The Court apparently felt it was able to achieve an equitable result in this delimitation case without getting into legal quicksand by defining Serpent as an “island” or a “rock” under the 1982 Convention.

The main reason that the 123(3) exception for “rocks” cannot be construed as coming from proposals before the Conference is found in the word in the text “sustain”. Almost all the definitional proposals before the Conference advanced objective factors such as population, on-going economic activities, size, contiguity, geology, political status or other characteristics. Article 121(3) is not based on objective factors or limited to even just past or present matters. Instead, it opens the door for future uses which could well hinge on technological advances that might be unforeseen and unpredictable. This interpretation is reinforced by the existence of the disjunction “or” as contrasted with the conjunction “and” between “human habitation”... “economic life of their own” in the text of article 121(3). Meeting either criterion satisfies the condition of the article for island status, thereby triggering land or territory entitlement. For example, a single cell phone relay tower placed on a tiny, uninhabited “island” would seem to thereby qualify the feature as “territory” for island status and thus generate a 200-mile EEZ and, perhaps, an extended continental shelf beyond its EEZ. The Convention is also usually read implicitly to recognize that “rocks” may generate only a territorial sea and contiguous zone. It can be said that in that limited sense they are treated akin to an island or land territory proper under the Convention.

There were, of course, no cell phones contemplated in 1975 (at least to the best of my knowledge) but the text of article 121(3) is the law and must be interpreted and applied unless either a judicial authority or the affected States decide to alter or ignore it. Some might point out that the regime of island text is not really a “gap”. But in my opinion it qualifies as the text was never changed since being inserted into the Convention in 1975. Article 121(3) was never understood and its application is bringing unintended consequences that are a genuine source of serious disputes between States.

We see highly questionable applications in the case of Okinotori-shima where Japan must confront the fact that even if an island qualifies under article 121(3), it still must be “naturally formed”. After considerable expenditure of diplomatic capital, the U.K. decided not to press the point that Rockall, (as its name suggest) was an island. In my opinion, Rockall could have been elevated to island status if the British had chosen to do so. Likewise, Dokdo/Takeshima and Senkaku/Diaoyu can qualify as islands under article 121 of the Conventions. The conflicts in their cases are not over their maritime space entitlement but rather on what nation owns them and what value ought to be ascribed in a delimitation context. There are, of course, many other unresolved island/rock/reef problems around the world. But an examination of those or even mention here are beyond the scope of this brief talk.

The Convention with all its short comings has still exceeded all reasonable expectations in providing stability of expectations, that is the Rule of Law for the world’s oceans. When the political will exists, States have found a way to deal with even fatal flaws such as were in the original deep seabed regime which was re-negotiated in 1994 (despite protestations to the contrary of this characterization). Accordingly, I remain confident that existing and future “gaps” in law of the sea doctrine can and will be resolved satisfactorily although none of us can predict where or what all those gaps will be or anticipate exactly how they will be resolved.

MARINE PROTECTED AREAS: THE CASE OF THE EXTENDED CONTINENTAL SHELF

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Sumário: *Hoje os fundamentos jurídicos para a criação de AMPs estão bem definidos. Para este fim, as disposições da CNUDM precisam de ser interpretadas recorrendo aos métodos sistemático e teleológico previstos no artigo 31.º da Convenção de Viena sobre o Direito dos Tratados, de 1969, particularmente na perspectiva de uma interpretação evolutiva. O conceito de AMP não tem fronteiras claras, sendo utilizado num conjunto muito variado de situações. Por conseguinte, no estudo procurar-se-á identificar os elementos estruturantes do conceito de AMP, culminando numa proposta de definição.*

Apesar de a CNUDM dar base jurídica para a criação de AMPs, os poderes concretos necessários à sua implementação exigem mais desenvolvimento. Para lá do mar territorial, deve ser estabelecido um novo equilíbrio entre os direitos e liberdades dos Estados terceiros e o poder-dever do Estado costeiro de proteger o ambiente, em particular a biodiversidade. A ‘última zona marítima’, quer dizer, a plataforma continental estendida, dá orientações sobre a interpretação evolutiva dos poderes do Estado costeiro, bem como das tendências na percepção regional acerca do dever comum de preservação dos oceanos. O exemplo português, em conjunto com a actuação da Comissão OSPAR, abre novas perspectivas quanto à conciliação do paradigma jurídico subjacente à CNUDM com os desafios do mundo contemporâneo.

Abstract: *Today the legal bases for the creation of MPAs are well established. To this end UNCLOS provisions need to be interpreted under the teleological and systematic methods set out in article 31, Vienna Convention 1969, particularly using the evolutionary*

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interpretation approach. The concept of MPA has no clear borders, being used in highly varied situations. Hence, in this paper the structural elements of the MPA concept are identified, along with a proposal for a definition.

Although UNCLOS gives a legal basis to create MPAs, the concrete powers to implement them need further development. Beyond the territorial sea, a new balance should be established between the rights and freedoms of third States and the coastal State power and duty to protect the environment, in particular the biodiversity. The 'last maritime zone', that is the outer ('extended') continental shelf, gives guidance about the evolutionary interpretation of the coastal State powers and the trends in the regional perception about the common duty to preserve the oceans. The Portuguese example, together with the OSPAR Commission action, opens new perspectives to conciliate the UNCLOS legal paradigm with the challenges of the contemporary world.

INTRODUCTORY NOTE

Dear Ladies and Gentlemen, first of all I want to express my deep gratitude to this magnificent assembly. It is also a true honour to be participating in this Session, next to such distinguished academics and experts.

Before beginning the talk, I would like to dedicate my paper to two remarkable academics, founders of research lines in the field of the law of the sea, namely Professor Gerard J. Mangone (1918 — 2011) of University of Delaware, USA, in whose honour *The International Journal of Marine and Coastal Law* established a prize, and Professor Armando Marques Guedes (1919 — 2012), the Portuguese *father* of the law of the sea.

1. UNCLOS: A LEGAL BASIS FOR THE CREATION OF MPAS?

As all of you know, marine protected areas (MPAs) have been proven to be efficient tools to protect marine biodiversity and the ecological processes, as well as to manage related human activities ⁽²⁾. Moreover,

⁽²⁾ Stefanie SCHMIDT and Sabine CHRISTIANSEN, *The Offshore MPA Toolbox. Implementing Marine Protected Areas in the North-East Atlantic Offshore: Seamounts — A Case Study*, OASIS/WWF, Hamburg-Frankfurt am Main, 2004, p. 5.

MPAs are crucial to combat climate change. Consequently, today the preservation of marine biodiversity through protected areas is a worldwide political priority, particularly owing to the *Plan of Implementation of the Johannesburg World Summit* (2002) ⁽³⁾. The duty of States to create MPAs is clearly established under international law, either in maritime zones under coastal State jurisdiction or beyond its jurisdiction. In this paper will be considered only the maritime zones under coastal state jurisdiction, highlighting the case of the outer ('extended') continental shelf.

At global level, the original international legal basis of the duty of States to create MPAs lies in the United Nations Convention on the Law of the Sea (UNCLOS, 1982) provisions. The reasoning for reaching this conclusion is more complex than it seems. It implies an analysis of the general principle laid down in article 192 ("*States have the obligation to protect and preserve the marine environment*") and article 193 ⁽⁴⁾ and its respective substantive scope by using the teleological and systematic interpretation methods set out in article 31, Vienna Convention 1969, particularly relating to the use of the evolutionary interpreta-

⁽³⁾ Despite the reference to MPAs in the World Charter for Nature (1982; UN-GA Resolution 37/7, General Principle 3), the global political awareness for the need to create MPAs started in a more visible way with the Agenda 21 (1992, Chapter 17). The 'Jakarta Mandate', adopted in the CBD Second Conference of the Parties (1995), reinforced the process (see *infra* footnote 15). After 2002 the resolutions of the United Nations General Assembly and the reports of the Secretary-General, both on Oceans and Law of the Sea, are also worthy of reference. See Resolution 57/141 of 12 December 2002, para. 53; Resolution 58/240 of 23 December 2003, para. 54; Resolution 59/24 of 17 November 2004, para. 72-73; Resolution 60/30 of 29 November 2005, para. 74; Resolution 61/222 of 20 December 2006, para. 97 and 99; Resolution 62/215 of 22 December 2007, para. 111-114; Resolution 63/111 of 5 December 2008, para. 134-136; Resolution 64/71 of 4 December 2009, para. 152-157; Resolution 65/37 of 7 December 2010, para. 176-181; Resolution 66/231 of 24 December 2011, para. 175-180; and Resolution 67/L.21 (provisional) of 2012, para. 192-198; available online at: http://www.un.org/Depts/los/general_assembly/general_assembly_resolutions.htm.

⁽⁴⁾ Article 193, UNCLOS: "*States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.*"

tion approach (article 31(3)) ⁽⁵⁾. This approach is notably relevant in the case of the relationship between the protection of marine biodiversity and the MPAs.

Effectively, UNCLOS establishes a framework for the protection of the marine environment open to future evolution (e.g., article 197). By combining articles 192 and 193 (provisions that open the Part II) with the *rationale* of articles 194(5) ⁽⁶⁾ and 145 ⁽⁷⁾ we can argue:

- i) Firstly, the duty to protect the marine environment is all-embracing, including, notably, the prevention of marine

⁽⁵⁾ See Rüdiger WOLFRUM, Volker ROBÈN and Fred L. MORRISON, “Preservation of the Marine Environment”, in Fred L. MORRISON and Rüdiger WOLFRUM (Eds), *International, Regional and National Environmental Law*, Kluwer Law International, 2000, pp. 225-283 (250); Daniel OWEN, “The Application of the Wild Birds Directive Beyond the Territorial Sea of European Community Member States”, *Journal of Environmental Law*, vol. 13, issue 1, 2001, pp. 39-78; Patricia W. BIRNIE, Alan E. BOYLE and Catherine REDGWELL, *International Law and the Environment*, 3rd ed., Oxford University Press, 2009, pp. 20-22; and Marta Chantal RIBEIRO, *A protecção da biodiversidade marinha através de áreas protegidas nos espaços marítimos sob soberania ou jurisdição do Estado: discussões e soluções jurídicas contemporâneas. O caso português*, PhD thesis, Faculdade de Direito, Universidade do Porto, 2010, published at Coimbra Editora, 2013, *vide* p. 490 et seq.

⁽⁶⁾ Article 194(5), UNCLOS: “*The measures taken in accordance with this part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.*”

⁽⁷⁾ Article 145, UNCLOS: “*Necessary measures shall be taken in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities. To this end the Authority shall adopt appropriate rules, regulations and procedures for inter alia:*

- (a) *the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities;*
- (b) *the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.*”

pollution and alien species, and also the protection of marine biodiversity⁽⁸⁾. In turn, the protection of marine biodiversity includes the protection of ecosystems and habitats as well as the protection of species themselves. This general conclusion derives primarily from the joint reading of articles 194(5) and 145 (para. b). The latter provision, in particular, is very general and all-embracing. Although article 145 concerns the International Seabed Authority, while Part XII of UNCLOS respects to the States, we can argue that it would be strange to subject States to a different regime of the Authority. Actually, originally article 145 gave the States the task that, in the end, was entrusted to the Authority⁽⁹⁾.

- ii) Secondly, in the case of States, the duty exists regardless of its association with threats or impacts caused by any specific human activity.
- iii) Thirdly, the duty to protect the marine environment is transversal to all maritime zones.
- iv) Fourthly, the creation of MPAs is one of the measures that States can adopt to protect the marine biodiversity⁽¹⁰⁾.

The last conclusion, the core of our analysis, derives from the regime established in article 194(5): “*The measures taken in accordance with this part shall include those necessary to protect and preserve rare or fragile eco-*

⁽⁸⁾ About “*the all-embracing extent*” of the marine environment protection, see Myron H. NORDQUIST (Ed.), *United Nations Convention on the Law of the Sea, 1982. A Commentary*, vol. IV, Center for Oceans Law and Policy, University of Virginia, Martinus Nijhoff Publishers, 1990, pp. 9-11 (XII.12 and XII.13).

⁽⁹⁾ See Myron H. NORDQUIST (Ed.), *United Nations Convention on the Law of the Sea, 1982. A Commentary*, vol. VI, Center of Oceans Law and Policy, University of Virginia School of Law, Martinus Nijhoff Publishers, 2002, p. 192 (145.2).

⁽¹⁰⁾ See Marta Chantal RIBEIRO, *cit.*, *A protecção da biodiversidade marinha...*, 2013; *idem*, “A protecção da biodiversidade marinha: importância do poder do Estado na prossecução deste ‘interesse geral’”, in Julio Jorge Urbina and Maria Teresa Ponte Iglesias (Coord.), *Protección de intereses colectivos en el Derecho del mar y cooperación internacional*, Iustel, 2012, pp. 25-62 (37-40).

systems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.”

Article 194(5) was proposed by the American delegation in 1978⁽¹¹⁾. Although the provision is inserted in the context of marine pollution, several authors argue that its content has the nature of general principle (the wording “*this part*” relates to all Part XII), exceeding the limits of the marine pollution framework⁽¹²⁾. Complementarily, the word ‘measures’ is sufficiently vague and open to include the MPA tool. The practice of the States (relevant under article 31(3), Vienna Convention 1969) confirms this interpretation of the scope of article 194(5). Several international regional conventions related to MPAs are clearly inspired by the wording of article 194(5). Some are contemporary with the UNCLOS negotiation⁽¹³⁾, others are subsequent to its signature⁽¹⁴⁾. At a global level, the Convention on Biological Diversity (CBD) of 1993, together with the decisions entitled ‘*Jakarta Mandate*’ (1995⁽¹⁵⁾), can be seen as complementary to the UNCLOS framework (see article 8 and article 22(2), CBD). That means that the CDB with ‘*Jakarta Mandate*’

⁽¹¹⁾ See Myron H. NORDQUIST (Ed.), *cit.*, vol. IV, 1990, p. 63.

⁽¹²⁾ See, *inter alia*, Margarita CORRAL SUÁREZ, *La Conservación de los Recursos Biológicos del Mar en el Derecho Internacional Vigente*, Secretariado de Publicaciones, Universidad de Valladolid, 1993, pp. 155-156; David FREESTONE, “The Conservation of Marine Ecosystems under International Law”, in Michael BOWMAN and Catherine REDGWELL (Eds), *International Law and the Conservation of Biological Diversity*, Kluwer Law International, 1996, pp. 91-107 (103); and OWEN, *cit.*, 2001, pp. 59-62, pp. 62-67 and p. 76.

⁽¹³⁾ E.g., *Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region*, of 23 March 1981, Abidjan, article 11.

⁽¹⁴⁾ E.g., Protocol to the Nairobi Convention, of 21 June 1985, *Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region*, article 2(1); all Contracting Parties are signatory of UNCLOS. Also the Protocol to the Lima Convention (1981), *Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific*, of 21 September 1989, Paipa, article II.

⁽¹⁵⁾ On *Conservation and sustainable use of marine and coastal biological diversity*, Decisions II/10 (COP 2 — 1995) and IV/5 (COP 4 — 1998), CBD.

decisions express the duty of cooperation in the field of the protection of the marine environment set out in article 197 of UNCLOS ⁽¹⁶⁾. The geographical scope of the CBD embraces mainly the maritime zones under national jurisdiction (article 4). Contracting Parties, however, underline the need to create MPAs in the Area and high seas, and are making efforts in this regard.

The conclusion is that today there is no doubt about the duty of States to create MPAs in all maritime zones. But, what do we understand by ‘marine protected area’? What realities are included in the concept and what are not?

2. WHAT DO WE UNDERSTAND BY ‘MARINE PROTECTED AREA’?

The concept of MPA has no clear borders. Effectively the concept is used in very varied situations.

Very often we find the concept associated with fishery reserves or ‘closed areas’ for fishing, with sanctuaries for large marine mammals (particularly, the ones designated by the International Whaling Commission), with areas designated for the prevention of impacts caused by shipping (article 211(6) of UNCLOS; MARPOL Special Areas or Particularly Sensitive Sea Areas designated by IMO ⁽¹⁷⁾), with areas associated with mining activities in the Area (Preservation Reference Areas; designation by ISA ⁽¹⁸⁾ of Areas of Particular Environmental Inter-

⁽¹⁶⁾ In this sense, see Rüdiger WOLFRUM and Nele MATZ, “The Interplay of the United Nations Convention on the Law of the Sea and the Convention on Biological Diversity”, *Max Planck Yearbook of United Nations Law*, 2000, pp. 445-480 (463 and 478). See also the Report of the Secretary-General on Oceans and the Law of the Sea, published on 15 July 2005, A/60/63/Add.1, paragraph 185: “*The Convention on Biological Diversity is complementary to UNCLOS in relation to its specific objectives.*”

⁽¹⁷⁾ International Maritime Organization.

⁽¹⁸⁾ International Seabed Authority.

est⁽¹⁹⁾), with areas designated to protect underwater cultural heritage, with safety areas around artificial islands and, ultimately, with protection areas for military operations⁽²⁰⁾. We can call these areas ‘sectoral MPAs’. All these areas are associated with particular human activities and the protection of environment, in particular biodiversity, may not be the primary goal or even any goal at all. In these cases, a very wide concept of MPA is used⁽²¹⁾.

On the other hand, it is also very common to see the concept being used in a restricted sense, that is, MPAs are the areas designated for the protection of marine biodiversity only, even though other complementary objectives may be associated with them⁽²²⁾⁽²³⁾. These are all-encompassing MPAs or, using the terminology of Erik Jaap MOLENAAR and Alex G. Oude ELFERINK, ‘multi-sectoral’, ‘multi-purpose’, ‘holistic’ MPAs⁽²⁴⁾.

When we refer to MPAs in the UNCLOS framework of ‘*protection and preservation of the marine environment*’ is it the narrow concept that

⁽¹⁹⁾ See Michael LODGE, “Some Legal and Policy Considerations Relating to the Establishment of a Representative Network of Protected Areas in the Clarion-Clipperton Zone”, *International Journal of Marine and Coastal Law*, vol. 26, issue 3, 2011, pp. 463-480.

⁽²⁰⁾ See Marta Chantal RIBEIRO, *cit.*, *A protecção da biodiversidade marinha...*, 2013, p. 178.

⁽²¹⁾ See *infra* point 2.2 and point 2.3.

⁽²²⁾ See *infra* point 2.2.

⁽²³⁾ The most radical understanding excludes from the MPA concept the Categories V (Protected seascape) and VI (Protected area with sustainable use of natural resources) of IUCN classification system. See Harvey LOCKE and Philip DEARDEN, “Rethinking protected area categories and the new paradigm”, *Environmental Conservation*, vol. 32, issue 1, 2005, pp. 1-10 (1 and 9).

⁽²⁴⁾ In “Marine protected areas in areas beyond national jurisdiction. The pioneering efforts under the OSPAR Convention”, *Utrecht Law Review*, special issue: *Protected Areas in Environmental Law*, vol. 5, issue 1, 2009, pp. 5-20 (6-7). See also Marta Chantal RIBEIRO, *cit.*, *A protecção da biodiversidade marinha...*, 2013, pp. 174-182.

is implicit? The answer to this question needs further reflexion and future development. The interpretation of UNCLOS by the authors varies from the broad sense of MPA, on the one hand, to the restricted sense, on the other. For the purpose of this paper, however, thinking about the *rationale* of article 194(5), we are adopting a restrictive understanding of the term ‘marine protected area’; in other words, the MPAs are areas aimed at protecting marine biodiversity. This is the approach favoured by IUCN which has influenced several regional and domestic regimes around the world ⁽²⁵⁾.

This being said, what are the structural elements of a ‘marine protected area’?

The concept implies three elements or dimensions ⁽²⁶⁾, physical, teleological, and regulatory.

2.1. Physical dimension

In the case of islands or coastal areas, the marine component should prevail in order to qualify a protected area as ‘marine’. A MPA, therefore, may include adjacent terrestrial areas (e.g., islands, shoreline, estuaries, mudflats, marshes), but these components must be secondary ⁽²⁷⁾. Other-

⁽²⁵⁾ See Graeme KELLEHER, *Guidelines for Marine Protected Areas*, Gland — Switzerland, Cambridge — United Kingdom, IUCN, 1999; Kevin BISHOP [et al.], *Speaking a Common Language. The uses and performance of the IUCN System of Management Categories for Protected Areas*, Cardiff University, IUCN, 2004; more recently, Nigel DUDLEY (Ed.), *Guidelines for Applying Protected Area Management Categories*, Gland, Switzerland, IUCN, 2008; J. DAY [et al.], *Guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas*, IUCN, 2012.

⁽²⁶⁾ Among several academic contributions, see Mercedes ORTIZ GARCÍA, *La conservación de la biodiversidad marina: las áreas marinas protegidas*, Editorial Comares, 2002. See also Marta Chantal RIBEIRO, *cit.*, *A protecção da biodiversidade marinha...*, 2013, pp. 147-219 (182-219).

⁽²⁷⁾ See Jean-Pierre BEURIER and Didier LE MORVAN, «Quelques réflexions sur le concept de parc marin en droit français», *Revue Juridique de l'Environnement*, special issue: *Les Parcs Marins*, no. 4, 1980, pp. 318-336; and Graeme KELLEHER, *cit.*, 1999.

wise, instead of ‘marine protected area’, the qualification should be simply ‘protected area’. Based on the IUCN definition of 1999 ⁽²⁸⁾, we may say that the marine limit is the limit of the intertidal area at the high tide ⁽²⁹⁾. The intertidal area is the area between the low and high tide marks. This understanding is helpful in the case of terrestrial borders *stricto sensu*. The marine limit is much more difficult to establish in case of ecosystems influenced by the sea, such as estuaries, mudflats, and marshes ⁽³⁰⁾.

Usually a MPA embraces the three-dimensional space, in other words, seabed and associated subsoil, water column and surface. Notwithstanding this, sometimes an MPA may include only the seabed and subsoil or simply the water column.

2.2. Teleological dimension

The heterogeneous application of the MPA concept is essentially caused by the teleological element. As a consequence of this the regulatory element may be more or less complex.

In the context of protection of marine biodiversity, MPAs are only those whose primary aim is the long term protection of marine ecosystems, habitats, species, ecological processes and areas of high productivity, irrespective of the carrying out of any economic activity. That ‘*leitmotif*’ may be combined with other complementary goals (e.g., sus-

⁽²⁸⁾ See Graeme KELLEHER, *cit.*, 1999, p. xi and p. xviii, about the definition of MPA: “*Any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.*” Emphasis added.

⁽²⁹⁾ In Portuguese legislation applicable to MPAs the limit of the marine environment corresponds to the limit of the spring tides.

⁽³⁰⁾ In the context of CBD these ecosystems are integrated in the ‘marine environment’, *Technical Advice on the Establishment and Management of a National System of Marine and Coastal Protected Areas*, Secretariat of the Convention on Biological Diversity, CBD Technical Series no. 13, 2004, p. 7.

tainable use of natural resources, conduct of marine scientific research, recreational and touristic activities, environmental education) but activities should immediately cease or be restricted if the achievement of the primary objectives is under threat ⁽³¹⁾. Consequently, fishery reserves, for instance, cannot be qualified as MPAs once the protection of biodiversity is accessory to an evident economic goal, viz. the continuity of the fishing activity. Likewise, areas designated by IMO should not be considered MPAs as well, notably because they may lack the immediate purpose of protecting biodiversity.

It should be stressed that fishery reserves and ‘IMO areas’ may be of relevance in complementing the objectives of the MPAs, but it is not accurate to qualify them as ‘MPAs’. From the teleological perspective, it should also be stressed that today, in concrete cases, the distinction between fishery reserves, sanctuaries for marine mammals (e.g., the Pelagos Sanctuary) and Particularly Sensitive Sea Areas, on the one hand, and MPAs, on other hand, might be blurred. In these situations, the regulatory dimension is crucial in order to exclude these areas from the concept of ‘MPAs’.

2.3. Regulatory dimension

The regulatory element can be divided into two stages:

First, the formal designation of the MPA; in other words, the moment when the MPA is created; and

Second, the adoption of protective measures based on threats and negative impacts caused by the set of human activities carried out in the area (holistic approach). The adoption of protective measures should be complemented by monitoring, surveillance and enforcement systems. To this end, the MPA designation is usually accompanied by, or followed by, a management plan.

⁽³¹⁾ Graeme KELLEHER, *cit.*, 1999; Nigel DUDLEY, *cit.*, 2008.

Without effective protective measures we have nothing but ‘paper MPAs’. This assertion merits further development, owing to the fact that, from a legal point of view, the efficacy of a MPA depends on the binding nature of the protective measures adopted ⁽³²⁾, as well as depends on the application of the article 34 of the Vienna Convention 1969. Under this article, for non-contracting parties the treaty is ‘*res inter alios acta*’, so how can we involve them in the MPA objectives ⁽³³⁾? In the ocean those two limitations are of major importance for the future of biodiversity.

The regulatory element is, sometimes, the crucial distinctive factor between MPAs and other close concepts ⁽³⁴⁾. Together with the teleological dimension, the regulatory dimension is the reason why MPAs have become so important in the protection of oceans. Actually, MPAs entail a management plan where all uses and activities with current or potential impact on the marine environment are regulated. This holistic approach makes not only a ‘quantitative’ difference but also a ‘qualitative’ difference.

In the case of MARPOL Special Areas and marine mammal sanctuaries, namely the ones designated by the International Whaling Commission, it is also arguable that their extension ⁽³⁵⁾ goes beyond what is conceivable for a MPA.

Finally, the MPA instrument should not be confused with individual measures even though these have the ability to complement their objectives and, possibly, become components of the MPA management

⁽³²⁾ E.g., under RFMO or IMO instruments, the binding nature of the measures adopted is not always a certainty.

⁽³³⁾ “*A treaty does not create either obligations or rights for a third State without its consent*”. In other words, treaties may neither impose obligations on, nor create legal entitlements for, third States (*pacta tertiis nec nocent nec prosunt*).

⁽³⁴⁾ See notably point 2.2. of this article.

⁽³⁵⁾ Very large areas of the ocean. See Graeme KELLEHER, *cit.*, 1999, p. 8.

plan, as, for instance, areas where it is forbidden to use certain kinds of fishing nets and areas to be avoided by the navigation as designated by the IMO.

2.4. Proposed definition

Without prejudicing the worldwide acceptance of the IUCN definitions (1999 ⁽³⁶⁾ and 2008 ⁽³⁷⁾), we propose a definition of ‘marine protected area’, firstly, as an attempt to overcome the critics to the definition of MPA elaborated by IUCN in 1999 ⁽³⁸⁾, and, secondly, to give an autonomous definition suitable for the marine environment. In fact, the IUCN definition developed in 2008 embraces both ‘terrestrial’ and ‘marine’ protected areas. Our proposed definition is this:

‘A marine protected area is a juridical figure which entails a special protective regime granted to an area delimited in the marine environment, extending this up to the maximum limit of the intertidal area and to which might be linked, accessorially, the adjacent terrestrial environment, being the area formally designated and managed for the long term protection of biological diversity, as well as to pursue other complementary purposes’ ⁽³⁹⁾.

⁽³⁶⁾ For the definition of ‘marine protected area’ by IUCN, see *supra* footnote 28.

⁽³⁷⁾ General definition, applicable to terrestrial and marine protected areas: “A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values”, in Nigel DUDLEY, *cit.*, 2008, p. 8 and p. 56.

⁽³⁸⁾ See Graeme KELLEHER, *cit.*, 1999; Kevin BISHOP [et al.], *cit.*, 2004; Sue WELLS and Jon DAY, “Application of the IUCN protected area management categories in the marine environment”, IUCN, Parks, vol. 14, issue 3, *Protected Areas Categories*, 2004, pp. 28-38.

⁽³⁹⁾ Marta Chantal RIBEIRO, *cit.*, *A protecção da biodiversidade marinha...*, 2013, p. 219.

3. THE INFLUENCE OF MPAS IN THE EVOLUTION OF THE UNCLOS INTERPRETATION: THE BALANCE BETWEEN THE POWERS OF COASTAL STATE AND THE RIGHTS AND FREEDOMS OF THIRD STATES

Finding the legal bases for creating MPAs and building a reasonable definition are the easiest tasks. One of the real difficulties lies in finding the balance among the powers of coastal State and the rights and freedoms of third States.

Although UNCLOS gives legal basis to create MPAs (*declaration, designation, nomination*), the concrete powers to implement them need further development, such as the power to approve the management plan, the power to adopt the inherent protective measures, the power to establish the necessary surveillance and enforcement systems. Particularly beyond the territorial sea, a new balance should be established between the rights and freedoms of third States (e.g., navigation, fishing, marine scientific research) and the coastal State power and duty to protect the environment, notably the biodiversity.

The effects of the encouragement and pressure to create MPAs are visible. Even though the majority of the existent MPAs are coastal, small and isolated (that is, not included in a coherent network), there was a noteworthy evolution from 2003 to 2011. In 2003, MPAs encompassed only 0.45 per cent of the seas and oceans and 1.14 per cent of the marine area within the limits of the EEZ. At the beginning of 2010 the percentages had changed, respectively, to 1.17 and 2.86 per cent⁽⁴⁰⁾. In 2011, according to the World Database on Protected Areas dataset, 7.2 per cent of coastal waters (0-12 n.m.) were protected

⁽⁴⁰⁾ See M. SPALDING [et al.], “The 10% Target: Where Do We stand?”, in C. TOROPOVA [et al.] (eds.), *Global Ocean Protection: Present Status and Future Possibilities*, IUCN, The Nature Conservancy, UNEP-WCMC, UNEP, UNU-IAS, Agence des aires marines protégées, France, 2010, pp. 25-40 (28).

and the total marine area within the limits of the EEZ reached 4 per cent protection ⁽⁴¹⁾.

In Nagoya (October 2010), the Conference of the Parties of the CBD launched the target ‘2020: 10 per cent’. In other words, by 2020, at least 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, should be preserved through effectively and equitably managed, ecologically representative and well-connected systems of MPAs and other effective area-based conservation measures, and integrated into the wider seascapes ⁽⁴²⁾. In Hyderabad (October 2012), the Conference of the Parties of the CBD reaffirmed this target ⁽⁴³⁾.

Given this scenario, the opportunity for conflicts will increase. This is true both for areas under national jurisdiction (especially, the EEZ and the continental shelf) as to areas beyond national jurisdiction. So, what shall we do?

Shall we repeat laconically that the rights and freedoms of third States are untouchable, as the United Nations General Assembly resolutions ironically (... but involuntarily?) suggest? For instance, in the Resolution 66/231 of 24 December 2011 ⁽⁴⁴⁾, it is stated that MPAs must be established in a manner “*consistent with international law, as reflected in the Convention*”, that is, UNCLOS.

⁽⁴¹⁾ See UNEP/CBD/COP/11/26, of 23 July 2012, paragraph 32, p. 13, available at: <http://www.cbd.int/doc/meetings/cop/cop-11/official/cop-11-26-en.pdf>.

⁽⁴²⁾ See COP 7-2004, Decision VII/30, Annex II, Target 1.1, and Decision X/2 — COP 10 (*The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets*), Annex, IV, 13, Target 11.

⁽⁴³⁾ See, namely, Draft Decisions of 21 September 2012, UNEP/CBD/COP/11/1/Add.2, point III, p. 11 and p. 20, Implementation of the Strategic Plan for Biodiversity 2011-2020 and Progress Towards the Aichi Biodiversity Targets, available at: <http://www.cbd.int/doc/meetings/cop/cop-11/official/cop-11-01-add2-en.pdf>.

⁽⁴⁴⁾ See para. 175-176.

Or shall we move to solutions case-by-case in order to reconcile the apparently irreconcilable?

Unless either an amendment of UNCLOS or a lateral agreement is foreseen in the near future, a highly improbable hypothesis, there is no alternative but to read UNCLOS provisions with a dynamic and contemporary perspective. In this process we can be taught many lessons from the MPAs created on the continental shelf beyond 200 n.m. Effectively, the outer continental shelf gives guidance about the evolutionary interpretation of the powers of coastal State and the trends in the regional perception about the common duty to preserve the oceans. Sometimes problems are identical, irrespective of the legal statute of the maritime zone.

4. LESSONS FROM THE PORTUGUESE CASE-STUDY AND OSPAR EXAMPLE

In 2005, Portugal announced its intention to make a submission to the Commission on the Limits of the Continental Shelf. Consequently, in 2006, Portugal nominated the seabed and subsoil of the hydrothermal vent field named 'Rainbow' to the OSPAR Network of MPAs⁽⁴⁵⁾ as a marine protected area under national jurisdiction. At that time it was already certain that the Rainbow was located on the Portuguese continental shelf beyond 200 n.m.⁽⁴⁶⁾ From a legal perspective, the nomination was based, notably, on article 77(3)(4), articles 192-193 and article 194(5) of UNCLOS.

⁽⁴⁵⁾ Convention for the Protection of the Marine Environment of the North-East Atlantic, of 22 September 1992, particularly the Annex V on the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area, of 23 July 1998, and the related Recommendation 2003/3 (see *infra* footnote 56).

⁽⁴⁶⁾ Approximately 235 n.m. from the coastal baselines, at depths ranging from about 2270 to 2320 metres.

In 2007, remarkably, OSPAR Contracting Parties accepted the Portuguese nomination of the first national marine protected area under the high seas, commending the initiative. At that time, the Portuguese submission to the Commission on the Limits of the Continental Shelf was still being prepared, having been formalized on 11 May 2009. In fact, the case had no international precedents; its development, therefore, prompted innovative interpretations of the law of the sea provisions ⁽⁴⁷⁾. In 2010, in the European Union context, the Regional Government of Azores selected the Rainbow hydrothermal field for the Natura 2000 network. At this moment, the field is included in the National List of Sites, waiting for a decision of the European Commission about its recognition as a 'Site of Community Importance'.

In 2010, Portugal nominated the seabed and subsoil of another four ecosystems located on the outer continental shelf to the OSPAR Network of MPAs, viz. Altair, Antialtair and the Josephine seamounts, as well as the complex of seamounts of the Mid-Atlantic Ridge North of the Azores. The ecological features of the seamounts are very different from those of the hydrothermal vent fields. Seamounts include features and organisms belonging to the seabed and subsoil, plus features and organisms belonging to the water column. Hence, for the protection of Altair, Antialtair, Josephine and the Mid-Atlantic Ridge North of the Azores to be effective it necessarily needs the protection both of the seabed and subsoil (legally qualified as 'continental shelf' beyond 200 n.m. and so under Portuguese jurisdiction) and also the water column (legally qualified as 'high seas' because the water column is beyond national jurisdiction). Consequently, in collaboration with Portugal, at its meeting in September 2010 (Bergen), the OSPAR Commission established four high seas marine protected areas, viz. the Altair, the

⁽⁴⁷⁾ For more developments, see Marta Chantal RIBEIRO, "The 'Rainbow': The First National Marine Protected Area Proposed Under the High Seas", *International Journal of Marine and Coastal Law*, vol. 25, issue 2, pp. 183-207.

Antialtair, and the Josephine seamounts *High Seas* MPAs, as well as the Mid-Atlantic Ridge North of the Azores *High Seas* MPA ⁽⁴⁸⁾ ⁽⁴⁹⁾.

These four high seas MPAs are complementary to the four MPAs nominated by Portugal relating to the outer continental shelf. With this solution Portugal and OSPAR overcame the difficulty of protecting the entire ecosystem of the seamounts; the protection and management of the seabed and subsoil is the responsibility of Portugal, and the protection and management of the water column is the responsibility of OSPAR. This approach obviously requires effective collaboration between the two parties. It should be highlighted that this example attracted international attention, namely by being referred to in the Report of the Secretary-General of 22 March 2011 ⁽⁵⁰⁾.

⁽⁴⁸⁾ See OSPAR Decision 2010/3 on the *Establishment of the Altair Seamount High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 38; OSPAR Recommendation 2010/14 on the *Management of the Altair Seamount High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 39; OSPAR Decision 2010/4 on the *Establishment of the Antialtair Seamount High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 40; OSPAR Recommendation 2010/15 on the *Management of the Antialtair Seamount High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 41; OSPAR Decision 2010/5 on the *Establishment of the Josephine Seamount High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 42; OSPAR Recommendation 2010/16 on the *Management of the Josephine Seamount High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 43; OSPAR Decision 2010/6 on the *Establishment of the MAR North of the Azores High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 44; OSPAR Recommendation 2010/17 on the *Management of the Mid-Atlantic Ridge North of the Azores High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 45.

⁽⁴⁹⁾ For more developments, see Marta Chantal RIBEIRO, 'A criação de AMPs nas zonas da plataforma continental situadas além das 200 mn: Direito do Mar, CPLP e experiência portuguesa pós- 'Rainbow'', *Revista do CEDOUA*, vol. 25, XIII, issue 1, 2010, pp. 23-39; Marta Chantal RIBEIRO and Ricardo Serrão SANTOS, 'Ecossistemas de profundidade, AMPs oceânicas, plataforma continental além das 200mn e pioneirismo português', *Dossier, Revista do CEDOUA*, vol. 25, XIII, issue 1, 2010, pp. 117-130.

⁽⁵⁰⁾ United Nations General Assembly, Oceans and the Law of the Sea, A/66/70, paragraphs 142 and, particularly, 174.

What are the legal implications of all these pioneer initiatives?

4.1. From the perspective of a coastal State

- a) *Automatic enlargement of the geographical area where the coastal State can exercise its sovereign and jurisdictional powers (prescriptive and enforcement powers):*

The relevance of the MPAs created on the outer continental shelf for the understanding of the evolution of the powers of coastal States, given an ‘actualistic’ interpretation of the provisions set out in UNCLOS, may be summarized as follows ⁽⁵¹⁾:

- i) First, in the outer continental shelf the coastal State has exclusive environmental jurisdiction, even at a stage where there is still no ultimate confirmation of the limits proposed to the Commission on the Limits of the Continental Shelf ⁽⁵²⁾. The coastal State can, and should, exercise immediate power, utilising the precautionary principle, to protect ecosystems and biodiversity in general. This includes the creation of MPAs.
- ii) Second, fishing and bio-prospecting by third States for sedentary species on the outer continental shelf should cease immediately.
- iii) Third, in the unlikely event that the ISA is involved in any mining activity on the outer continental shelf, it would have to immediately suspend any activity planned.

⁽⁵¹⁾ For more detailed arguments see our article “The ‘Rainbow’: The First National...”, *cit.*, 2010, p. 190 et seq.

⁽⁵²⁾ We quote our article “The ‘Rainbow’: The First National...”, *cit.*, 2010, pp. 193-194: “*in the light of what is laid out in the LOSC, the recognition of the environmental jurisdiction of the coastal State, although conditional upon final determination that the area is part of its extended continental shelf, is the only interpretation compatible with the current law of the sea regime.*”

- iv) Fourth, the laying of cables and pipelines would need to comply with article 79(2)(3) of UNCLOS.
- v) Fifth, marine scientific research is no longer a freedom of the high seas. Third States must comply with, notably, article 246 of UNCLOS.

An aspect that is still not clear is to know whether a coastal State may immediately and completely exercise its rights to *exploit the natural resources* of the outer continental shelf in accordance with article 77 of UNCLOS. Or, differently, is there arguably a duty of ‘standstill’ on the part of the coastal State until the Commission on the Limits of the Continental Shelf has issued ‘positive’ recommendations (sections of the continental shelf ‘free of objections’) or until the entire process is concluded ⁽⁵³⁾?

Without prejudicing the principle of good faith, three arguments concur with regard to recognising the immediate full sovereignty of the coastal State, at least with reference to the sections of the extended continental shelf ‘free of objections’, that is, after ‘positive’ recommendations issued by the Commission on the Limits of the Continental Shelf. These are:

- i) Firstly, the whole article 77 of UNCLOS. The wording makes no distinction between the continental shelf within the 200 n.m. limit and the continental shelf beyond that limit.
- ii) Secondly, the long duration of the entire process of analysing the submissions. For instance, in the case of Portugal the beginning of the analysis is expected only in 2015. In the case of large economic dependence on the resources of the continental shelf, is it fair to require of the coastal State a duty of ‘standstill’? I also agree that the answer is not easy.

⁽⁵³⁾ *Mutatis mutandis* see the rationale of the previous footnote.

- iii) Thirdly, in 2010, the International Seabed Authority gave an important interpretation in its Technical Study No. 5, paragraph 2.2.1, related to the application of article 82 of UNCLOS:

“The sovereign rights of the coastal States over the continental shelf exist ab initio and ipso jure regardless of the extent of the continental shelf and regardless of the establishment of the outer limits of the continental shelf beyond 200M. They are exclusive and do not depend on effective or notional occupation or on any express proclamation. Therefore, a coastal State is entitled to exercise those rights even before the limits are final and binding. In other words, the extraction of resources from the OCS⁽⁵⁴⁾ (which would in turn trigger the implementation of Article 82) is not contingent on the delineation of the outer limits of the continental shelf beyond 200M”⁽⁵⁵⁾.

- b) *The consequences of the assumption by the coastal State of its exclusive competence to create MPAs on the continental shelf beyond 200 n.m.:*

When we reflect on the exclusive jurisdiction of the coastal State to protect the environment and create MPAs on the outer continental shelf, this matter seems to be more conciliatory in the current stage of development of the international law and the law of the sea. Taking into account the UNCLOS provisions and the complementary international instruments (e.g., in the field of shipping and fisheries), however, the adoption of the management plans that assure the effectiveness of the MPAs may become a ‘puzzle’ which it is not easy to determine and solve.

⁽⁵⁴⁾ Outer continental shelf.

⁽⁵⁵⁾ International Seabed Authority, *Non-living Resources of the Continental Shelf Beyond 200 Nautical Miles: Speculations on the Implementation of Article 82 of the United Nations Convention on the Law of the Sea*, Technical Study No. 5, 2010, p. 14. Article 82 is about ‘Payments and contributions with respect to the exploitation of the continental shelf beyond 200 nautical miles’.

Actually, coastal State may not have the unilateral power to adopt protective measures, such as those for limiting or prohibiting navigation or fishing by vessels flying the flag of third States.

In this respect, the reasoning of article 4 of Annex V of OSPAR Convention, together with Recommendation 2003/3, gives important guidelines ⁽⁵⁶⁾. It follows from this Recommendation that, according to the management plan of the MPA presented by the coastal State and the type of protective measures required, actions must be developed for the measures to be approved, notably:

- When the proposing State has the competence to adopt such measures (all or some of them), it should initiate the processes under its domestic legislation to establish such measures.
- When a State needs consent from an international organization in order to adopt such measures or when the adoption of the measures proposed is within the competence of an international authority or organization, it is up to the State to take steps in order to obtain such consent or achieve the adoption of the measures in question. These cases should be reported to the OSPAR Commission.
- The recommendation establishes a restrictive calendar regarding the implementation of the management plans (2016 or five years, depending on the case).

The State initiative benefits, when it is required, from the importance of the OSPAR structure, translated into action by the Commission or into concerted actions by the Contracting Parties.

As can be easily observed, the exclusive competence of the coastal State to protect the environment in the outer continental shelf, in its

⁽⁵⁶⁾ OSPAR Recommendation 2003/3, on a Network of Marine Protected Areas, adopted by OSPAR 2003 (OSPAR 03/17/1, Annex 9), amended by OSPAR Recommendation 2010/2 (OSPAR 10/23/1, Annex 7), paragraph 3.2(b).

own interest and/or on behalf of the international community, entails a great responsibility for the State. The exercise of the unilateral prescriptive and enforcement powers already faces several difficulties in the economic exclusive zone and the related continental shelf. The level of difficulty increases in the outer continental shelf owing to the regime of the high seas applicable to the water column.

In general, we think about the freedom of navigation and IMO competences, or about the implications of the European Union common fisheries policy, or even about the principle under which, for non-contracting parties, the treaties are '*res inter alios acta*', or, finally, we think about the measures adopted at an international level which are not always binding even for contracting parties (e.g., RFMO ⁽⁵⁷⁾).

In this scenario, only an energetic diplomatic activity might overcome the present insufficiencies of the regime created in 1982.

c) *Effects on the evolution of the Portuguese legal system:*

The assumption by Portugal of its exclusive competence to create MPAs on the outer continental shelf entailed noteworthy developments in the domestic legal system. Nor could it be otherwise. Compliance with international commitments demands an adequate domestic framework. In this respect, the following evolution is worthy of reference:

- The possibility of creating MPAs in the EEZ and continental shelf is established in Law 11/87 of 7 April (Basic Law on the Environment) and consolidated in the Decree-Law 142/2008 of 24 July ⁽⁵⁸⁾. Through interpretation, the Decree-Law 142/2008 that sets the regime of the National Network of Protected Areas is applicable to the outer continental shelf.

⁽⁵⁷⁾ Regional Fisheries Management Organizations.

⁽⁵⁸⁾ *Diário da República* I, No. 142, p. 4596.

- Regional Legislative Decree 15/2007/A, of June 25, replaced by Regional Legislative Decree 15/2012/A of April 2 ⁽⁵⁹⁾. These regulations were adopted in the context of the system of regional autonomy of Azores, and they should be highlighted. In fact, they are innovative and remarkable at the level of the conception of the network of MPAs. They create the Marine Park of the Azores ⁽⁶⁰⁾, including the outer continental shelf, namely the protected areas nominated to the OSPAR Network of MPAs.
- Regional Legislative Decree 28/2011/A, of November 11 ⁽⁶¹⁾. This regulation is of major importance because it implements the Marine Park of the Azores. With respect to the protected areas created on the outer continental shelf, the Rainbow hydrothermal field is classified as ‘marine natural reserve’, and the Altair seamount, Antialtair seamount, and the complex of seamounts of the Mid-Atlantic Ridge North of the Azores are classified as ‘habitats and species management areas’.
- Aware of the wealth of its biodiversity, the Autonomous Region of Azores adopted another remarkable regulation — the Regional Legislative Decree 9/2012/A, of March 20 ⁽⁶²⁾, implemented by the Regional Legislative Decree 20/2012/A, of November 5 ⁽⁶³⁾ — establishing the regime on access to and utilization of natural resources for scientific purposes, including bio-prospecting. This regulation anticipated the implementation of *The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their*

⁽⁵⁹⁾ *Diário da República* I, No. 66, p. 1625.

⁽⁶⁰⁾ The regulations make a distinction between the ‘natural parks of island’ (9) and the ‘marine park of the Azores’. The MPAs located within the limits of the territorial sea belong to the respective ‘park of island’. The MPAs located within the limits of the EEZ and on the outer continental shelf belong to the ‘marine park of the Azores’.

⁽⁶¹⁾ *Diário da República* I, No. 217, p. 4834.

⁽⁶²⁾ *Diário da República* I, No. 57, p. 1301.

⁽⁶³⁾ *Diário da República* I, No. 213, p. 6350.

Utilization to the Convention on Biological Diversity, of 29 October 2010. Portugal signed the Protocol on 20 September 2011. Portugal has not ratified the Protocol thus far, and the Protocol is not yet in force. The Regional Legislative Decrees are applicable to all maritime zones (Autonomous Region of Azores) under Portuguese jurisdiction.

- The last comment applies to another recent regulation: the Regional Legislative Decree 21/2012/A, of May 9 ⁽⁶⁴⁾, which establishes the regime on the exploration and exploitation of geological resources, embracing all maritime zones (Autonomous Region of Azores) under Portuguese jurisdiction. Prior general regulations adopted by the Portuguese government also exist.

Portugal, emphasizing the Autonomous Region of Azores, has thereby given proof of a credible commitment to providing a legal response to the challenge of creating MPAs, thus showing the determination to take the leap from good intentions, which form the substance of political speeches, to the complex vision of the world that practical execution represents.

4.2. From the perspective of OSPAR

The initiative of the OSPAR Commission of establishing four high seas MPAs, complementary to the Portuguese MPAs, is also worthy of reference, as it throws light on the pragmatic solutions that can be taken under UNCLOS framework. I am not, however, going to prolong this discussion because this is the topic of the contribution of Professor Tullio Scovazzi. I just anticipate three thoughts:

- i) Firstly, it is clear that the Contracting Parties of the OSPAR Convention are willing to strengthen the mandate of the

⁽⁶⁴⁾ *Diário da República* I, No. 90, p. 2444.

- OSPAR Commission in areas beyond national jurisdiction, if national interest is not affected ⁽⁶⁵⁾ ⁽⁶⁶⁾.
- ii) Secondly, the tasks of regulating and managing the four OSPAR high seas MPAs face their own complicated factors. These are that OSPAR does not have authority to control fishing activities, which are covered by the North East Atlantic Fisheries Commission (NEAFC) eventually combined with the European Union fisheries policy, or to control shipping, which is covered by the IMO. Hence, OSPAR, in collaboration with Portugal and European Union, when appropriate, might need to reach further agreements with the above-mentioned bodies so that full protection can be given to the four new sites. NEAFC have already imposed closures for bottom fisheries embracing the Altair and Antialtair MPAs as well as the Mid-Atlantic Ridge North of the Azores MPA ⁽⁶⁷⁾. Other activities, such as marine scientific research, including bio-prospecting, do not have an international regulatory body.
 - iii) Thirdly, to achieve the four objectives of the OSPAR high seas MPAs, the OSPAR Commission has set an ambitious work-plan for Contracting Parties, notably ⁽⁶⁸⁾:
 - (a) The implementation of the management framework of each MPA implies the commitment by each Contracting Party of an appropriate level of resources in order to achieve the conservation objectives of the MPA.

⁽⁶⁵⁾ There are sixteen Contracting Parties of the OSPAR Convention: Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the European Union.

⁽⁶⁶⁾ Notably, the position of Iceland in the case of the *Charlie-Gibbs Fracture Zone, North*.

⁽⁶⁷⁾ See <http://www.neafc.org/closures/vme>.

⁽⁶⁸⁾ For more details see, for instance, the OSPAR Recommendation 2010/17 on the *Management of the Mid-Atlantic Ridge North of the Azores High Seas Marine Protected Area*, OSPAR 10/23/1-E, Annex 45.

(b) Awareness raising:

- (b.1) Contracting Parties should promote awareness, at a national level, about the establishment of the MPAs and the objectives the OSPAR Commission has set for its conservation. This should be achieved through actions such as notification of relevant stakeholders through competent national authorities and the inclusion of the MPAs in sea charts and other maps, as appropriate, and, particularly,
- (b.2) Contracting Parties should aim, through awareness raising and voluntary agreements, to encourage vessels flying their flags to comply with the management framework and meet the conservation objectives of the MPAs.

(c) Information building:

- (c.1) Contracting Parties should nationally engage with relevant stakeholders in building and sharing information and knowledge of the biodiversity and ecosystems of the MPAs and the impacts of human activities taking place there.
- (c.2) Likewise, Contracting Parties should report scientific and technical information and knowledge gained at a national level on the biodiversity and ecosystems of the MPAs to the OSPAR Commission.

(d) Marine science:

- (d.1) Contracting Parties should promote the application of the *OSPAR Code of Conduct for responsible Marine Research in the deep seas and high seas of the OSPAR area* (OSPAR Agreement 2008-1) by national research vessels or national research institutions

- involved in international research programmes in the MPAs.
- (d.2) Contracting Parties should also encourage and, where appropriate, support and initiate scientific research projects and programmes to enhance the knowledge base of the sites, of the impacts resulting from human activities, and of the solutions to achieve the conservation objectives, as well as:
 - (d.3) Encourage the inclusion of the MPAs as reference areas in scientific research programmes on climate change and the oceans; and
 - (d.4) Identify suitable mechanisms for monitoring the achievement of the conservation objectives for the areas; and
 - (d.5) Identify activities and mitigating actions that promote the achievement of the conservation objectives for the areas.
- (e) New developments:
- (e.1) Contracting Parties should make publicly available, and bring to the attention of the OSPAR Commission, plans for human activities in the MPAs, or any measure outside the areas that may be potentially in conflict with the conservation objectives and likely to cause a significant impact to the ecosystems of the MPAs.
 - (e.2) Contracting Parties should ensure, where appropriate, that human activities are subjected to an environmental impact assessment or to a strategic environmental assessment, and that appropriate measures are taken.
 - (e.3) Contracting Parties should ensure the involvement of relevant stakeholders in the process of planning new activities and assessing their potential impacts on the MPAs, and use best-available scientific advice.

- (f) Finally, regarding third parties, in order to circumvent the principle under which, for non-contracting parties, the treaties are ‘*res inter alios acta*’, Contracting Parties should engage with third parties and relevant international organizations, as appropriate, with a view to promoting the delivery of the conservation objectives that the OSPAR Commission has set for the MPAs and to encourage the application of the above programmes and measures, as is relevant.

More than anything else, Portuguese authorities must give a pro-active example with regard to the implementation of this work-plan especially owing to the complementary nature of the protection of the seabed and the protection of the water column.

5. FINAL THOUGHTS

Marine protected areas are a kind of ‘*ecological insurance*’⁽⁶⁹⁾ and the oceans depend on them to prosper and... to make prosper. Any reflection about the future of the law of the sea must necessarily face the implications, whatever their complexity, of that certainty.

Both for areas under national jurisdiction and for areas beyond national jurisdiction, only a revolutionary change of the current legal paradigm will ensure the achievement of the objectives set for the marine protected areas and, consequently, will ensure a happier prospect for the health of the oceans and, ultimately, for the health of the Earth and the sake of mankind.

⁽⁶⁹⁾ Robert COSTANZA [et al.], “A Economia Ecológica e a Governação Sustentável dos Oceanos”, in Robert COSTANZA and Francisco ANDRADE (Ed.), *Ecological Economics and Sustainable Governance of the Oceans*, Fundação Luso-Americana para o Desenvolvimento — IMAR — LPN, 1998, pp. 11-40 (36-37).

MARINE PROTECTED AREAS IN WATERS BEYOND NATIONAL JURISDICTION

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Abstract: *An important means to comply with the general obligation to protect and preserve the marine environment is the establishment of marine protected areas, which is implied in Art. 194, para. 5, of the United Nations Convention on the Law of the Sea (UNCLOS). It provides that States shall take the measures necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. A number of policy instruments call for action towards the establishment of marine protected areas, both within and beyond national jurisdiction. Such an action is also encouraged by treaties that are today in force for many States, at the world and regional level. Some relevant instances are the 1992 Convention on Biological Diversity, the 1995 Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean and the 1998 OSPAR Annex V on the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area. In the last years a number of States proposed the commencement of a negotiation process towards a new implementation agreement of the UNCLOS that could fill the gaps in the present regime of conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction. While a general consensus on this proposal has not yet been achieved, commonalities are being developed among States that were previously putting forward divergent positions. A future global regime for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction could include provisions relating to some main subjects, such as a network of marine protected areas, environmental impact assessment, marine genetic resources, including access to and sharing of benefits from them, as well as capacity building and technology transfer.*

1. THE NOTION OF MARINE PROTECTED AREA

The United Nations Convention on the Law of the Sea (Montego Bay, 1982) ⁽¹⁾ puts emphasis on the objective of preservation and protection of the marine environment, at both the world and the regional level and according to different sources of pollution, as specified in detail in UNCLOS Part XII. All States are under an obligation, arising from customary international law and restated in Art. 192 UNCLOS, “to protect and preserve the marine environment”.

An important means to comply with the above mentioned general obligation is the use of area-based management tools, including marine protected areas, which is implied in Art. 194, para. 5, UNCLOS. It provides that the measures taken to protect and preserve the marine environment

“shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life” ⁽²⁾.

This provision applies everywhere in the sea, including the high seas and the seabed.

A marine protected area can generally be understood as an area of marine waters or seabed that is delimited within precise boundaries,

⁽¹⁾ Hereinafter: UNCLOS. See Scovazzi (Ed.), *Marine Specially Protected Areas — The General Aspects and the Mediterranean Regional System*, the Hague, Kluwer Law International, 1999; Ribeiro, *A protecção da biodiversidade marinha através de áreas protegidas nos espaços marítimos sob soberania ou jurisdição do Estado. Discussões e soluções jurídicas contemporâneas*, Coimbra, Coimbra Editora, 2013.

⁽²⁾ Rare or fragile marine ecosystems present various characteristics and are found in areas which have different legal conditions. While wetlands, lagoons or estuaries are located along the coastal belt, other kinds of ecosystems, such as seamounts, hydrothermal vents or submarine canyons, are frequently found at a certain distance from the coast, in areas located beyond the limit of the exclusive economic zone.

including, if appropriate, buffer zones, and that is granted a special protection regime because of its significance for a number of reasons (ecological, biological, scientific, cultural, educational, recreational, etc.)⁽³⁾. This broad notion of marine protected area does not substantially depart from the definition of “protected area” given by the Art. 2 of the Convention on Biological Diversity (Rio de Janeiro, 1992), that is “a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives”, and from the definition of “marine and coastal protected areas” that has been proposed by the Ad Hoc Technical Group on Marine and Coastal Protected Areas, established within the framework of the same convention:

“Marine and coastal protected areas’ means any defined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings”⁽⁴⁾.

⁽³⁾ This definition is recalled in note 11 of Decision VII/5 on Marine and Coastal Biological Diversity, adopted in 2004 by the Conference of the Parties to the Convention.

⁽⁴⁾ The World Conservation Union (IUCN) has defined a protected area as “an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources and managed through legal or other effective means”. It has developed a number of protected area management categories, which are also applicable to the marine environment, namely: Strict Nature Reserve: protected area managed mainly for science; Wilderness Area: protected area managed mainly for wilderness protection; National Park: protected area managed mainly for ecosystem protection and recreation; Natural Monument: protected area managed mainly for conservation of specific natural features; Natural Monument: protected area managed mainly for conservation of specific natural features; Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation; Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems.

Marine protected areas are a rather flexible instrument that can be limited to those protection measures which are necessary to ensure the prescribed objectives, without unnecessarily burdening the activities that can be carried out in an environmentally sustainable way. The establishment of marine protected areas as a key element of marine environmental protection is linked to the most advanced concepts of environmental policy, such as sustainable development, precautionary approach, integrated coastal zone management, marine spatial planning⁽⁵⁾, ecosystem approach and transboundary cooperation.

2. THE RELEVANT POLICY INSTRUMENTS

A number of policy instruments call for action towards the establishment of marine protected areas.

According to Agenda 21, the action programme adopted in Rio de Janeiro by the 1992 United Nations Conference on Environment and Development, States, acting individually, bilaterally, regionally or multilaterally and within the framework of the International Maritime Organization (IMO) and other relevant international organizations, should assess the need for additional measures to address degradation of the marine environment. Agenda 21 stresses the importance of protecting and restoring endangered marine species, as well as preserving

⁽⁵⁾ Under the Communication by the Commission of the European Union *Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU*, doc. COM(2008) 791 final of 25 November 2008, “MSP [= Maritime Spatial Planning] is a tool for improved decision-making. It provides a framework for arbitrating between competing human activities and managing their impact on the marine environment. Its objective is to balance sectoral interests and achieve sustainable use of marine resources in line with the EU [= European Union] Sustainable Development Strategy. MSP should be based on the specificities of individual marine regions or sub-regions. It is a process that consists of data collection, stakeholder consultation and the participatory development of a plan, the subsequent stages of implementation, enforcement, evaluation and revision” (para. 2.1).

habitats and other ecologically sensitive areas, both on the high seas and in the zones under national jurisdiction ⁽⁶⁾. In particular:

“States commit themselves to the conservation and the sustainable use of marine living resources on the high seas. To this end, it is necessary to: (...)

- e) Protect and restore marine species;
- f) Preserve habitats and other ecologically sensitive areas”
(para. 17.46).

“States should identify marine ecosystems exhibiting high levels of biodiversity and productivity and other critical habitat areas and provide necessary limitations on use in these areas, through, inter alia, designation of protected areas” (para. 17.86).

The Plan of Implementation of the World Summit on Sustainable Development (Johannesburg, 2002) confirms the need to promote the conservation and management of the ocean and “maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, including in areas within and beyond national jurisdiction” (para. 32, a). To achieve this aim, the Plan puts forward the objective of a representative network of marine protected areas and the deadline of 2012 for its achievement. States are invited to

“develop and facilitate the use of diverse approaches and tools, including (...) the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 and time/area closures for the protection of nursery grounds and periods (...)” (para. 32, c).

An in-depth discussion on the issue of “area-based management tools, in particular marine protected areas” took place during the 2010

⁽⁶⁾ See para. 17.75, e, f.

session of the Ad Hoc Open-ended Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity beyond Areas of National Jurisdiction ⁽⁷⁾, established under United Nations General Assembly Resolution 60/30 of 29 November 2005. Attention was drawn to the lack of progress in meeting the commitment in the Johannesburg Plan of Implementation with respect to areas beyond national jurisdiction ⁽⁸⁾. Several delegations noted the fundamental role of area-based management tools, including marine protected areas, in the conservation and sustainable use of marine biodiversity and in ensuring the resilience of marine ecosystems. They highlighted the importance of these tools, as part of a range of management options, in implementing precautionary and ecosystem approaches to the management of human activities and in integrating scientific advice on cross-sectoral and cumulative impacts ⁽⁹⁾. In particular,

“it was underlined that management arrangements should be based on science, including considerations of threats and ecological values. Several delegations emphasized the need for flexibility in the selection of area-based management tools, and the need to avoid a ‘one-size-fits-all’ approach, recognizing regional and local characteristics. In this regard, some delegations noted that the designation of marine protected areas did not require closing those areas to all activities, or particular activities, but rather managing those areas to ensure that ecological values were maintained. A suggestion was made that fisheries management measures, such as the protection of spawning stocks and the establishment of catch or fishing limits for specific areas could be considered a form of marine protected area.

(...) The view was expressed that marine protected areas needed to have: clearly delineated boundaries; a strong causal link between the harm being addressed and management measures, which should

⁽⁷⁾ Hereinafter: the Working Group.

⁽⁸⁾ U.N. doc. A/65/8 of 17 March 2010, para. 60.

⁽⁹⁾ *Ibidem*, para. 58.

be flexible and adaptive; and implementation, compliance and enforcement measures consistent with international law, as reflected in the Convention [= the UNCLOS] (...)”⁽¹⁰⁾.

The Working Group recommended to the United Nations General Assembly to recognize the work of competent international organizations related to the use of area-based management tools and the importance of establishing marine protected areas, as well as to call upon States to work through such organizations towards the development of a common methodology for the identification and selection of marine areas that may benefit from protection⁽¹¹⁾.

The UN General Assembly, by its subsequent resolutions on “Oceans and the Law of the Sea”, namely Resolution 65/37, adopted on 7 December 2010, and Resolution 66/231, adopted on 24 December 2011, reaffirmed

“the need for States to continue and intensify their efforts, directly or through competent international organizations, to develop and facilitate the use of diverse approaches and tools for conserving and managing vulnerable marine ecosystems, including the possible establishment of marine protected areas, consistent with international law, as reflected in the Convention [= the UNCLOS], and based on the best scientific information available, and the development of representative networks of any such marine protected areas by 2012” (para. 176 of Res. 66/231).

However, for quite evident chronological reasons, States realized that the objective to establish a representative network of marine protected areas by the year 2012 could not be achieved. This led them to change the envisaged deadline into 2020 and to set forth the ratio of 10% of marine and coastal areas to be included in systems of protected

⁽¹⁰⁾ *Ibidem*, paras. 66 and 67.

⁽¹¹⁾ *Ibidem*, paras. 17 and 18.

areas. In “The Future We Want”, that is the outcome document of the United Nations Conference on Sustainable Development, held in Rio de Janeiro in 2012 (so-called Rio+20 Conference) ⁽¹²⁾, States

“(…) reaffirm the importance of area-based conservation measures, including marine protected areas, consistent with international law and based on best available scientific information, as a tool for conservation of biological diversity and sustainable use of its components” and “note decision X/2 of the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity, held in Nagoya, Japan, from 18 to 29 October 2010, that, by 2020, 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are to be conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures” (para. 177) ⁽¹³⁾.

The reference to the 2020 deadline and to the 10% ratio is retained in General Assembly Resolution 67/78 of 11 December 2012 on “Oceans and the Law of the Sea” (para. 193).

3. THE RELEVANT LEGAL INSTRUMENTS

The policy instruments that call for the establishment of marine protected areas beyond the limits of national jurisdiction have not been

⁽¹²⁾ Doc. A/RES/66/288 of 11 September 2012.

⁽¹³⁾ Reference is made to Target 11 of the Annex (Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets) to Decision X/2 adopted in 2010 by the Conference of the Parties to the Convention on Biological Diversity: “By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine, especially areas of particular importance for biodiversity and ecosystem services, are to be conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into wider landscapes and seascapes” (doc. UNEP/CBD/COP/DEC/X/2 of 29 October 2010).

adopted in a legal vacuum ⁽¹⁴⁾. Such an action is already encouraged by general rules of customary international law on the protection of the marine environment and by treaties that are today in force for many States, at the world and regional level ⁽¹⁵⁾.

The importance of marine protected areas, as a means for the protection of the marine environment, is strengthened by the multi-lateral treaties which, besides the already mentioned UNCLOS ⁽¹⁶⁾, encourage the parties to create such zones. These treaties have either a global or a regional sphere of application. Some examples are here-under given.

- a) Under the Convention for the Regulation of Whaling (Washington, 1946), the International Whaling Commission (IWC) may adopt regulations with respect to the conservation and utilization of whale resources, fixing, *inter alia*, “open and closed waters, including the designation of sanctuary areas” (Art. V, para. 1). Sanctuaries where commercial whaling is prohibited were established by the IWC in the Indian Ocean (1979) and the Southern Ocean (1994). They cover extremely large extents of high seas waters, where whaling for commercial purposes is prohibited ⁽¹⁷⁾.

⁽¹⁴⁾ See Scovazzi, *Marine Protected Areas on the High Seas: Some Legal and Policy Considerations*, in *International Journal of Marine and Coastal Law*, 2004, p. 1; Molenaar, *Managing Biodiversity in Areas beyond National Jurisdiction*, *ibidem*, 2007, p. 89.

⁽¹⁵⁾ According to a general obligation, arising from customary international law and reflected in Art. 197 UNCLOS, “States shall cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.”

⁽¹⁶⁾ *Supra*, para. 1.

⁽¹⁷⁾ It is regrettable that the prohibition does not apply to whaling for scientific purposes.

- b)* The International Convention for the Prevention of Pollution from Ships, called MARPOL (London, 1973, amended in 1978) provides for the establishment of special areas where particularly strict standards are applied to discharges from ships. Special areas provisions are contained in Annexes I (Regulations for the Prevention of Pollution by Oil), II (Regulations for the Control of Pollution by Noxious Substances in Bulk) and V (Regulations for the Prevention of Pollution by Garbage from Ships) to the MARPOL ⁽¹⁸⁾. Special areas, which are listed in the relevant annexes, may include also the high seas. The whole Mediterranean Sea area is a special area for the purposes of Annexes I and V.
- c)* A set of Guidelines for the Identification of Particularly Sensitive Sea Areas (PSSAs) were adopted on 6 November 1991 by the Assembly of the International Maritime Organization (IMO) under Resolution A.720(17), revised by Resolutions A.927(22) of 29 November 2001 and A.982(24) of 1 December 2005. Procedures for the identification of PSSAs and the adoption of associated protective measures were set forth under IMO Assembly Resolution A.885(21) of 25 November 1999 ⁽¹⁹⁾. A PSSA is defined “as an area that needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities”. It is intended to function as “(...) a comprehensive management tool at the international level that provides a mechanism for reviewing an area that is vulnerable to damage

⁽¹⁸⁾ For example, under Regulation 1, para. 10, of Annex I, “special area means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required.”

⁽¹⁹⁾ The new procedures supersede those contained in the annex to Resolution A.720(17).

by international shipping and determining the most appropriate way to address that vulnerability”⁽²⁰⁾.

To be identified as a PSSA, an area should meet at least one among a number of ecological criteria (namely: uniqueness or rarity; critical habitat; dependency; representativity; diversity; productivity; spawning or breeding grounds; naturalness; integrity; vulnerability; bio-geographic importance), social, cultural and economic criteria (namely: economic benefit; recreation; human dependency) or scientific and educational criteria (namely: research; baseline and monitoring studies; education). In addition, the area should be at risk from international shipping activities, taking into consideration vessel traffic (operational factors; vessel types; traffic characteristics; harmful substances carried) and natural factors of hydrographical, meteorological and oceanographic character. The 2005 revised PSSAs guidelines specify that at least one of the relevant criteria should be present in the entire proposed PSSA, though this does not have to be the same criterion throughout the area. Cultural heritage has been reinstated as a criterion under the category of “social, cultural and economic criteria”.

PSSAs may be located within or beyond the limits of the territorial sea. They are identified by the Marine Environment Protection Committee of IMO on proposal by one or more member States and under a procedure which takes place at the multilateral level. PSSA proposals should be accompanied by proposals for associated protective measures, identifying the legal basis for each measure. Associated protective measures that may be taken in PSSAs include those available under IMO instruments and cannot be extended to fields different from shipping. They encompass the following options: designation of an area as a Special Area under MARPOL Annexes I, II, V

⁽²⁰⁾ Guidance Document for Submitting PSSA Proposals to IMO (MEPC Cir/398).

and VI; adoption of ships' routing systems under the 1974 International Convention for the Safety of Life at Sea, including areas to be avoided, that is areas within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or by certain classes of ships; reporting systems near or in the area; other measures, such as compulsory pilotage schemes or vessel traffic management systems.

- d) The United Nations Convention on Biological Diversity (Rio de Janeiro, 1992) sets out a series of measures for *in-situ* conservation. Parties are required, as far as possible and as appropriate, to "establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity" (Art. 8, a), to "develop, where necessary, guidelines for the selection, establishment and management of protected areas where special measures need to be taken to conserve biological diversity" (Art. 8, b), and to "regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use" (Art. 8, c).

As to its territorial scope, the convention applies, in relation to each Party,

- (a) in the case of components of biological diversity, in areas within the limits of its national jurisdiction; and
- (b) in the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction" ⁽²¹⁾.

⁽²¹⁾ Under Art. 22, para. 2, "Contracting Parties shall implement this Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea."

Several decisions adopted by the parties to the convention underline the importance of marine protected areas as one of the essential tools and approaches in the conservation and sustainable use of biodiversity, including marine genetic resources, and provide detailed guidance to the States concerned.

In 1995, the Parties agreed on a programme of action to implement the convention in marine and coastal ecosystems, called Jakarta Mandate on Marine and Coastal Biological Diversity. It was reviewed and updated in 2004 (Decision VII/5 on Marine and Coastal Biological Diversity). It provides guidance on integrated marine and coastal area management, the sustainable use of living resources and marine and coastal protected areas. Annex II (Guidance for the Development of a National Marine and Coastal Biodiversity Management Framework) to Decision VII/5 recommends that the legal or customary frameworks of marine and coastal protected areas clearly identify prohibited activities contrary to the objectives of such areas, as well as activities that are allowed, with clear restrictions or conditions to ensure that they will not be contrary to the objectives of the marine protected area and a decision-making process for all other activities (para. 6). Under Appendix 3 (Elements of a Marine and Coastal Biodiversity Management Framework) to the same decision, integrated networks of marine and coastal protected areas should consist of marine and coastal protected areas, where threats are managed for the purpose of biodiversity conservation or sustainable use and where extractive uses may be allowed, as well as of representative marine and coastal protected areas where extractive uses are excluded and other significant human pressures are removed or minimized, to enable the integrity, structure and functioning of ecosystems to be maintained or recovered (para. 5).

In 2006 the Conference of the Parties (Decision VIII/24 on protected areas) recognized that

“marine protected areas are one of the essential tools to help achieve conservation and sustainable use of

biodiversity in marine areas beyond the limits of national jurisdiction, and that they should be considered as part of a wider management framework consisting of a range of appropriate tools, consistent with international law and in the context of best available scientific information, the precautionary approach and ecosystem approach; and that application of tools beyond and within national jurisdiction need to be coherent, compatible and complementary and without prejudice to the rights and obligations of coastal States under international law” (para. 38).

In 2008 the Conference of the Parties (Decision IX/20 on marine and coastal biodiversity) adopted a set of “Scientific criteria for identifying ecologically or biologically significant marine areas in need of protection in open waters and deep-sea habitats” (Annex I; so-called CBD EBSA criteria), namely “uniqueness or rarity”⁽²²⁾, “special importance for life history stages of species”⁽²³⁾, “importance for threatened, endangered or declining species and/or habitats”⁽²⁴⁾, “vulnerability, fragility, sensitivity, or slow recovery”⁽²⁵⁾, “biological productivity”⁽²⁶⁾, “biological diversity”⁽²⁷⁾ and

⁽²²⁾ “Area contains either (i) unique (‘the only one of its kind’), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct habitats or ecosystems, and/or (iii) unique or unusual geomorphological or oceanographic features.”

⁽²³⁾ “Areas that are required for a population to survive and thrive.”

⁽²⁴⁾ “Area containing habitat for the survival of and recovery of endangered, threatened, declining species or area with significant assemblages of such species.”

⁽²⁵⁾ “Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.”

⁽²⁶⁾ “Area containing species, populations or communities with comparatively higher natural biological productivity.”

⁽²⁷⁾ “Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.”

“naturalness”⁽²⁸⁾. The Conference also adopted the “Scientific guidance for selecting areas to establish a representative network of marine protected areas, including in open-ocean waters and deep-sea habitats” (Annex II) that lists the required network properties and components, namely “ecologically and biologically significant areas”, “representativity”, “connectivity”, “replicated ecological features” and “adequate and viable sites”. The Conference proposed “four initial steps to be considered in the development of representative networks of marine protected areas” (Annex III), namely “scientific identification of an initial set of ecologically or biologically significant areas”, “develop/chose a biogeographic habitat and/or community classification scheme”, “drawing upon steps 1 and 2 above, iteratively use qualitative and/or quantitative techniques to identify sites to include in a network” and “assess the adequacy and viability of the selected sites”⁽²⁹⁾.

The Conference of the Parties held in 2012 in Hyderabad adopted Decision XI/17 (Marine and Coastal Biodiversity: Ecologically or Biologically Significant Marine Areas) which identifies in an annex several areas meeting the EBSA criteria in the Western South Pacific region, in the Wider Caribbean and Western Mid-Atlantic region and in the Mediterranean region⁽³⁰⁾.

⁽²⁸⁾ “Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.”

⁽²⁹⁾ The close link between protection of the marine environment and sustainable management of marine living resources is confirmed by decision X/31 (protected areas), adopted in 2010 by the Conference of the Parties to the Convention on Biological Diversity. It encourages Parties to establish marine protected areas for conservation and management of biodiversity as the main objective and, when in accordance with management objectives of protected areas, as fisheries management tools.

⁽³⁰⁾ An Expert workshop on scientific and technical guidance on the use of biogeographic classification systems and identification of marine areas beyond national jurisdiction in need of protection was held in 2009 in Ottawa. The report of the workshop (doc. UNEP/CBD/EW-BCS&IMA/1/2 of 22 December 2009) includes, as Annex IV, a “scientific guidance on the identification of marine areas beyond national jurisdiction, which meet the scientific criteria in annex I to decision IX/20).”

- e) Particularly relevant is one of the instruments adopted in the framework of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona, 1996; amended in 1995), that is the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (Barcelona, 1995) that has replaced the previous Protocol Concerning Mediterranean Specially Protected Areas (Geneva, 1982).

While the sphere of application of the 1982 Protocol did not cover the high seas, the 1995 Protocol applies to all the maritime waters of the Mediterranean, irrespective of their legal condition, to the seabed and its subsoil and to the terrestrial coastal areas designated by each of the Parties. The extension of the application of the Protocol to the high seas areas was seen by the Parties necessary to protect those highly migratory marine species (such as marine mammals) which, because of their natural behaviour, do not respect the artificial boundaries drawn by man on the sea.

To overcome the difficulties arising from the fact that different kinds of national coastal zones have been proclaimed by the Mediterranean States (exclusive economic zones, fishing zones and, later, ecological protection zones)⁽³¹⁾ and that several maritime boundaries have yet to be agreed upon by the States concerned, the Protocol includes two very elaborate disclaimer provisions:

“Nothing in this Protocol nor any act adopted on the basis of this Protocol shall prejudice the rights, the present and future claims or legal views of any State relating to the

⁽³¹⁾ The high seas still existing today in some areas of the Mediterranean has a particular nature. For geographical reasons it will disappear if and when all the coastal States establish their exclusive economic zones. No point in the Mediterranean is located at a distance of more than 200 n.m. from the nearest land or island.

law of the sea, in particular, the nature and the extent of marine areas, the delimitation of marine areas between States with opposite or adjacent coasts, freedom of navigation on the high seas, the right and the modalities of passage through straits used for international navigation and the right of innocent passage in territorial seas, as well as the nature and extent of the jurisdiction of the coastal State, the flag State and the port State.

No act or activity undertaken on the basis of this Protocol shall constitute grounds for claiming, contending or disputing any claim to national sovereignty or jurisdiction” (Art. 2, paras. 2 and 3) ⁽³²⁾.

The idea behind such a display of juridical devices is simple. On the one hand, the establishment of intergovernmental cooperation in the field of the marine environment is not intended to prejudice all the different questions which have a legal or political nature; but, on the other hand, the very existence of such questions, whose settlement is not likely to be achieved in the short term, should neither prevent nor delay the adoption of measures necessary for the protection of the marine environment in the Mediterranean.

The Protocol provides for the establishment of a List of Specially Protected Areas of Mediterranean Importance (SPAMI List). The SPAMI List may include sites which “are of importance for conserving the components of biological diversity in the Mediterranean; contain ecosystems specific to the Mediterranean area or the habitats of endangered species; are of special interest at the scientific, aesthetic, cultural or educational levels” (Art. 8, para. 2). The existence of the SPAMI List does not

⁽³²⁾ The model of the disclaimer provision was, *mutatis mutandis*, Art. IV of the Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 1980).

exclude the right of each Party to create and manage protected areas which are not intended to be listed as SPAMIs, but deserve to be protected under the domestic legislation.

The procedures for the listing of SPAMIs are specified in detail in the Protocol:

“Proposals for inclusion in the List may be submitted:

- (a) by the Party concerned, if the area is situated in a zone already delimited, over which it exercises sovereignty or jurisdiction;
- (b) by two or more neighbouring Parties concerned if the area is situated, partly or wholly, on the high sea;
- (c) by the neighbouring Parties concerned in areas where the limits of national sovereignty or jurisdiction have not yet been defined” (Art. 9, para. 2).

Yet the submission of a joint proposal may become a way to promote new forms of co-operation between the States concerned, irrespective of the fact that their maritime boundaries have not yet been defined.

In proposing a SPAMI, the Party or Parties concerned shall indicate the relevant protection and management measures, as well as the means for their implementation (Art. 9, para. 3). As paper areas would not comply with the purposes of the Protocol, protection, planning and management measures “must be adequate for the achievement of the conservation and management objectives set for the site in the short and long term, and take in particular into account the threats upon it” (Annex 1, para. D, 2).

Once the areas are included in the SPAMI List, all the parties agree “to recognize the particular importance of these areas for the Mediterranean”, as well as “to comply with the measures applicable to the SPAMIs and not to authorize nor undertake any activities that might be contrary to the objectives for which the SPAMIs were established” (Art. 8, para. 3). This

gives to the SPAMIs and to the measures adopted for their protection an *erga omnes partes* effect, that is an effect with respect to all the Parties to the Protocol.

As to the relationship with third countries, the Parties shall “invite States that are not Parties to the Protocol and international organizations to cooperate in the implementation” of the Protocol (Art. 28, para. 1). They also “undertake to adopt appropriate measures, consistent with international law, to ensure that no one engages in any activity contrary to the principles and purposes” of the Protocol (Art. 28, para. 2) ⁽³³⁾. This provision aims at facing the potential problems arising from the fact that treaties, including the Protocol itself, can produce rights and obligations only among parties.

The Protocol is completed by three annexes, which were adopted in 1996 in Monaco, namely the Common Criteria for the Choice of Protected Marine and Coastal Areas that Could be Included in the SPAMI List (Annex I) ⁽³⁴⁾, the List of Endangered or Threatened Species (Annex II), the List of Species Whose Exploitation is Regulated (Annex III). Under Annex I, the sites included in the SPAMI List must be “provided with adequate legal status, protection measures and management methods and means” (para. A, *e*) and must fulfil at least one of six general criteria (uniqueness, natural representativeness, diversity, naturalness, presence of habitats that are critical to endangered, threatened or endemic species, cultural repre-

⁽³³⁾ Also this provision is shaped on a precedent taken from the Antarctic Treaty System: “Each of the Contracting Parties undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles or purposes of the present Treaty” (Art. X of the 1959 Antarctic Treaty).

⁽³⁴⁾ It has been remarked that “the CBD EBSA criteria provide a helpful supplement to the older SPAMI criteria in that they provide more specific operational guidance” (doc. UNEP/CBD/EW-BCS&IMA/1/2 of 22 December 2009, Annex IV, para. 1, *a*).

sentativeness). The SPAMIs must be awarded a legal status guaranteeing their effective long term, protection (para. C.1) and must have a management body, a management plan and a monitoring programme (paras. from D.6 to D.8). Moreover,

“in the case of areas situated, partly or wholly, on the high sea or in a zone where the limits of national sovereignty or jurisdiction have not yet been defined, the legal status, the management plan, the applicable measures and the other elements provided for in Article 9, paragraph 3, of the Protocol will be provided by the neighbouring Parties concerned in the proposal for inclusion in the SPAMI List” (para. C.3) ⁽³⁵⁾.

Only one among the thirty-two SPAMIs so far established covers also some high seas areas. This is the French-Italian-Monegasque sanctuary for marine mammals (so-called Pelagos sanctuary), established under an Agreement signed in Rome in 1999 by the three States concerned. The sanctuary extends for about 96,000 km² of waters located between the continental coasts of the three countries and the islands of Corsica (France) and Sardinia (Italy) ⁽³⁶⁾. These waters have the legal status, depending

⁽³⁵⁾ Under Art. 9, para. 3, of the SPA Protocol, “Parties making proposals for inclusion in the SPAMI List shall provide the Centre with an introductory report containing information on the area’s geographical location, its physical and ecological characteristics, its legal status, its management plans and the means for their implementation, as well as a statement justifying its Mediterranean importance; (a) where a proposal is formulated under subparagraphs 2 (b) and 2 (c) of this Article, the neighbouring Parties concerned shall consult each other with a view to ensuring the consistency of the proposed protection and management measures, as well as the means for their implementation; (b) proposals made under paragraph 2 of this Article shall indicate the protection and management measures applicable to the area as well as the means of their implementation.”

⁽³⁶⁾ The waters of the sanctuary are inhabited by the eight cetacean species regularly found in the Mediterranean, namely the fin whale (*Balaenoptera physalus*), the sperm whale (*Physeter catodon*), Cuvier’s beaked whale (*Ziphius cavirostris*), the long-finned pilot

of their location, of marine internal waters (in the case of France and Italy), territorial sea, ecological protection zone (in the case of Italy) or exclusive economic zone (in the case of France) ⁽³⁷⁾. The parties undertake to adopt measures to ensure a favourable state of conservation for every species of marine mammals and to protect them and their habitat from negative impacts, both direct and indirect (Art. 4). They are bound to prohibit in the sanctuary any deliberate “taking” (defined as “hunting, catching, killing or harassing of marine mammals, as well as the attempting of such actions”) or disturbance of mammals. Non-lethal catches may be authorized in urgent situations or for *in-situ* scientific research purposes (Art. 7, a) ⁽³⁸⁾.

Also to ensure a more representative network of SPAMIs, the Meeting of the Parties to the Convention reaffirmed in the Declaration adopted on 4 November 2009 in Marrakesh

“the necessity, at the Mediterranean level, of pursuing efforts to identify varied methods and tools for the

whale (*Globicephala melas*), the striped dolphin (*Stenella coeruleoalba*), the common dolphin (*Delphinus delphis*), the bottlenose dolphin (*Tursiops truncatus*) and Risso’s dolphin (*Grampus griseus*). In this area, the water currents create conditions favouring phytoplankton growth and abundance of krill (*Meganyctiphanes norvegica*), a small shrimp that is preyed upon by pelagic vertebrates.

⁽³⁷⁾ After the recent establishment by France of an exclusive economic zone in the Mediterranean (Decree No. 2012-1148 of 12 October 2012), the high seas area within the sanctuary is restricted to the waters that would become the exclusive economic zone of Monaco, if this State were to establish such a zone.

⁽³⁸⁾ From the legal point of view, the most interesting aspect of the Agreement is the provision on the enforcement on the high seas of the measures agreed upon by the parties. Art. 14 provides as follows: “1. Dans la partie du sanctuaire située dans les eaux placées sous sa souveraineté ou juridiction, chacun des Etats Parties au présent accord est compétent pour assurer l’application des dispositions y prévues. 2. Dans les autres parties du sanctuaire, chacun des Etats Parties est compétent pour assurer l’application des dispositions du présent accord à l’égard des navires battant son pavillon, ainsi que, dans les limites prévues par les règles de droit international, à l’égard des navires battant le pavillon d’Etats tiers.”

conservation and management of ecosystems, including the establishment of marine protected areas and the creation of networks representing such areas in accordance with the relevant objectives for 2012 of the World Summit on Sustainable Development (...).”

The same Meeting of the Parties also adopted Decision IG.19/13, regarding a regional working programme for the coastal and marine protected areas in the Mediterranean. A project on the identification of areas of conservation interest, with a view to promoting the establishment of a representative ecological network of protected areas in the Mediterranean, has been implemented by the UNEP — Mediterranean Action Plan, Regional Activity Centre for Specially Protected Areas (RAC/SPA), with funding by the European Union. A number of “operational criteria for identifying SPAMIs in areas of open seas, including the deep sea”, have been envisaged⁽³⁹⁾. A list of thirteen “priority conservation areas lying in the open seas, including the deep sea, likely to contain sites that could be candidates for the SPAMI List” has been drafted⁽⁴⁰⁾.

- f) A very significant achievement towards the establishment of marine protected areas beyond national jurisdiction comes from the action taken under the Convention for the Protection of the Marine Environment of the North East Atlantic (Paris, 1992; so-called OSPAR Convention)⁽⁴¹⁾. The maritime areas falling under the scope of the OSPAR Convention are defined as those parts of the Atlantic Ocean which lie north of 36° north latitude and between 42° west longitude and 51° east

⁽³⁹⁾ See Annex 1 to doc. UNEP(DEPI)/MED WG.348/3 of 28 May 2010.

⁽⁴⁰⁾ See Annex 2 to doc. UNEP(DEPI)/MED WG.348/3 of 28 May 2010.

⁽⁴¹⁾ See Ribeiro, *The “Rainbow”: The First National Marine Protected Area Proposed Under the High Seas*, in *International Journal of Marine and Coastal Law*, 2010, p. 183.

longitude (from the Strait of Gibraltar in the south, to the North Pole in the north, from Greenland in the west to the Barents Sea in the east) and include also the high seas and its seabed beyond the 200-mile limit.

In 1998 Annex V concerning the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area was added to the OSPAR Convention. The Parties to Annex V commit themselves to take the necessary measures to protect and conserve the ecosystems and the biological diversity of the maritime area and to restore, when practicable, marine areas which have been adversely affected. Art. 3, para. 1, *b*, ii, makes it a duty for the OSPAR Commission “to develop means, consistent with international law, for instituting protective, conservation, restorative or precautionary measures related to specific areas or sites or related to specific species or habitats.”

In 2003 the Parties to the OSPAR Convention adopted Recommendation 2003/3 on a network of marine protected areas ⁽⁴²⁾. Its purpose is

“to establish the OSPAR Network of marine Protected Areas and to ensure that by 2010 it is an ecologically coherent network of well-managed marine protected areas which will:

- a*) protect, conserve and restore species, habitats and ecological processes which have been adversely affected by human activities;
- b*) prevent degradation of, and damage to, species, habitats and ecological processes, following the precautionary principle;

⁽⁴²⁾ During the same 2003 meeting, the OSPAR Commission adopted the Guidelines of the Identification and Selection of Marine Protected Areas in the OSPAR Maritime Area and the Guidelines for the Management of Marine Protected Areas in the OSPAR Maritime Area.

- c) protect and conserve areas that best represent the range of species, habitats and ecological processes in the maritime area.”

In 2010 Recommendation 2003/3 was amended by Recommendation 2010/2, based on the purpose to make further efforts “to ensure the ecological coherence of the network of marine protected areas in the North-East Atlantic, in particular through inclusion of areas in deeper water”. Under the amended recommendation, Parties should

“(…) c) contribute, as practicable, to assessments of areas beyond national jurisdiction in the North-East Atlantic which may justify selection as an OSPAR Marine Protected Area under the criteria set out in the identification and selection guidelines; and

d) propose to the OSPAR Commission the areas beyond national jurisdiction that should be selected by the OSPAR Commission as components of the OSPAR Network of Marine Protected Areas” (para. 3.1).

This enabled the Parties to establish in 2010 six marine protected areas that regard waters or seabed located beyond national jurisdiction, namely Milne Seamount Complex Marine Protected Area, that is an area of seamounts of about 21,000 km² situated to the west of the Mid-Atlantic Ridge (Decision 2010/1), Charlie-Gibbs South Marine Protected Area, that is a fracture zone of 145,420 km² that divides the Mid-Atlantic Ridge into two sections (Decision 2010/2), Altair Seamount High Seas Marine Protected Area, that is an area of about 4,409 km² of high seas (Decision 2010/3), Antialtair Seamount High Seas Marine Protected Area, that is an area of about 2,208 km² of high seas (Decision 2010/4), Josephine Seamount High Seas Marine Protected Area, that is an area of about 19,370 km² of high seas (Decision 2010/5) and MAR

North of the Azores High Seas Marine Protected Area, that is an area of about 93,568 km² of high seas (Decision 2010/6). The OSPAR Parties have adopted recommendations on the management of each of the six marine protected areas (Recommendations from 2010/12 to 2010/17), providing that the management of human activities in the area should be guided by the general obligations set forth in Art. 2 of the OSPAR Convention, the ecosystem approach and the “Conservation Vision and Objectives” indicated in an annex to each recommendation ⁽⁴³⁾. The programmes and measures envisaged for the marine protected areas relate to the fields of awareness raising, information building, marine science, as well as human activities that may be potentially conflicting with the conservation objectives and likely to cause a significant impact to the ecosystems. These activities are subject to environmental impact assessment or strategic environmental assessment and the relevant stakeholders are involved in the planning of new activities.

The OSPAR decisions and recommendations on marine protected areas are notable for the spirit of co-operation that inspires them. While two of them include both the high seas waters and the seabed, the other four are limited to the high seas waters superjacent to the seabed beyond 200 n.m. claimed by Portugal as being within its continental margin. In this case, the goal of protecting and conserving the biodiversity and ecosystems of the waters is to be achieved in coordination with, and complementary to, protective measures taken by Portugal for the seabed. Furthermore, the OSPAR Parties should engage

⁽⁴³⁾ It includes a “conservation vision” and a number of “general conservation objectives” and “specific conservation objectives”. For example, in the case of Milne Seamount the specific conservation objectives related to the water column, the benthopelagic layer, the benthos and habitats and species of specific concern.

with third parties and relevant international organizations with a view to promoting the delivery of the conservation objectives that the OSPAR Commission has set for the marine protected areas and to encourage the application of the relevant programmes and measures. The decisions and recommendations on the marine protected areas recognize that a range of human activities occurring, or potentially occurring, in them “are regulated in the respective frameworks of other competent authorities”, namely the North-East Atlantic Fisheries Commission (NEAFC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the North Atlantic Salmon Conservation Organization (NASCO), the North Atlantic Marine Mammal Commission (NAMMCO) and the International Whaling Commission (IWC), in the case of fishing; IMO, in the case of shipping; the International Seabed Authority, in the case of extraction of mineral resources (the latter organization only for the two marine protected areas that include the seabed). Memoranda of understanding have been concluded in 2008 between the OSPAR Commission and NEAFC in order to promote mutual cooperation towards the conservation and sustainable use of marine biological diversity, including protection of marine ecosystems, in the North-East Atlantic ⁽⁴⁴⁾, and in 2010 between the OSPAR Commission and the ISBA, to consult on matters of mutual interest with a view to promoting or enhancing a better understanding and coordination of their respective activities.

⁽⁴⁴⁾ In the statement adopted in Bergen at their 2010 meeting, the Parties to the OSPAR Convention “welcome the decision by the North East Atlantic Fisheries Commission to close until 31 December 2015 an area almost identical to Charlie-Gibbs Fracture Zone, as well as areas coinciding with the Mid-Atlantic Ridge North of the Azores, Altair Seamount and Antialtair Seamount and other areas beyond national jurisdiction of the North-East Atlantic, to bottom fisheries in order to protect the vulnerable marine ecosystems in these areas from significant adverse impacts” (para. 30).

4. POSSIBLE FUTURE DEVELOPMENTS

New prospects have emerged at the 2011 meeting of the already mentioned UN Ad Hoc Open-ended Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity beyond Areas of National Jurisdiction ⁽⁴⁵⁾. A number of States, both developed and developing, proposed the commencement of a negotiation process towards a new implementation agreement of the UNCLOS that could fill the gaps in the present regime of conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction ⁽⁴⁶⁾. While a general consensus on this proposal has not yet been achieved, commonalities are being developed among States that were previously putting forward divergent positions. The States participating to the 2011 meeting of the Working Group recommended that

“(a) A process be initiated by the General Assembly, with a view to ensuring that the legal framework for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction effectively addresses those issues by identifying gaps and ways forward, including through the implementation of

⁽⁴⁵⁾ *Supra*, para. 2.

⁽⁴⁶⁾ A new implementation agreement was already envisaged by certain States, in particular the member States of the European Union, during the 2008 meeting of the Working Group: “Several delegations considered that an implementation agreement under the United Nations Convention on the Law of the Sea was the most effective way to establish an integrated regime and address the multiplicity of challenges facing the protection and sustainable use of marine biodiversity in areas beyond national jurisdiction. These delegations suggested that such an instrument was necessary to fill the governance and regulatory gaps that prevented the international community from adequately protecting marine biodiversity in the areas beyond national jurisdiction. It was proposed that such an instrument would address currently unregulated activities, ensure consistent application of modern ocean governance principles in sectoral management regimes and provide for enhanced international cooperation” (doc. A/63/79 of 16 May 2008, para. 47).

- existing instruments and the possible development of a multi-lateral agreement under the United Nations Convention on the Law of the Sea.
- (b) This process would address the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction, in particular, together and as a whole, marine genetic resources, including questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, and environmental impact assessments, capacity-building and transfer of marine technology.
 - (c) This process would take place: (i) in the existing Working Group; and (ii) in the format of intersessional workshops aimed at improving understanding of the issues and clarifying key questions as an input to the Work of the working Group”⁽⁴⁷⁾.

The recommendations of the Working Group were endorsed by the UN General Assembly in its 2011 Resolution on “Oceans and the Law of the Sea” (Res. 66/231, para. 166).

At its 2012 meeting, the Working Group requested the United Nations Secretary-General to convene in 2013 two intersessional workshops on the topics of “marine genetic resources” and “conservation and management tools, including area-based management and environmental impact assessment”. The workshops are intended to improve understanding of the issues and clarify key questions in order to enable the United Nations General Assembly to make progress on ways to fulfil its mandate⁽⁴⁸⁾.

By Resolution 67/78, adopted on 11 December 2012, the U.N. General Assembly decided (para. 182) to convene the two workshops in May 2013⁽⁴⁹⁾ and recalled (para. 181):

⁽⁴⁷⁾ See doc. A/66/119 of 30 June 2011, para. 1 of the annex.

⁽⁴⁸⁾ See doc. A/67/95 of 13 June 2012, para. 1 and appendix.

⁽⁴⁹⁾ The workshop on “conservation and management tools, including area-based management and environmental impact assessment” will address the following sub-

“that in ‘The future we want’ States committed to address, on an urgent basis, building on the work of the Ad Hoc Open-ended Informal Working Group and before the end of the sixty-ninth session of the General Assembly, the issue of the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, including by taking a decision on the development of an international instrument under the United Nations Convention on the Law of the Sea”⁽⁵⁰⁾.

What is needed for the time being is the consolidation of a general understanding on a number of “commonalities” that could become the key elements in the “package” for a future global regime for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction. This package could include provisions relating to a number of main subjects, such as a network of marine protected areas, environmental impact assessment, marine genetic resources, including access to and sharing of benefits from them, as well as capacity building and technology transfer.

While some important achievements have been made at the regional level, there is no process to establish a network of marine protected areas in areas beyond national jurisdiction that is universally accepted and would apply on a world basis. In the development of a future instrument in this regard, consideration could be given to, *inter alia*:

- the establishment of a list of high seas marine protected areas of world importance;

jects: types of area-based management tools; key ecosystem functions and processes in areas beyond national jurisdiction; assessments of sectoral and cumulative impacts; technological, environmental, social and economic aspects; existing regimes, experiences and best practices; new and emerging uses of, and experimental activities in, areas beyond national jurisdiction; impacts and challenges to marine biodiversity beyond areas of national jurisdiction; exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; international cooperation and coordination, as well as capacity building and the transfer of marine technology.

⁽⁵⁰⁾ The 69th session of the U.N. General Assembly will be held in 2014.

- a procedure for the inclusion of high seas marine protected areas in the list based on a decision taken by the parties, which are considered as the trustees of the common interest for the preservation of high seas marine protected areas;
- the adoption of a set of protection and conservation measures on a case by case basis;
- the provision of common criteria for the choice of high seas marine protected areas (importance for the conservation of biological diversity, ecosystems or habitats of endangered species; special interest at the scientific, aesthetic, cultural or educational level; etc.).

MARINE BIOTECHNOLOGY: SCIENTIFIC AND LEGAL CHALLENGES

Laura GIULIANO

The Mediterranean Science Commission (CIESM)

Abstract: *In recent years, the question of the status of marine genetic resources in areas both within and beyond national jurisdiction has been largely debated at national and international level. Lack of practical measures to regulate the conservation and sustainable use of marine genetic resources (especially in areas beyond national jurisdiction) has emerged. As a consequence, targeted studies to address certain knowledge gaps such as the socio-economic value of MGRs or the regime of applicability of IPR have been solicited.*

Based on its long tradition in research related to marine biological diversity, CIESM — the Mediterranean Science Commission (www.ciesm.org) — has engaged a coordinated effort to examine the potential of MGRs in marine areas of concern for its Member States, and to produce reference protocols for their sustainable use, along with fair and equitable sharing of the benefits derived. This study reports about the nature and level of interest in marine biodiversity and the level of dissemination of results of scientific research at regional scale.

1. INTRODUCTION

Rapid progress in genome science, together with growing recognition of its many potential applications, are already having a major impact on research across the life sciences. Many specialists have concluded that genomics and related biotechnologies have a role to play in addressing some of the problems faced by poor countries. But to this day most researchers in developing countries still lack access to the knowledge essential for reaping the benefits of genomics. In recent years, questions associated with access and benefit sharing (ABS) in relation to marine

genetic resources (both within and beyond national jurisdiction) have become the focus of international, tense negotiations in different forums. The issue of those negotiations will have major consequences for integrated governance of the oceans.

The Mediterranean Science Commission (CIESM) is actively engaged on the front of optimizing measures that address the conservation and sustainable use of marine genetic resources (MGRs) in the Mediterranean region. This has led to various initiatives including: (i) Basin scale analytical studies of the regional landscape (including analysing the potential of the Mediterranean as a pilot area, and studying public perceptions on ABS-related issues); (ii) our active contribution to MGRs related strategic Panels (*i.e.* UN ⁽¹⁾; IUCN ⁽²⁾, OCDE ⁽³⁾, EU ⁽⁴⁾); (iii) a CIESM Charter — a proposed code of conduct for marine resource sampling, that has been refined thru public consultations and via our online forum ⁽⁵⁾.

In an effort to address critical knowledge gaps, this article examines the level and nature of scientific interest in marine genetic resources. By describing geographical trends on marine collection sites and scientific

⁽¹⁾ CIESM formal contribution to the 4th Meeting of the Ad hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. New York, USA, 31 May-3 June 2011.

⁽²⁾ IUCN International Seminar on Conservation and Sustainable Use of Marine Biodiversity beyond National Jurisdiction. Bonn, Germany, December 2011.

⁽³⁾ OCDE Workshops : (i) 'Marine Biotechnology — Enabling Solutions for Ocean Productivity & Sustainability'. Vancouver, Canada, 30-31 May 2012; (ii) 'Global Forum on Biotechnology — *The evolving promise of the life sciences*'. Paris, France, 12 November 2012.

⁽⁴⁾ CIESM is a partner of the MicroB3 EU research project, and a Member of the Advisory Board of PharmaSea —, and Marine Biotech CSA — EU research projects.

⁽⁵⁾ *CIESM Charter on ABS* : www.ciesm.org/forums/index.php?post/2013/03/14/CIESM-Charter-on-ABS.

authorship in the Mediterranean region, it provides arguments for developing suitable rules in order to regulate access and benefit sharing at regional scale.

2. THE MEDITERRANEAN — A HOTSPOT FOR BIOPROSPECTING

The Mediterranean region presents a number of challenging specificities.

This inland sea borders three continents, and thus interacts with highly diversified economic and socio-cultural systems, ranging from medium to high human development standards (HDR UNDP, 2013) ⁽⁶⁾. It therefore offers a challenge and great opportunity to design new models of collaboration and marine co-governance with a view to better secure the various user communities' needs.

Due to very peculiar geological settings, and a complex history characterized by a long series of catastrophic events, the Mediterranean Sea (2.5 million square km body of water; average depth of 1,500 m; maximum depth of 5,267 m ⁽⁷⁾), features high species richness, exceptional concentrations of endemic species and a diversity of easy-to-reach extreme environments that harbour unique forms of life (particularly microbes) and remarkable ecological processes. The fast degradation of coastal and deep-sea habitats threatens the survival of a number of these species, from

⁽⁶⁾ The Human Development Index (HDI) integrates health, education and living standards into a single statistics, providing the United Nation Development Program (UNDP) with a common frame of reference for both social and economic development. The HDI sets a minimum and a maximum for each dimension, called goalposts, and then shows where each country stands in relation to these goalposts, expressed as a value between 0 and 1. Regular UNDP Reports (from 1993 to date) provide specific goals for poverty reduction and human development, plans and approaches for national, regional and international action. <http://hdr.undp.org/en/statistics/hdi/>.

⁽⁷⁾ Calypso Deep (Ionian Sea).

bacteria to sponges, from sharks and marine mammals ⁽⁸⁾. High marine biodiversity means a very distinct set of gene pools and natural products with large potential application in medicine, food development and bio-energy (See Box I). Yet, only a fraction of these marine organisms and little of their usefulness to humans are known to us (1, 2).

Box I — Taxonomic provenance of Marine Genetic Resources (MGRs)

While the taxonomic origin of MGRs covers the entire spectrum of the "Tree of Life", marine invertebrates are increasingly selected for the screening of bioactive marine natural products (MNPs) to develop new therapeutic agents (3). Among them, sponges, the major contributing species, have emerged some 700—800 million years ago. This early appearance allowed them to develop diversified, complex, and advanced defence systems against their pathogens and predators through specific MNPs (4, 5). While the number of active compounds obtained from marine microorganisms (including actinomycetes, fungi, prokaryotes and phytoplankton) has only doubled from roughly 50 in the 1980s to over 100 in 2008 (6), their huge reservoir of new biosynthetic genes (with emphasis on microbes inhabiting 'extreme' marine environments such as hydrothermal vents and hypersaline lakes) found its way in patents at a much faster rate. So far marine natural products have been mostly derived from large sessile organisms which are easily collected and provide relatively large amounts of biomass for screening of natural products (7). In fact, more and more potential novel compounds isolated from marine invertebrates turn out to be biosynthesized by mutualistic microorganisms (8). Advances in molecular biology (including high throughput sequencing, metagenomics, and bioinformatics), plus easy industrial culturing and the application of gene technology, are making marine microbiology the most promising field for drugs development.

⁽⁸⁾ See Annex II of the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, and latest IUCN Red Species List.

3. MARINE BIOPROSPECTING RESEARCH AND DEVELOPMENT TRENDS

Although patenting does not always result in effective exploitation, the proprietary regime (specially patents) is considered a sound indicator of economic interest and of the growth of the bioresource and knowledge-based industry. According to Arnaud-Haond et al. (2011) (9), claims associated with marine genes originate from only 31 of the 194 countries in the world. Ten countries alone own 90% of all patents deposited with marine genes; 70% are the propriety of the top three countries. These 10 nations, which rank among those having the highest income per capita, represent only 20% of the world's coastline but take advantage of their access to advanced technologies — a must to explore the vast genetic reservoir of the oceans.

Nevertheless, geographical trends during the last decade show that certain developing countries have been able to increase their biotechnology patenting and, to an even wider extent, their capacity to harness their invention (national patenting ownership) (10). These countries exhibit a low industry *vs.* research ratio ($\approx 1:4$); in other words their research sector has been particularly active in patenting while industrial patenting has remained limited (11), possibly due to the extent of market diversification. A single, interesting exception is South Korea that displays a highly diversified range of industrial sectors that benefit from biotechnology products whereas the other developing countries focus on health biotechnology (12).

If we take a step back in the marine biotechnology value chain, from applied research (patents profiling) to basic research (number of scientific articles on bioactive molecules obtained from marine organisms), the observed patterns confirm a steadily increase of interest during the last decades. In particular, the accelerated growth of scientific production since the '80s has been related to technological progress (*i.e.* invention and development of the high-resolution nuclear magnetic resonance spectrometer, NMR, in the '70s and '80s; opti-

misation of high throughput screening methods from 1990 to date) (6) and to punctual supportive policies (*i.e.* EU Maritime Policy, 2007).

Despite the limited applicability of classical indicators for Research and Experimental Development (R&D) in a region largely composed of developing countries (13)⁽⁹⁾, it seems anyway interesting to reflect on the Mediterranean share of scientific publications related to marine natural products (MNPs). The data collected by Blunt et al. (2011) (14) indicate that in 2010, scientific articles describing marine natural products obtained from Mediterranean organisms accounted for only 4% of the world total share. Interestingly Mediterranean authorship was very high for papers describing MNPs obtained from Mediterranean invertebrates and algae (95.7% and 100%, respectively), but very limited (20%) for those describing MPNs obtained from Mediterranean microorganisms (see Figure 1).

Sample collection is the first step — and one of the most important — during natural product drug discovery programs. *Samples accessibility*, which varies depending on the geographical location of MPNs collection sites, can be a reason of the authorships' geographic heterogeneity. More precisely, macrofauna specimens (algae and invertebrates) usually inhabit near shore areas while the most promising microbial genetic resources (*e.g.*, the so-called 'extremophilic microorganisms') are most often located in remote pelagic areas.

On one side, this goes along with the principles regulating access to the biological resources. While the collection of macrofauna specimens shall usually rely on national legislation rules, sampling microorganisms shall most often fall within the international regime that applies to areas beyond national jurisdiction.

⁽⁹⁾ In addition to R&D indicators, both descriptors and narratives are important in analysing the characteristics of R&D, particularly in developing countries.

On the other side, there are vast differences in the costs associated to the sampling facilities. Algae and invertebrates can be easily collected by free divers using basic sampling devices while high cost infrastructure facilities (*i.e.* oceanographic research vessels) are necessary for sampling microorganisms.

The distribution of research vessel sampling facilities across the Mediterranean region illustrates a huge divide. According to the 'Sailwx' integrated maritime information service, the USA contribute about 32% of the global research fleet, followed by Japan (12%) and UK (8%). Mediterranean countries as a whole contribute 10% of the global share, with France accounting for half of that (see Table 1, and Figure 2).

4. CONCLUSIONS

Marine biotechnology has great potential for building cross-sector and cross-border cooperation in the Mediterranean region, characterized by a commercially valuable marine biodiversity, high endemism, and easy-to-access sampling sites. Its expected outcomes in various sectors such as agriculture, health and environment would stimulate sustainable economic growth in the region, provided that *all* countries are enabled to generate and apply scientific and technological knowledge equitably.

Trends in certain classical R&D indicators — namely the share of patents and scientific articles across the Mediterranean Basin — underline tendencies that may appear somewhat inconsistent. While developing countries have increased their biotechnology patenting rates (*i.e.* their capacity to harness their inventions) in recent years, geographic disparities in scientific production signal a great divide on national facilities for marine bioprospecting. This suggests that, to date, Mediterranean countries long for fostering biotechnology innovation while lacking some basic services.

In recent years, CIESM has produced a number of reports proposing concrete paths and strategies to allow the marine biotechnology

oriented cross-sector networks to flourish on all shores of the Mediterranean Basin (15). In particular, regional approaches in the Mediterranean would do well to rely on creative tools such as open access programs, common gene libraries, and patent pools. Initiatives such as establishing marine peace parks (16), research institutes dedicated to marine life based research and start-up companies on marine biotechnology can play important roles in the process as well.

Common solutions will enable all countries to control the valorisation chain of marine genetic resources. To this end, legal instruments and frameworks that will sooner or later accommodate multi-lateral agreements on access to and benefit sharing for MGRs should also include measures for tracing the geographic origin of organisms upon which patents are based. This kind of action can usefully build upon existing success stories ⁽¹⁰⁾.

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⁽¹⁰⁾ See the Japanese sampling policy adopted under the JAMSTEC Co-Management system: www.godac.jamstec.go.jp/bio-sample/user/management_e.html.

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Table 1

Country	N.º of R/V
Argentina	2
Australia	2
Bahamas	1
Belgium	3
Bermuda	1
Bulgaria	1
Canada	13
Denmark	1
Faroe Islands	1
Finland	1
France	17
Germany	21
Greece	1
Iceland	3
India	2
Indonesia	1
Ireland	2
Italy	2
Japan	36
Korea	1
Lithuania	2
Mexico	2
Netherlands	8
New Zealand	2
Norway	10
Poland	3
Portugal	7
Russia	20
South Africa	4
Spain	7
Sweden	7
Turkey	1
United Kingdom	24
United States of America	98

Table 1: N.º of research vessels per Country. Data obtained from ‘Sailwk Ship database’ (updated 15:57 Friday, 14 Jun 2013 UTC). Not reporting ships were excluded from the list.

Figure 1

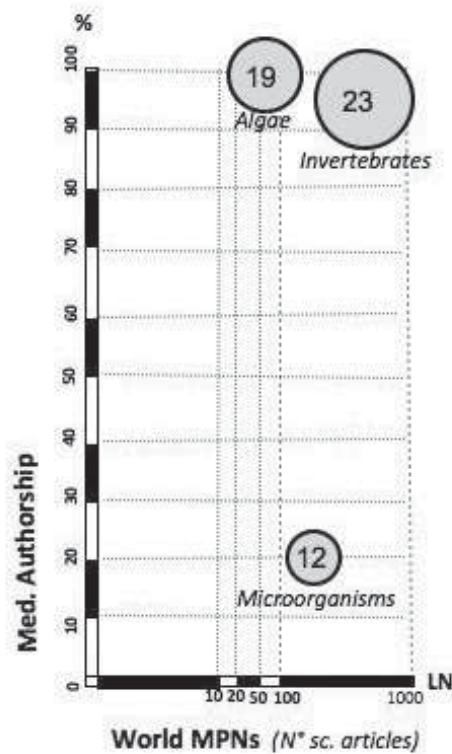


Figure 1: Number of scientific articles on MPNs obtained from marine organisms. Horizontal axis indicates the total number of articles describing MPNs per each category published worldwide (logarithmic scale). The vertical axis indicates the number of articles produced by Mediterranean authors (percentage of the total number of articles). The number reported in each circle refers to the articles describing MPNs obtained from Mediterranean organisms. (raw data from Blunt *et al.*, 2011).

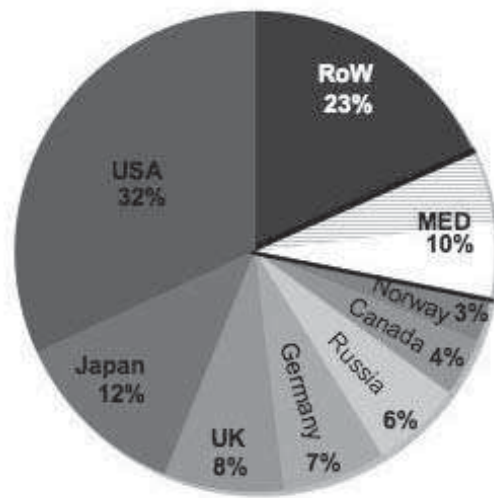
Figure 2

Figure 2: Oceanographic research vessels world share. France contributes to 50% of the Mediterranean share (*raw data from Sailux: www.sailux.info/*).

MARINE GENETIC RESOURCES WITHIN AND BEYOND THE LIMITS OF NATIONAL JURISDICTION: CHALLENGES AND OPPORTUNITIES POSED BY EXISTING AND EMERGING INTERNATIONAL LEGAL FRAMEWORKS AND PROCESSES

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Content: *1. Introduction. 2. ABS and the Innovations of the Convention on Biological Diversity and the Nagoya Protocol. 3. Towards an ABS Protocol: The Need for Legal Certainty and Compliance Measures. 4. ABS in Areas Beyond the Limits of National Jurisdiction; 4.1 Meaning and scope; 4.2 Extent and types of research, uses and applications; 4.3 Access-related issues. 5. Conclusion: Towards Fair and Equitable Access to Marine Genetic Resources from ABNJ and Related Data.*

1. INTRODUCTION

I would very much like to thank the organizers, in particular, Professor Marta Chantal Ribeiro, for inviting me to join this event celebrating the 30th Anniversary of the United Nations Convention on the Law of the Sea (UNCLOS). This seminar has been an extraordinary oppor-

⁽¹⁾ I am very grateful to Mi-Jin Lee and Danielle Linnen for their valuable research assistance throughout 2012 on a wide range of issues with respect to marine genetic resources in areas beyond the limits of national jurisdictions, to Danielle Linnen for her helpful comments on an earlier draft of this chapter, and to Chris Lyal and Graham Shimmield for their comments on the indicative principles and criteria suggested at the end of this chapter.

tunity to meet and learn from some of the top international lawyers and scientists in the field. I am very honoured to be here with you this afternoon to speak about marine genetic resources and, in particular, an area in which I have been working for over twenty years: access and benefit-sharing (ABS) for genetic resources.

In my presentation I would like to introduce you to the origins of ABS while highlighting some of the innovative provisions of the Convention on Biological Diversity (CBD) and the new Nagoya Protocol on Access to Genetic Resources and Benefit-sharing (Nagoya Protocol). Next I would like to introduce you to some of the recent developments regarding the treatment of ABS and marine genetic resources in areas beyond the limits national jurisdiction (ABNJ). Throughout my presentation I would like to highlight some of the challenges and opportunities for applying ABS to marine genetic resources whether in marine areas within or beyond the limits of national jurisdiction. Finally, I would like to suggest some principles and criteria that could contribute to ensuring fair and equitable access to marine genetic resources from ABNJ.

2. ABS AND THE INNOVATIONS OF THE CONVENTION ON BIOLOGICAL DIVERSITY AND THE NAGOYA PROTOCOL

The Convention was adopted about twenty years ago in 1992 and entered into force in late 1993. It has near universal membership with 193 contracting parties.

The Convention is unique in focusing on the variety of life on earth. It takes a holistic, comprehensive approach to biodiversity conservation and is applicable to terrestrial and marine areas, their organisms and genetic resources. Its primary mode of action is to establish broad-level commitments for its contracting parties to fulfil, most notably through the obligation to undertake national biodiversity planning exercises.

The Convention has three objectives ⁽²⁾:

The first, the conservation of biodiversity, focuses in other words on the conservation of the variety of life on earth at genetic, species and ecosystem levels.

The sustainable use of the components of biodiversity is the Convention's second objective. This objective focuses on biodiversity's tangible manifestations: the genetic material, populations of species and ecosystems that make up the variety of life on earth.

The third objective is the focus of my presentation: fair and equitable benefit-sharing from the utilization of genetic resources. At the time of the Convention's adoption the third objective was unique.

From its entry into force the Convention became the primary global forum addressing ABS. Its ABS-related principles have penetrated and influenced a wide range of other relevant fora ⁽³⁾ in such diverse areas as agriculture, intellectual property rights, human health and human rights, with implications well-beyond international environmental law. I will speak later about the United Nation General Assembly's (UNGA) law of the sea process as it relates to the implementation of the United Nations Convention on the Law of the Sea (1982) (UNCLOS) and the on-going process regarding biodiversity in areas beyond the limits of national jurisdiction (BBNJ).

Turning to the origins of ABS, historically before the CBD entered into force genetic resources were accessible by anyone for any purpose.

⁽²⁾ CBD article 1.

⁽³⁾ These include the Antarctic Treaty System, the Food and Agriculture Organization's Commission on Genetic Resources for Food and Agriculture, the International Treaty on Plant Genetic Resources for Food and Agriculture (2001), the United Nations Permanent Forum on Indigenous Issues, the World Health Organisation (pandemic human influenza), the World Intellectual Property Organisation and its Intergovernmental Committee on Intellectual Property, Genetic Resources, Traditional Knowledge and Folklore, the World Trade Organisation with its work on trade-related aspects of intellectual property rights.

There was no obligation to share benefits with the providers of genetic resources unless, of course, they asked.

This practice was not questioned until the early to mid-1980s when intellectual property rights, particularly as applied to plant genetic resources for food and agriculture, became more prominent and there was the near parallel emergence of the biotechnology industry whose business model was very much premised and dependent on the use of patents to protect innovations based on genetic material. For many developing countries in the intergovernmental negotiations that led to the CBD, a major aim was to redefine historical benefit flows from the use of genetic resources to rectify what was viewed as an inequitable situation whereby genetic resources were available for use by anyone for any purpose with no requirements to direct benefits back to the original provider country once the material was physically obtained ⁽⁴⁾.

Paralleling the quest for equity was a complimentary idea. If some of the benefits generated by genetic resources could be captured, incentives for biodiversity conservation could be created. Providing a value to biodiversity could facilitate its conservation. Well-publicized examples such as Costa Rica's National Biodiversity Institute (INBio) and its contract with the multinational pharmaceutical company Merck captured peoples' imaginations.

This was a very innovative concept at the time, and was probably one of the first examples attempting to create an economic incentive to conserve biodiversity through its sustainable use. It was premised on the idea of directing benefits back to providers of genetic resources to encourage biodiversity conservation. The beneficiaries could be governments or local communities.

⁽⁴⁾ Lyle Glowka, "Evolving Perspectives on the Area's Genetic Resources Fifteen Years after the Deepest of Ironies", in: Davor Vidas (ed.), *Law, Technology and Science for Oceans in Globalization* (Martinus Nijhoff Publishers/Brill, Leiden-Boston, 2010) 397-419. (Hereinafter "Evolving Perspectives").

Both streams of thinking were driven by high expectations for big financial windfalls from what was then — and remember this was the late 1980s and early 1990s — an emerging biotech industry.

The ABS paradigm that emerged was appealingly simple: an ethno-botanist collects plant material in a rainforest, in some cases guided by the traditional knowledge of indigenous peoples. They would go back home, share the materials collected and the traditional knowledge recorded with a pharmaceutical concern which would then create a “blockbuster drug” generating billions of dollars. A fair and equitable percentage of the proceeds would be directed back to the providers of genetic resources ostensibly for biodiversity conservation.

Based on this notion genetic resources at the time came to be viewed as a kind of “green gold” with a decidedly terrestrial orientation. Few if any people back then were thinking about marine genetic resources and the potential to turn them into a kind of “blue gold” despite the marine environment’s significant biodiversity.

Within this context, therefore, the Convention’s major innovation was to provide the basis for what was then a new equity relationship between the providers and the users of genetic resources, quite simply, access to genetic resources in exchange for a fair and equitable share of the benefits derived from their use. It was premised on three fundamental access-related principles.

The first principle was the re-affirmation of sovereign rights over natural resources and, by extension, genetic resources ⁽⁵⁾. The second principle was access to genetic resources with the prior informed consent of the providing country ⁽⁶⁾. The third principle provided for the possibility to negotiate mutually agreed terms, memorialized for example

⁽⁵⁾ CBD article 15(1).

⁽⁶⁾ CBD article 15(5).

in a contract, in the process of seeking prior informed consent, providing for the terms of access in particular fair and equitable sharing of benefits from the utilization of the genetic resources ⁽⁷⁾.

These principles were complimented by five fundamental benefit-sharing obligations. First, the sharing of commercial or other benefits derived from the utilization of the genetic resources ⁽⁸⁾. Second, access to and transfer of technology using genetic resources ⁽⁹⁾. Third, participation in research on genetic resources, including biotechnological research ⁽¹⁰⁾. Fourth, priority access to results and benefits arising from biotechnological use ⁽¹¹⁾. Fifth, and less explicit, benefit-sharing for the use of traditional knowledge associated with genetic resources ⁽¹²⁾.

3. TOWARDS AN ABS PROTOCOL: THE NEED FOR LEGAL CERTAINTY AND COMPLIANCE MEASURES

The adoption and early entry into force of the Convention — though itself a great achievement — left outstanding a number of key implementation challenges in the ABS area.

For example, throughout the Convention's negotiations, and later in the early years of implementation, countries providing genetic resources (primarily developing countries) remained concerned about how to ensure benefit sharing after the materials collected in their territory by a foreign collector left the country. How could they generate the capacity to regulate access to genetic resources and ultimately monitor their use? How could they prevent and respond to issues of

⁽⁷⁾ CBD article 15(4).

⁽⁸⁾ CBD article 15(7).

⁽⁹⁾ CBD article 16(3).

⁽¹⁰⁾ CBD articles 15(6) and 19(1).

⁽¹¹⁾ CBD article 19(2).

⁽¹²⁾ CBD article 8(j).

misappropriation contrary to their laws or misuse contrary to a negotiated contract? And was there a complementary role or responsibility for those countries, primarily developed countries, with users of genetic resources within their jurisdiction, to help support compliance with and enforcement of ABS laws and contracts?

In addition provider countries were questioning the plain meaning of the Convention which, if read strictly, only appeared to apply to genetic materials. They argued that there were other benefits to be derived from equally valuable materials associated with the genetic resource such as biochemical compounds.

On the other hand, users of genetic resources were finding that provider countries were enacting legal and institutional frameworks that, even once they were eventually navigated (itself a challenge), were not necessarily creating the legal certainty needed to create confidence that the materials collected could be used without competing benefit-sharing claims.

Overcoming the implementation challenges left unaddressed by the Convention did not begin in earnest until 1999. The Bonn Guidelines (2002) ⁽¹³⁾ were the first significant output in the Convention process targeted at operationalizing its ABS provisions. Perhaps most significantly they addressed for the first time the responsibilities of Convention contracting parties as users of genetic resources ⁽¹⁴⁾.

However, the Bonn Guidelines were not viewed by developing countries as enough to address the various implementation challenges that they faced. Just a few months after their adoption by the Conven-

⁽¹³⁾ Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, CBD Conference of the Parties Decision 6/24, "Access and benefit-sharing as related to genetic resources" (27 May 2002) UN Doc UNEP/CBD/COP/6/20 (Hereinafter "Bonn Guidelines").

⁽¹⁴⁾ Bonn Guidelines, section II, paragraph 16.d.

tion's Conference of the Parties (COP), governments went a step further at the World Summit on Sustainable Development calling for the negotiation within the CBD framework of an international regime to promote and safeguard the fair and equitable sharing of benefits arising out of the utilization of genetic resources ⁽¹⁵⁾.

The negotiations were taken up under the auspices of the Convention's COP, ultimately resulting in the adoption in late October 2010 of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits arising from their Utilization. At the same time the COP recognized that the international regime on genetic resources constituted the Convention, the Nagoya Protocol, as well as complementary instruments, including the International Treaty on Plant Genetic Resources for Food and Agriculture (2001) and the Bonn Guidelines ⁽¹⁶⁾. Importantly, the indicative language provides the possibility to increase the number of mutually supportive international instruments addressing ABS that could be affiliated within the international regime.

The Nagoya Protocol operationalizes the Convention's third objective and in particular Article 15. Its objective is to ensure benefits arising from the utilization of genetic resources are shared fairly and equitably. An article-by-article review of the Nagoya Protocol is beyond the scope of my presentation ⁽¹⁷⁾, however there are some of interesting innovations

⁽¹⁵⁾ UN, "Report of the World Summit on Sustainable Development" (2002) UN Doc A/CONF.199/20, paragraph 44(o).

⁽¹⁶⁾ CBD Conference of the Parties Decision X/1, preambular paragraph 6, "Access to genetic resources and the fair and equitable sharing of benefits arising from their utilization" (29 October 2010) UN Doc UNEP/CBD/COP/10/27.

⁽¹⁷⁾ For an overview see Matthias Buck and Clare Hamilton, "The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity", (2011) 20 *Review of European Community & International Environmental Law* 47-61, and Lyle Glowka and Valérie Normand, "The Nagoya Protocol on Access and Benefit-sharing: Innovations in International Environmental Law", in: Elisa Morgera, Mathias Buck,

that are very much worth highlighting. For example, the Nagoya Protocol's scope of application clarifies that utilization of genetic material is not the sole focus for benefit-sharing anymore. The Nagoya Protocol applies to biochemical compounds too ⁽¹⁸⁾.

What's more, the development of access-related measures by provider countries is now addressed quite clearly within the Nagoya Protocol. Those countries that choose to regulate access to their genetic resources in order to create opportunities for benefit-sharing are very much under an obligation to develop their regulatory programmes in such a way that legal certainty, clarity, and transparency are created ⁽¹⁹⁾.

There are some other access-related provisions that are interesting. For example, the Protocol promotes the concept of encouraging research contributing to biodiversity conservation by suggesting the development of simplified access and benefit-sharing measures ⁽²⁰⁾.

There are also innovative provisions addressing benefit-sharing ⁽²¹⁾. With the new definition of "utilization of genetic resources" ⁽²²⁾ there is now a trigger for benefit-sharing within the Nagoya Protocol that is quite clear: research and development on genetic resources. In terms of the continuum of uses of genetic resources the Nagoya Protocol clarifies that benefit-sharing need not be limited to research and development. Subsequent applications for research and development, as well as commercial applications, may be eligible for benefit-sharing ⁽²³⁾.

and Elsa Tsioumani (eds.), *The Nagoya Protocol in Perspective: Implications for International Law and Implementation Challenges* (Martinus Nijhoff Publishers/Brill, Leiden-Boston, 2012) 21-51.

⁽¹⁸⁾ Nagoya Protocol articles 2(c) and (e).

⁽¹⁹⁾ Nagoya Protocol article 6(3).

⁽²⁰⁾ Nagoya Protocol article 8(a).

⁽²¹⁾ Nagoya Protocol article 5.

⁽²²⁾ Nagoya Protocol article 2(c).

⁽²³⁾ Nagoya Protocol article 5(1).

Benefits can be monetary but, importantly, non-monetary as well ⁽²⁴⁾. The Nagoya Protocol therefore broadens the notion of benefits, suggests what these could be and legitimizes non-monetary benefits.

And to return to one of the original themes at the conceptual heart of the Convention's ABS provisions, there is now a very clear emphasis to try to direct benefits back to biodiversity conservation ⁽²⁵⁾.

Finally the Nagoya Protocol strongly emphasizes compliance-related measures particularly in cases of misappropriation and misuse ⁽²⁶⁾. These measures should assist developing countries that, since the Convention's adoption and entry into force, considered themselves ill prepared to ensure benefit-sharing when genetic resources left their territory. The measures form a cornerstone of the political bargain embodied in the Nagoya Protocol linking compliance measures to the enactment of more straightforward and legally certain access-related measures that will ultimately facilitate access and fulfill a key Convention obligation ⁽²⁷⁾.

The Nagoya Protocol is designed to address the unmet challenges of implementing the Convention's ABS provisions whether in relation to terrestrial or marine genetic resources. But challenges remain with regard to marine genetic resources.

One is quite simply overcoming a lack of awareness. The notion of "green gold" which drove the Convention's negotiations still pre-dominates within the forum and exists at national level as well. Greater emphasis could be placed on the opportunities that marine genetic resources may present to coastal states while assisting them in capturing their potential value.

⁽²⁴⁾ Nagoya Protocol article 5(4) and annex.

⁽²⁵⁾ Nagoya Protocol article 9.

⁽²⁶⁾ Nagoya Protocol articles 15-18.

⁽²⁷⁾ CBD article 15(2).

For coastal states aiming to become providers of marine genetic resources a key consideration will be to find an appropriate balance between protecting their interests through, for example, regulation while facilitating access. Opportunities for benefit-sharing need to be identified and appropriate partnerships established to capitalize on them. Finding the right balance will foster mutual supportiveness between the Nagoya Protocol and the UNCLOS marine scientific research provisions when the provider coastal state is a party to both instruments ⁽²⁸⁾.

Provider coastal states will also need to review their capacity building needs to determine how best to capitalize on the potential opportunities for benefit-sharing that regulating access to their marine genetic resources could create. Ensuring that the capacity building self-assessments required under the Nagoya Protocol ⁽²⁹⁾ include a marine genetic resource component could facilitate this review.

From the perspective of users of genetic resources another challenge to be considered is how to build strong working relationships with provider coastal states that are premised on trust and good will. Trust needs to be established between the providers and users of marine genetic resources when genetic resources are anticipated to leave the country.

This is important because many of the first generation laws of provider countries enacted just after the Convention's entry into force took a defensive approach to ABS and responded to a political, industrial and scientific climate that had placed the entire burden of ensuring benefits

⁽²⁸⁾ For an overview see Charlotte Salpin, "The Law of the Sea: A Before and an After Nagoya?" in: Elisa Morgera, Mathias Buck, and Elsa Tsioumani (eds.), *The Nagoya Protocol in Perspective: Implications for International Law and Implementation Challenges* (Martinus Nijhoff Publishers/Brill, Leiden-Boston, 2012)) 148-183.

⁽²⁹⁾ Nagoya Protocol article 22(3).

on the source country. The Nagoya Protocol will help shift some of this burden to users and their governments. Overly restrictive access regulations will be minimized and opportunities for benefit-sharing created by facilitating access to genetic resources.

But laws alone cannot cultivate the good will necessary between genetic resource providers and users. In the end strong relationships must be premised on transparency.

The marine scientific research community will need to be attuned to the needs and concerns of coastal provider states wishing to achieve benefit-sharing. Researchers and their institutions will need to be forthcoming about their intentions, as well as identifying and securing the possibilities for meaningful benefit-sharing in the short, medium and longer terms.

Just as importantly, states with users of genetic resources within their jurisdiction will need to live up to the plain meaning of the obligations embodied in the Nagoya Protocol and ensure the availability of meaningful compliance-related measures to support coastal provider states if the need arises.

Of course one of the ultimate challenges is the future entry into force of the Nagoya Protocol itself. Fifty ratifications are needed for entry into force⁽³⁰⁾. To date ratification has been dominated by developing countries. More developed countries need to join because the Nagoya Protocol's functioning requires a very balanced collection of states. Entry into force characterized by a representative collection of states should lend itself to more predictable conditions of access, greater legal certainty, and a rationalized approach to compliance-related measures providing a strong foundation for overcoming some of the implementation challenges highlighted earlier.

⁽³⁰⁾ Nagoya Protocol article 33. As at 27 April 2013 there are sixteen ratifications.

4. ABS IN AREAS BEYOND THE LIMITS OF NATIONAL JURISDICTION

The Nagoya Protocol's adoption answered a key outstanding scope-related question that dominated the negotiations right up until the very last moment. It confirmed the Protocol's non-applicability to marine genetic resources in areas beyond the limits of national jurisdiction ⁽³¹⁾.

This clarity left space for the international community working under the UNGA's auspices to accelerate its review of marine genetic resources in ABNJ sourced from the International Seabed Area and the open oceans. The debates taking place amongst states within the UNGA and within academia and civil society resonate with some of the echoes of the CBD's ABS negotiations.

For example, a situation exists where marine genetic resources from ABNJ are accessible by anyone for any purpose with no explicit — and I emphasize explicit — obligation to share benefits from their use with other states — whether developed or developing.

At the same time, UNCLOS clearly reflects general notions of equity in relation to the oceans' resources providing a basis for benefit-sharing with respect to marine genetic resources from ABNJ whether collectively through cooperation or individually through state-level action ⁽³²⁾. Its marine scientific research provisions include general obligations to promote international cooperation on the basis of mutual benefit ⁽³³⁾. States are required to cooperate to create favourable conditions for marine scientific research by concluding bilateral and multilateral agreements ⁽³⁴⁾.

⁽³¹⁾ Nagoya Protocol article 3.

⁽³²⁾ UNCLOS preambular paragraphs 2-4.

⁽³³⁾ UNCLOS article 242, paragraph 1.

⁽³⁴⁾ UNCLOS article 243.

More specific UNCLOS provisions address data exchange ⁽³⁵⁾, publication and dissemination of information, knowledge and research results ⁽³⁶⁾, and the need to build the capacity of developing and less technologically developed states with respect to marine scientific research ⁽³⁷⁾. UNCLOS also has marine technology development and transfer provisions with clear references to equity that could be applied to technologies developed using marine genetic resources from ABNJ and the related capacities to develop them ⁽³⁸⁾.

UNCLOS further states that marine scientific research activities shall not constitute the legal basis for any claim to any part of the marine environment or its resources ⁽³⁹⁾. In relation to marine technology it calls on states to have “due regard for all legitimate interests...including the rights and duties of holders, suppliers and recipients of marine technology” ⁽⁴⁰⁾. Both provisions may have implications for intellectual property rights extended over marine genetic resources from ABNJ and related data.

Finally, UNCLOS states that marine scientific research in the International Seabed Area is to be for the benefit of humankind as a whole ⁽⁴¹⁾.

In sum all of these provisions could be interpreted by states collectively or individually to apply to marine scientific research and other activities involving marine genetic resources and resulting benefit-sharing. But there is no explicit treatment of the utilization of marine genetic resources from ABNJ in UNCLOS. Furthermore there has been no

⁽³⁵⁾ UNCLOS article 244, paragraph 2.

⁽³⁶⁾ UNCLOS article 143, paragraph 3(c) and article 244.

⁽³⁷⁾ UNCLOS article 143, paragraph 3(b)(i) and article 244, paragraph 2.

⁽³⁸⁾ UNCLOS Part XIV.

⁽³⁹⁾ UNCLOS article 241.

⁽⁴⁰⁾ UNCLOS article 267.

⁽⁴¹⁾ UNCLOS article 143.

systematic review of state practice in relation to marine scientific research in ABNJ generally ⁽⁴²⁾ or more specifically with regard to marine genetic resources. The questions therefore facing the international community are understanding what the situation is and then deciding whether to more progressively develop UNCLOS with respect to this issue and, if so, how?

Driving this consideration is a perception of inequity between states. But in contrast to the situation within the CBD there are no issues of national sovereignty and no claims that genetic resources are being taken and used without permission.

One often cited example of the inequities that exist relates to the ocean going technological, financial and human resources capacities needed to directly access marine genetic resources in the International Seabed Area and the open oceans. These capabilities appear to be limited to a handful of countries such as China, those of the European Union in particular France, Germany and United Kingdom, India, Japan, Korea, Russian Federation and the United States. Direct physical access to marine genetic resources in ABNJ creates the impression that these countries solely benefit.

As with the CBD, there are expectations that there could be large financial windfalls from the use of marine genetic resources from ABNJ in biotechnological applications. These would flow most directly to countries with direct access to the International Seabed and the open oceans, and the technological capacity to use the marine genetic resources, though depending on the application the resulting benefits may also accrue more widely even globally.

⁽⁴²⁾ See United Nations Division of Ocean Affairs and the Law of the Sea, *Marine Scientific Research: A Revised Guide to the Implementation of the Relevant Provisions of the United Nations Convention on the Law of the Sea*, (United Nations, New York, 2010) 32 noting "...there is not much information about State practice regarding marine scientific research beyond areas of national jurisdiction...".

Concerns have also been expressed about the exclusivity of use that comes from the extension of intellectual property rights, such as patents, over marine genetic resources accessed through marine scientific research activities as well as the technological innovations subsequently developed from them. In general the rate of discovery of natural products and patenting of genetic sequences from all marine areas is significantly increasing⁽⁴³⁾ though relative to patenting of genetic sequences with a terrestrial origin the number remains small⁽⁴⁴⁾. The extent to which this is the case for marine genetic resources from ABNJ is unknown. Aside from the monetary benefit streams they could guarantee, whether patents become problematic may largely depend on whether they limit future use of the marine genetic resources or derived data from ABNJ, whether for commercial or non-commercial uses such as research⁽⁴⁵⁾.

There is also an assertion that the “first come, first served” type approach of the high seas legal regime may need to be re-examined in the context of marine genetic resources in ABNJ⁽⁴⁶⁾. Another assertion contends that the common heritage of mankind principle applies to the biological resources of the International Seabed Areas implying by exten-

⁽⁴³⁾ Jesus Arrieta, Sophie Arnaud-Haond and Carlos Duarte, “What Lies Beneath: Conserving the Oceans’ Genetic Resources”, (2010) 107 *Proceedings of the National Academies of Science of the United States of America* 18318-18324. <http://www.pnas.org/content/early/2010/09/09/0911897107>.

⁽⁴⁴⁾ As of 2009, using the GenBank database as a source, which is not exhaustive, it was estimated that 1.2 of every thousand patents were associated with gene sequences originating from marine versus terrestrial areas. Despite this low percentage the significant observation of Arrieta, Jesus, *et al.* (2010), was the exponential rate of growth for patenting the materials with a marine origin. Personal communication with Sophie Arnaud-Haond, (Institut Francais de Recherche sur la Mer) (16 April 2013).

⁽⁴⁵⁾ Lyle Glowka, “Evolving Perspectives” at 416.

⁽⁴⁶⁾ European Union Presidency Statement to the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, Agenda Item 5c (15 February 2006: New York). See the European Union website at http://www.eu-un.europa.eu/articles/en/article_5705_en.htm.

sion that the marine genetic resources found there should have a similar status ⁽⁴⁷⁾.

Interestingly this is still very much an emerging area, though the first comprehensive legal and policy review of the issue in relation to the marine genetic resources of the International Seabed Area dates to 1995 ⁽⁴⁸⁾. The CBD COP had picked-up the issue with respect to deep seabed genetic resources that same year, ⁽⁴⁹⁾ deferring later to the UNGA in 2004 ⁽⁵⁰⁾. Under the auspices of the UNGA the issue was considered, first by the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea ⁽⁵¹⁾, and now by the UNGA's Ad Hoc Open-ended Informal Working Group to study issues relating to the

⁽⁴⁷⁾ Statement on behalf of the Group of 77 and China by Minister Diego Limieres, Deputy Permanent Representative of the Permanent Mission of Argentina to the United Nations, at the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (New York, 31 May 2011). See the G77 website at <http://www.g77.org/statement/getstatement.php?id=110531>.

⁽⁴⁸⁾ In 1995 the author presented a paper entitled "The Deepest of Ironies: Genetic Resources, Marine Scientific Research and the Area" to the first session of the Global Biodiversity Forum, which met just before the first meeting of the CBD Subsidiary Body on Scientific, Technical and Technological Advice in Paris (4-8 September 1995). The paper was subsequently revised and distributed at the Second Meeting of the CBD Conference of the Parties in Jakarta (6-17 November 1995). The paper was published in 1996. See generally Lyle Glowka, "The Deepest of Ironies: Genetic Resources, Marine Scientific Research, and the Area", (1996) 12 *Ocean Yearbook* 154-178. For a review of developments between 1995 and 1999 see generally Lyle Glowka, "Genetic Resources, Marine Scientific Research and the International Seabed Area", (1999) 8 *Review of European Community & International Environmental Law* 56-66.

⁽⁴⁹⁾ CBD COP Decision II/10 (Conservation and sustainable use of marine and coastal biological diversity), UN doc. UNEP/CBD/COP/2/19 (30 November 1995).

⁽⁵⁰⁾ CBD COP Decision VII/5 (Marine and Coastal Biological Diversity), UN doc. UNEP/CBD/COP/7/21 (13 April 2004).

⁽⁵¹⁾ UNGA Res 58/240 (Oceans and the Law of the Sea), UN doc. A/RES/58/240 (5 March 2004).

conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction ⁽⁵²⁾.

The working group has met five times since 2006 ⁽⁵³⁾. A watershed event occurred in 2012 when the UNGA resolved to initiate within the working group a process to examine the legal framework for conservation and sustainable use of biodiversity in ABNJ ⁽⁵⁴⁾. The working group was mandated “to identify gaps and ways forward in the existing legal framework including through the implementation of existing instruments and the possible development of a multilateral agreement under the United Nations Convention on the Law of the Sea” ⁽⁵⁵⁾.

The process will address a package of issues relating to the conservation and sustainable use of marine biodiversity in ABNJ: marine genetic resources, including benefit-sharing, area-based conservation management tools, such as marine protected areas, and environmental impact assessment, capacity building, as well as marine technology transfer ⁽⁵⁶⁾. In June 2012 at the Rio+20 Summit heads of state and governments committed themselves to urgently address the issue of the conservation and sustainable use of marine biodiversity in ABNJ. They set a target to take a decision on the development of an international instrument under UNCLOS before the end of the UNGA’s sixty-ninth session ⁽⁵⁷⁾.

⁽⁵²⁾ UNGA Res 59/24 (Oceans and the Law of the Sea), UN doc. A/RES/59/24 (4 February 2005).

⁽⁵³⁾ As at 27 April 2013. Its sixth meeting will take place in August 2013.

⁽⁵⁴⁾ UNGA Res 66/231 (Oceans and the Law of the Sea), paragraph 167, UN doc. A/RES/66/231 (5 April 2012).

⁽⁵⁵⁾ UN doc A/66/119 and Annex (Recommendations of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction and Co-Chairs’ summary of discussions), paragraph 1(a) (30 June 2011).

⁽⁵⁶⁾ *Id.* at paragraph 1(b).

⁽⁵⁷⁾ UNGA Res 66/288 (The Future We Want), paragraph 162, UN doc. A/RES/66/288 (11 September 2012).

An observer to the BBNJ working group process could be forgiven for being a bit frustrated over the years as its work unfolded. In relation to marine genetic resources the working group focused almost exclusively on the applicable legal regime. Developed countries asserted that the high seas legal regime applied to these genetic resources, while developing countries were saying “No, they're a common heritage”. The working group's failure to gain traction was the result of focusing on the wrong question as it overlooked first defining the problem ⁽⁵⁸⁾. This was further compounded by the uncertainty surrounding the geographical scope of application of the Nagoya Protocol until this was finally resolved in October 2010.

The breakthrough presents a real opportunity to re-cast the process. The BBNJ working group has the opportunity to look more deeply into current state and research community practices with respect to marine genetic resources from ABNJ. It can identify what could be problematic with respect to the utilization of these marine genetic resources, including possible inequities and inefficiencies, particularly in relation to how marine scientific research and subsequent utilization including commercialization is undertaken and who benefits.

The results of the examination could guide the working group to identify desirable policy outcomes and the tools needed to achieve them. This could include determining whether the existing legal framework embodied by UNCLOS, and perhaps some other existing international instruments and best practices, is best suited to achieve the outcomes sought, or whether additional tools, such as new instruments to supplement UNCLOS, might be necessary.

After so many years this seems to be the approach now emerging within the working group. In May 2013 inter-sessional workshops ⁽⁵⁹⁾

⁽⁵⁸⁾ Lyle Glowka, “Evolving Perspectives” at 413.

⁽⁵⁹⁾ UNGA Res 67/78 (Oceans and the Law of the Sea), annex, UN doc. A/67/L.21 (Oceans and the Law of the Sea, draft by Australia, Brazil, Cyprus, Denmark,

are scheduled before the working group's sixth regular meeting in August 2013.

Astoundingly, the workshops will provide the first true opportunity for the working group to improve understanding of the issues and clarify key questions. In relation to marine genetic resources from ABNJ the workshops will assist the working group in exploring nine thematic areas ⁽⁶⁰⁾. It is beyond the scope of my presentation to examine each of these areas, but three are especially noteworthy to mention for the opportunities presented to increase understanding and advance the process significantly particularly with respect to problem identification.

4.1. Meaning and scope

First, the meaning and scope thematic area presents the opportunity for the working group to examine the nature of marine genetic resources, the possible triggers for benefit-sharing and their biogeography in relation to the UNCLOS maritime zones.

Examining this thematic area may lead the working group to recognize that marine genetic resources have a tangible and intangible nature. For example genetic material can be physically collected, but it is only

Estonia, Finland, France, Iceland, India, Ireland, Jamaica, Japan, Monaco, Netherlands, New Zealand, Norway, Spain, Trinidad and Tobago and Tuvalu) (23 November 2012).

⁽⁶⁰⁾ These are (a) Meaning and scope; (b) Extent and types of research, uses and applications; (c) Technological, environmental, social and economic impacts; (d) Access-related issues; (e) Types of benefit-sharing; (f) IPR issues; (g) Global and regional regimes on genetic resources, experiences and best practices; (h) Impacts and challenges to marine biodiversity in ABNJ; (i) Exchange of information on research programmes regarding marine biodiversity in ABNJ, see UNGA Res 67/78 (Oceans and the Law of the Sea), annex, UN doc. A/67/L.21 (Oceans and the Law of the Sea, draft by Australia, Brazil, Cyprus, Denmark, Estonia, Finland, France, Iceland, India, Ireland, Jamaica, Japan, Monaco, Netherlands, New Zealand, Norway, Spain, Trinidad and Tobago and Tuvalu) (23 November 2012).

potentially valuable from a scientific or commercial standpoint for the information that it encodes.

Today the information embodied in genetic sequences and biochemical compounds is far easier to digitize and analyze than ever before with the explosion of low-cost computing power, coupled with high-throughput sequencing machines and powerful informatics software to mine data placed in databases. Bottlenecks exist with respect to interpreting the vast quantities of data generated.

But in theory, the capacity to mine databases containing genomic, metagenomic, proteomic and metaproteomic data sourced from genetic resources collected from ABNJ, and subsequently using data in research and development, could become just as important to understanding marine biodiversity and generating innovative applications as actual physical access to the organisms themselves and the genetic materials or biochemical compounds they are associated with. The working group should therefore not only consider the capacity of states and their researchers to gain physical access to marine genetic resources from ABNJ found in in-situ and ex-situ conditions, but to gain what I have called “in-silica access” to genetic resources: access to digitized genomic, metagenomic, proteomic and metaproteomic data in databases (in other words what could be described as access to ‘omics-related data) ⁽⁶¹⁾.

Possible triggers for benefit-sharing in relation to the use of both physical materials and data should also be considered because of the practical implications for capturing benefits. This could lead the working group to examine the work undertaken and the conclusions reached in the context of the Nagoya Protocol. As pointed out earlier the “utilization of genetic resources” triggers the application of many of the obligations in the Nagoya Protocol, particularly its benefit-sharing obligations.

⁽⁶¹⁾ Lyle Glowka, “Evolving Perspectives” at 416.

These apply to a continuum of research and development activities, and other applications including commercial use. Importantly, the Nagoya Protocol innovatively applies to both genetic material and biochemical compounds whether associated together or separately.

Could an approach be fashioned premised on “utilization of marine genetic resources from ABNJ” and extending to genetic material, biochemical compounds *and* associated data sourced from ABNJ? If so, harmony and mutual supportiveness with the CBD and Nagoya Protocol could be promoted, while the concept of in-silica access to genetic resources could be advanced with respect to ‘omics-related data.

In addition, the time of collecting materials and data could become less critical than the time of utilization because benefit-sharing obligations could potentially be triggered when a particular use takes place. This exploration will inevitably lead the BBNJ working group to consider the temporal scope of any approach that is ultimately developed for marine genetic resources from ABNJ, keeping in mind that the Nagoya Protocol does not apply retroactively ⁽⁶²⁾.

Finally, and very importantly, it will be necessary to keep in mind that marine genetic resources from ABNJ may not respect the legal boundaries established for the seabed and water column by UNCLOS and by extension the CBD and the Nagoya Protocol. Some will inevitably straddle various maritime zones whether in the horizontal or vertical dimensions ⁽⁶³⁾. One challenge will be to examine approaches that do not inadvertently undermine the possibilities for coastal provider states to engage in bilateral benefit-sharing within the context of the CBD and the Nagoya Protocol when marine genetic resources are

⁽⁶²⁾ Nagoya Protocol article 3.

⁽⁶³⁾ For an introduction to marine microbial biogeography in relation to the dark ocean see Beth N. Orcutt, Jason B. Sylvan, Nina J. Knab and Katrina J. Edwards, “Microbial Ecology of the Dark Ocean Above, At, and Below the Seafloor”, (2011) 75 *Microbiology and Molecular Biology Reviews* 361-422.

both found in their exclusive economic zone or on their continental shelf and in ABNJ, while being mindful of the need to avoid creating disincentives for marine scientific research within or beyond areas of national jurisdiction that could result in shifting activities to another maritime zone.

4.2. Extent and types of research, uses and applications

The second thematic area I would like to discuss involves the extent and types of research, uses and applications of marine genetic resources from ABNJ. An enormous opportunity exists for the BBNJ working group to identify and understand the relationship between marine scientific research and subsequent uses of marine genetic resources from ABNJ. Central to this is identifying those scientific communities of practice working in the International Seabed Area and in the water column of the open oceans.

The seabed communities of practice operating in ABNJ are on going and readily identifiable. The International Ocean Drilling Programme and its 26 member countries characterize the ocean drilling community ⁽⁶⁴⁾. The hydrothermal vent community is largely composed of 26

⁽⁶⁴⁾ Established in 2003, the Integrated Ocean Drilling Programme (IODP) “is an international marine research program that explores Earth's history and structure recorded in seafloor sediments and rocks, and monitors sub-seafloor environments.” One research component includes researching the deep biosphere and the sub-seafloor ocean. IODP's members are Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Finland, France, Germany, Iceland, India, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and United States of America. IODP is funded by financial contributions from a partnership between Australia-New Zealand, Brazil, China, a regional consortium of the European members and Canada, India, Japan, Korea and the United States. The next programme will be “The International Ocean Discovery Program — Exploring the Earth under the Sea” which will be launched in October 2013. See generally the IODP website at <http://www.iodp.org/>.

national research programmes associated with InterRidge ⁽⁶⁵⁾. To date it has been most closely associated with marine scientific research activities potentially involving marine genetic resources from ABNJ in the International Seabed Area.

Both communities aim to promote sample and data sharing through their respective policies and practices, though the extent to which sharing actually takes place has not been examined systematically. For example IODP, whose marine scientific research activities to date have not been associated in the literature or within the BBNJ working group with the utilization of marine genetic resources from ABNJ despite the geomicrobial work its member countries undertake, indicates “One of the scientific goals of IODP is to research the deep biosphere and the sub-seafloor ocean. IODP has microbiological samples from the sub-seafloor available for interested researchers and will continue to collect and preserve geomicrobiology samples for future research” ⁽⁶⁶⁾. The IODP has three international repositories in Germany, Japan and the United States from which such samples are available ⁽⁶⁷⁾.

⁽⁶⁵⁾ Established in 1992, InterRidge aims to promote all aspects of mid-oceanic ridge research through international cooperation. InterRidge is anchored by the principle of collaboration, pooling the resources of its member countries to ensure cost-effective and cooperative research. The InterRidge membership is characterized by principal members (China, France, Germany, Japan, United Kingdom and United States of America), associate members (Canada, India, Korea, Norway and Portugal), and corresponding members (Australia, Austria, Brazil, Bulgaria, Chile, Chinese Taipei, Denmark, Iceland, Italy, Mauritius, Mexico, Morocco, New Zealand, Philippines, Russia, Pacific Islands Applied Geoscience Commission (whose membership includes Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshal Islands, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu), South Africa, Sweden and Switzerland). See generally the InterRidge website at www.interridge.org.

⁽⁶⁶⁾ See generally IODP website at <http://www.iodp.org/access-data-and-samples>. See, too, Integrated Ocean Drilling Program Sample, Data, and Obligations Policy (March 2012) at the IODP website <http://www.iodp.org/program-policies/procedures/guidelines>.

⁽⁶⁷⁾ See generally IODP website at <http://www.iodp.org/repositories>.

In 2006 the InterRidge Steering Committee adopted the Inter-Ridge Statement of Commitment to Responsible Research Practices at Deep-sea Hydrothermal Vents ⁽⁶⁸⁾. According to Practice 6, members commit themselves to facilitating the fullest possible use of biological, chemical and geological samples collected through collaboration and cooperation amongst the global community of scientists.

This embodies a commitment on the part of the hydrothermal vent research community “to open international sharing of data, ideas and samples in order to avoid unnecessary re-sampling and impact on hydrothermal vents, and to further our global understanding of these habitats for the good of all people on Earth” ⁽⁶⁹⁾. The Statement of Commitment notes that InterRidge and the Census of Marine Life are building open databases on available biological samples preserved in laboratories and museums around the globe, as a resource to minimise repeat sampling. The Statement of Commitment further notes that many national ridge programmes are hosting open-access databases with geological, chemical and biological hydrothermal vent data.

The pelagic community operating in ABNJ appears to be far more diverse than that operating in the International Seabed Area. This community is characterized by national programmes, as well as international consortium activities. Most readily identifiable and relevant are one-off expeditions and projects targeting marine genetic resources within and beyond the limits of national jurisdiction and generating large amounts of genomic, metagenomic and other data such as the Global Ocean Sampling Expedition (GOSE) ⁽⁷⁰⁾, the Malaspina Expe-

⁽⁶⁸⁾ See the InterRidge website at www.interridge.org/en/IRstatement.

⁽⁶⁹⁾ Ibid.

⁽⁷⁰⁾ The Global Ocean Sampling Expedition (GOSE) was a private undertaking of the J. Craig Venter Institute to explore and describe marine microbial diversity of marine surface waters using metagenomic techniques. It was funded by grants from various private foundations and anonymous donors. Sampling took place around the

dition ⁽⁷¹⁾, Tara Oceans ⁽⁷²⁾, and more recently, European Union-funded regional projects such as the Micro B3 ⁽⁷³⁾ and Pharmasea ⁽⁷⁴⁾.

world in 2003 and 2004 and then again in 2009 and 2010 in coastal and open ocean contexts within and beyond areas of national jurisdiction. A private 29 metre sailboat was used. Datasets were made available through publicly accessible databases. See generally, Liza Gross, “Untapped Bounty: Sampling the Seas to Survey Microbial Biodiversity,” (2007) 5 *PLOS Biol* e85. doi:10.1371/journal.pbio.0050085 and the GOSE website at <http://www.jcvi.org/cms/research/projects/gos>.

⁽⁷¹⁾ The Malaspina 2010 Circumnavigation Expedition was a seven-month interdisciplinary cruise organized by the Spanish National Research Council. Institutions from Austria, Brazil, Canada, Czech Republic, France, Portugal, Spain, United Kingdom and the United States of America participated in a consortium governed by a consortium agreement that does not appear to be publicly available. Sampling took place in coastal and open water contexts within and beyond areas of national jurisdiction to explore among other things microbial food webs in the deep ocean and relate them to global change. Data inventories and a sample bank were established for future research. The data acquired is to be publicly available but it unclear where this is located. See generally the Malaspina Expedition website at <http://www.expedicionmalaspina.es/Malaspina/Main.do#content:Bloque:ident:5>.

⁽⁷²⁾ The Tara Oceans Expedition took place between 2009 and 2011 using the privately owned 36 metre research schooner Tara. It was the earliest attempt to undertake a global study of marine plankton to better understand planktonic ecosystems and complete a comprehensive census of oceanic protists. Sampling took place in coastal and open ocean contexts within and beyond areas of national jurisdiction. The consortium included institutions from France (lead), Belgium, Denmark, Italy and the United States of America. There does not appear to be a publicly available consortium agreement. See generally the Tara Oceans website at <http://oceans.taraexpeditions.org/en/.php?id_page=1018>. The follow-on OCEANOMICS project led by a consortium of French and European institutions from the academic and industrial sectors was launched in March 2013. The project aims to understand the complexity and biotechnological potential of oceanic plankton collected during the Tara Oceans expedition. A publicly accessible database is planned. Whether a publicly available consortium agreement is available is unknown. See generally the OCEANOMICS website at http://oceans.taraexpeditions.org/en/oceanomics-in-the-wake-of-tara-oceans.php?id_page=1281.

⁽⁷³⁾ The Micro B3 (Biodiversity, Bioinformatics, Biotechnology) launched in 2012 seeks to “develop innovative bioinformatic approaches and a legal framework to make large-scale data on marine viral, bacterial, archaeal and protiste genomes and metagenomes accessible for marine ecosystems biology and to define new targets for

With the exception of the GOSE, which was a private endeavour funded by private foundations and anonymous donors, all of these efforts are examples of multinational, multi-partner consortia with academic, industrial and non-profit partners. Activities are funded by public or private sources such as foundations, or a combination of both. It is unclear the extent to which commercial funding may be involved. Research funds sourced from governmental agencies and private foundations may be subject to conditionalities for example with respect to sample and data sharing, data management, the deposit of materials and data in public repositories as well as knowledge transfer through publications ⁽⁷⁵⁾.

Importantly, these partnerships are governed by consortium agreements that may or may not be publicly available. The agreements specify the respective roles and responsibilities of the partners. They

biotechnological applications.” A consortium of 32 academic and industrial partners has been formed. The project will draw from samples and datasets from the Malaspina and Tara expeditions and will also involve new sampling, data generation and analysis from an international Ocean Sampling Day. A consortium agreement has been developed but does not appear to be publicly available. Public availability of pre-competitive data and samples is envisioned. See the MicroB3 website at <http://www.microb3.eu/>.

⁽⁷⁴⁾ The Pharmasea project launched in 2013 with funding from the European Union focuses on biodiscovery research, development and commercialization of new substances from marine organisms the planet’s hottest, deepest and coldest marine sites. It is unclear the extent to which sampling will take place in areas within and beyond the limits of national jurisdiction. Screening will take place to discover new marine microbes and new bioactive compounds and evaluate their potential as novel drug leads, antibiotics and ingredients for nutrition or cosmetic applications. The project includes a consortium of academic, industrial and non-profit partners from 13 countries (Belgium, United Kingdom, Norway, Spain, Ireland, Germany, Italy and Denmark as well as China, South Africa, Chile, Costa Rica and New Zealand). There does not appear to be a publicly available consortium agreement and the extent to which samples and data will be publicly available is unclear. See generally the Pharmasea website at <http://www.pharma-sea.eu/pharmasea.html>.

⁽⁷⁵⁾ See for example the United States National Science Foundation (NSF), Division of Ocean Sciences Sample and Data Policy (May 2011) on the NSF website at <http://www.nsf.gov/pubs/2011/nsf11060/nsf11060.pdf>.

also describe how the resulting materials collected, data, and intellectual property will be shared within the group, and how the same will be shared with third parties and under what conditions.

Understanding and if possible actively engaging the seabed and pelagic research communities of practice in the BBNJ working group process will facilitate greater understanding of how they operate. It may also help to clarify whether the principles of sharing and open access that they promote are actually applied broadly or whether they are more limited in application to the particular community or consortium and the informal networks surrounding each ⁽⁷⁶⁾. It could also help to identify possible inequities and inefficiencies with respect to how these communities utilize marine genetic resources from ABNJ. Well-considered policy approaches could then be envisioned to facilitate marine scientific research, as well as benefit sharing in relation to the utilization of marine genetic resources from ABNJ and related data.

4.3. Access-related issues

With regard to the third and final thematic area I would like to discuss, access-related issues, the working group should focus on three different areas.

First, consideration should be given to in-situ access to marine genetic resources.

As mentioned earlier, the working group could usefully look at the capacities required to physically access the International Seabed and the

⁽⁷⁶⁾ For example, a survey of scientists worldwide engaged in deep-sea research gauged their awareness and perception of the InterRidge Statement of Commitment in relation to its conservation and use provisions. Respondents were familiar with the Statement and believed they followed it, though they were neither informed nor confident about whether other researchers were respecting it, see Laurent Godot, Kevin A. Zelnio and Cindy van Dover, “Scientists as Stakeholders in Conservation of Hydrothermal Vents” (2011), *25 Conservation Biology* 221. A similar review with respect to the implementation of Practice 6 of the Statement would be useful.

open oceans and the actual capacities of countries to do this. Access to the International Seabed Area due to the large distances off-shore, depths and extreme conditions generally requires large ocean going ships and manned or remotely piloted vehicles, capacities typically concentrated within developed countries and some of the more technologically advanced developing countries with interests in mining in the International Seabed Area such as China and India.

In contrast, sampling surface to mid-depth waters does not appear to require more than a sailboat or schooner properly outfitted to take and bring back water samples for subsequent on-shore analysis. The best examples are the vessels used in the GOSE and Tara Oceans Expedition, respectively measuring 29 and 36 metres in length.

Second, the BBNJ working group should also consider access to genetic resources sourced from ABNJ and located in ex-situ in facilities such as culture collections, particularly since isolated and culturable micro-organisms are to date the primary sources of the successfully screened marine sourced compounds ⁽⁷⁷⁾. There are two potential sources.

The first source is publicly accessible culture collections, such as those affiliated with the World Federation of Culture Collections (WFCC) a network of approximately 500 public collections ⁽⁷⁸⁾. These provide the international community with a large number of services. They collect, authenticate, maintain and distribute microbial cultures, with most striving to make these available at the marginal cost of distribution ⁽⁷⁹⁾. The second source is non-publically accessible culture

⁽⁷⁷⁾ Frank Oliver Glöckner and Ian Joint, “Marine Microbial Genomics in Europe: Current Status and Perspectives”, (2010) 3 *Microbial Biotechnology* 525. (Hereinafter “Marine Microbial Genomics in Europe”).

⁽⁷⁸⁾ See the World Federation of Culture Collections website at <http://www.wfcc.info/home/>.

⁽⁷⁹⁾ Lenie Dijkshoorn, Paul de Vos and Tom Dedeurwaerdere, “Understanding Patterns of Use and Scientific Opportunities in the Emerging Global Microbial Com-

collections such as those in academia, government and industry. These hold the vast majority of cultures ⁽⁸⁰⁾.

Both types of facilities are the world's repositories of culturable microorganisms. But it is unclear to what extent they may hold microbes from ABNJ. In fact, simply finding these microorganisms may be a challenge facing the entire international research community limiting researchers from developed and developing countries alike.

Some collections simplify matters by providing web-based finding tools and geo-referenced materials ⁽⁸¹⁾. In general however the vast majority of these cultures could be much more easily discoverable. Simply improving the ability to more efficiently locate existing publicly available cultures through improved web-based finding tools, database interoperability, standards, and meta-information such as geo-referenced coordinates would facilitate this. Development of a common language for information exchange would also help ⁽⁸²⁾.

Facilitating availability to the entire international research community could be characterized as a benefit to humankind as a whole. Benefits would also accrue if incentives could be found to encourage non-publicly accessible collections to make their cultures from ABNJ discoverable and available publicly ⁽⁸³⁾. A useful line of inquiry for the working group could be to survey what is available already within the network and how cultures from ABNJ could be located.

mons," (2010) 161 *Research in Microbiology* 408. (Hereinafter "Understanding Patterns of Use").

⁽⁸⁰⁾ Ibid at 409.

⁽⁸¹⁾ For example see the Japan Agency for Marine-Earth Science and Technology's Marine Biological Sample Database. See the JAMSTEC website at http://www.godac.jamstec.go.jp/bio-sample/index_e.html.

⁽⁸²⁾ See for example Bert Verslyppe, Renzo Kottman, Wim De Smet, Bernard De Baets, Paul De Vos and Peter Dawyndt, "Microbiological Common Language (MCL): A Standard for Electronic Information Exchange in the Microbial Commons", (2010) 161 *Research in Microbiology* 439-445.

⁽⁸³⁾ Lenie Dijkshoorn, *et al.*, "Understanding Patterns of Use" at 409.

Material transfer policies and obstacles to transfer could also be examined, while trying to project how accessible these materials are, under what conditions and what might be needed to make them more accessible. For example, in a trend exemplifying the progressive privatization of upstream microbial genetic resources needed for research, some WFCC-affiliated public culture collections have used prescriptive material transfer agreements to “progressively restrict access to, use of, and redistribution of their microbial materials for research purposes”⁽⁸⁴⁾. Whether this practice is impacting access to marine genetic resources sourced from ABNJ is unknown. But the practice is growing despite the assertion that “the bulk of all microbial materials residing in public culture collections all over the world [have] no known or likely commercial applications whatsoever... their only value... is to serve as inputs to basic scientific research”⁽⁸⁵⁾.

Restrictions exist at university-level too. University technology transfer offices often apply strict rules on transfer of research materials. Ironically, many scientists and labs often ignore such restrictions in favour of informal exchange with others on the basis of mutual trust and reciprocity⁽⁸⁶⁾. In fact, it is estimated that informal networks of trusted members account for upwards of sixty percent of microbial exchanges with materials turning into a “club goods”⁽⁸⁷⁾. Whether this is the situation for marine genetic resources sourced from ABNJ is unknown. But a club-like approach to sharing marine genetic resources, even one operating within the rules of a consortium agreement, could have implications for access since those outside the club may be treated less favourably and therefore subject to more stringent restrictions.

⁽⁸⁴⁾ Jerome H. Reichman, “A Compensatory Liability Regime to Promote the Exchange of Microbial Genetic Resources for Research and Benefit Sharing”, in: Paul F. Uhler (ed.), *Designing the Microbial Research Commons: Proceedings of an International Symposium* (National Academies Press, Washington DC, 2011) 44 (Hereinafter “A Compensatory Liability Regime”).

⁽⁸⁵⁾ Ibid.

⁽⁸⁶⁾ Ibid.

⁽⁸⁷⁾ Ibid.

Finally the third area needing examination by the working group is the emerging area I referred to earlier: in-silica access to genetic resources. Between 90-99 percent of marine micro-organisms are not culturable, ⁽⁸⁸⁾ but culture independent approaches such as genomics and metagenomics exist to digitize and study the genetic diversity of single cells and the diversity of microbial communities in water samples respectively, without the necessity of culturing the organisms studied. Functional diversity can be explored through proteomic and metaproteomic techniques. The GOSE, Malaspina and Tara Oceans expeditions referred to earlier are prime examples of where post-cruise 'omics technologies have been deployed to analyze water samples collected from the water column.

Back in the mid-1990s the Human Genome Project (HGP) unleashed a trend in computing capability that has since significantly slashed the time and cost of sequencing genetic material. Through the so-called Bermuda Rules of 1996 ⁽⁸⁹⁾ the HGP left a valuable legacy of open science to the international research community. It established the practice of making digitized primary genomic sequence data rapidly and freely available in the public domain via publicly accessible databases for all to use and analyze further in order to maximize the benefit to society and to prevent any of the participating publicly funded centres from “establishing a privileged position in the exploitation and control of human sequence information” ⁽⁹⁰⁾.

Conditions tied to public research funding at least in some developed countries ⁽⁹¹⁾ and the publication policies of leading scientific

⁽⁸⁸⁾ Frank Oliver Glöckner and Ian Joint, “Marine Microbial Genomics in Europe” at 524.

⁽⁸⁹⁾ See Summary of Principles Agreed at the First International Strategy Meeting on Human Genome Sequencing (Bermuda, 25-28 February 1996) presented on the website of the US Department of Energy’s Human Genome Project website at http://www.ornl.gov/sci/techresources/Human_Genome/research/bermuda.shtml#1.

⁽⁹⁰⁾ Ibid.

⁽⁹¹⁾ See for example the United States National Science Foundation (NSF), Division of Ocean Sciences Sample and Data Policy (May 2011) on the NSF website

journals ⁽⁹²⁾ now require the deposit of genomic and metagenomic data into recognized publicly accessible databases such those making up the International Nucleotide Sequence Database Collaboration ⁽⁹³⁾. Standards are being developed to better associate this data with contextual data including geo-referencing, depth and environmental information ⁽⁹⁴⁾. This would be particularly helpful since the explosion of sequence data entering public repositories requires contextual data to understand and apply ⁽⁹⁵⁾. These policies and standards would extend to datasets related to marine genetic resources from ABNJ.

An important line of inquiry for the BBNJ working group is to survey this area and determine the extent of public availability of genomic, metagenomic and other 'omics-related data from marine genetic resources sourced from ABNJ. The working group could also usefully examine the

at <http://www.nsf.gov/pubs/2011/nsf11060/nsf11060.pdf> and more generally the OECD Principles and Guidelines for Access to Research Data from Public Funding (2007) on the OECD website at <http://www.oecd.org/sti/sci-tech/38500813.pdf>. See too the Japan Agency for Marine-Earth Science and Technology's "Notes on our co-management of JAMSTEC's biological samples" (2009) on the JAMSTEC website at http://www.godac.jamstec.go.jp/bio-sample/user/management_e.html. For an evolving survey of potentially relevant policies, standards and databases see the Biosharing website at <http://biosharing.org/>.

⁽⁹²⁾ See for example the publication policies on the availability of data and materials of the Nature family of journals on the Nature website at <http://www.nature.com/authors/policies/availability.html>.

⁽⁹³⁾ The International Nucleotide Sequence Database Collaboration (INSDC) is an effort of GenBank (US National Center for Biotechnology), the DNA DataBank (Japan), and the European Molecular Biology Laboratory, see generally the INSDC website at <http://www.insdc.org/>.

⁽⁹⁴⁾ See for example the work of the Genomics Standards Consortium on the GSC website at http://gensc.org/gc_wiki/index.php/MIGS/MIMS/MIMARKS.

⁽⁹⁵⁾ Glöckner and Joint, citing P.K. Gupta, "Single Molecule DNA Sequencing Technologies for Future Genomics Research," (2008) 26 *Trends in Biotechnology* 602-611, indicate sequence data placed in publicly accessible databases doubles every 18 months. Frank Oliver Glöckner and Ian Joint, "Marine Microbial Genomics in Europe" at 523.

capacities needed in, genomics, metagenomics, proteomics and metaproteomics, as well as bioinformatics and biotechnology needed to find, access and exploit this data and the existing capacity of developing and less technologically advanced countries to do this.

These capacities could be useful in other contexts as well, and may already exist in other sectors in these countries. In fact, efforts may already be underway nationally and regionally to develop them with the support of intergovernmental and bilateral development agencies. Ideally, if for example developing countries had the bioinformatic and biotechnological capacity to tap these publicly accessible databases and mine the deposited data in theory they could undertake research and perhaps also develop commercial applications from that data.

5. CONCLUSION: TOWARDS FAIR AND EQUITABLE ACCESS TO MARINE GENETIC RESOURCES FROM ABNJ AND RELATED DATA

The BBNJ working group will ultimately need to judge the extent to which UNCLOS provides the basis for benefit-sharing resulting from the utilization of marine genetic resources from ABNJ and make a recommendation to the UNGA on a way forward. It will need to consider existing state practice and the practices and trends within the various marine scientific research communities utilizing marine genetic resources from ABNJ. It may also wish to draw from experience gained on ABS from the CBD's implementation, the development of the Nagoya Protocol and the experiences of other fora such as the International Treaty on Plant Genetic Resources for Food and Agriculture and the World Health Organization Pandemic Influenza System.

Inevitably the BBNJ working group will need to review the potential for monetary benefit sharing. But it should not overlook the significance of non-monetary benefit sharing.

A key consideration of the BBNJ working group's examination, and a cornerstone of non-monetary benefit-sharing, should be how to ensure

fair and equitable access to marine genetic resources (both materials and associated ‘omics-related data) sourced from ABNJ for all countries in the world taking into consideration the capacities of developing and less technologically advanced countries.

Promoting open science in relation to marine scientific research involving marine genetic resources from ABNJ is at the heart of fair and equitable access. This should be premised on ensuring public availability of as much of the physical materials, related data and research results as possible. But this needs to be complemented by meaningful capacity building initiatives in developing and less technologically advanced countries to lay the basis for them to participate in research cruises where this is possible, while strengthening their ability to better understand what marine genetic resources may be available in ex-situ and in-silica conditions and building their capacity to use these materials and related data ⁽⁹⁶⁾. Ensuring access is not undermined by subsequent uses, restrictive material transfer practices or intellectual property rights ⁽⁹⁷⁾ will also contribute to fair and equitable access whether for basic research on marine biodiversity or commercial innovation. This will benefit all countries of the world.

A set of indicative principles and criteria that could provide the foundation for fair and equitable access to marine genetic resources from ABNJ and related data is suggested in *Box 1*. These could be used as a checklist against which to review existing international obligations, current state practice, and trends in the practices of the marine scientific research and other communities utilizing marine genetic resources from ABNJ, or as a foundation for the negotiation of additional international instruments under UNCLOS addressing marine genetic resources from ABNJ.

Thank you very much for your attention and I look forward to any questions that you may have.

⁽⁹⁶⁾ Lyle Glowka, “Evolving Perspectives” at 419.

⁽⁹⁷⁾ Ibid.

Box 1: Indicative Principles and Criteria that could contribute to Fair and Equitable Access to Marine Genetic Resources from ABNJ**General Principles and Criteria**

- Ensure fair and equitable access to marine genetic resources (both materials and related data) from ABNJ for all countries in the world taking into consideration and building the capacities of developing and less technologically advanced countries.
- Promote open science in relation to marine scientific research on marine genetic resources from ABNJ.
- Ensure public availability of as much of the physical materials, related data and research results generated as possible.
- Lay the basis for developing and less technologically advanced countries to participate in research cruises where this is possible, strengthen their ability to better understand what marine genetic resources may be available in ex-situ and in-silica conditions and build their capacity to use these materials and related data.
- Foster the free exchange of marine genetic resources from ABNJ and related data and information by creating incentives and removing obstacles ⁽⁹⁸⁾.
- Cooperate to promote intellectual property policies and licensing procedures that are supportive of public accessibility and sharing of marine genetic resources from ABNJ as well as related data and information.
- Ensure access to marine genetic resources from ABNJ is not undermined by subsequent uses or intellectual property rights.

⁽⁹⁸⁾ Adapted from National Research Council, *Reaping the Benefits of Genomic and Proteomic Research: Intellectual Property Rights, Innovation and Public Health*, (The National Academies Press, Washington DC, 2007) 135-145.

Principles and Criteria Related to Samples of Marine Genetic Resources from ABNJ

Sample sharing: policy and practice

- Promote public accessibility and sharing of marine genetic resources from ABNJ to ensure maximum public benefit.
- Promote and ensure compliance with policies (including conditionalities) for publicly and privately funded marine scientific research to facilitate public accessibility and sharing of marine genetic resources from ABNJ.
- Promote simplified and transparent administrative procedures for the transfer of marine genetic resources from ABNJ for basic research purposes particularly when they do not have a clear commercial value in order to encourage research ⁽⁹⁹⁾.
- Promote the public accessibility and sharing of marine genetic resources from ABNJ that have no known or likely commercial value ⁽¹⁰⁰⁾, or are no longer commercially important ⁽¹⁰¹⁾.
- Create incentives for marine scientific researchers and non-publicly accessible culture collections to share marine genetic resources from ABNJ prior to and after publication of research results.
- Cooperate to create systems to locate and track marine genetic resources from ABNJ collected through marine scientific research.

⁽⁹⁹⁾ Ibid.

⁽¹⁰⁰⁾ Jerome Reichman, "A Compensatory Liability Regime" at 44.

⁽¹⁰¹⁾ Ibid.

Publications

- Promote publication policies that encourage public accessibility and sharing of marine genetic resources from ABNJ used in published research results.

Repositories/facilitating location of samples

- Encourage publicly accessible culture collections to develop finding tools to facilitate access to their accessions of marine genetic resources from ABNJ.
- Create incentives for public and non-public collections to publicly disclose their holdings.
- Promote best practices to collect and associate metadata with collections of marine genetic resources from ABNJ.
- Create incentives for non-publicly accessible culture collections to share marine genetic resources from ABNJ with publicly accessible collections.
- Identify repositories for marine genetic resources from ABNJ collected with public/private funding to ensure public accessibility and sharing.

Intellectual property and licensing

- Cooperate to promote responsible patenting and licensing procedures to support public accessibility and sharing of marine genetic resources from ABNJ ⁽¹⁰²⁾.

⁽¹⁰²⁾ Ibid. In the public health area the National Research Council suggested for example that the decision to patent should depend on whether significant private investment is required to make the invention widely available. If significant private investment was needed patent protection could be justifiable. Where significant private investment is not needed — as is the case for most research materials and research tools — no patents should be sought.

Capacity building

- Develop biotechnological and related capacities in developing and less technologically advanced countries to access and use marine genetic resources from ABNJ.

Principles and Criteria Related to Data Derived from Marine Genetic Resources from ABNJ

Data sharing: policy and practice

- Promote public accessibility and sharing of data in relation to marine genetic resources from ABNJ to ensure maximum public benefit.
- Promote policies (including conditionalities) for publicly and privately funded marine scientific research to facilitate public accessibility and sharing of data in relation to marine genetic resources from ABNJ.
- Create incentives for marine scientific researchers to share data in relation to marine genetic resources from ABNJ before and after publication.
- Cooperate to systematically share data in relation to marine genetic resources from ABNJ collected through marine scientific research.

Publications

- Encourage and provide incentives/direct financial support for publication of research results in open-access journals in relation to marine genetic resources from ABNJ.
- Promote open access to data in relation to marine genetic resources from ABNJ used in publications through publication of associated data.

- Develop best practices on publication moratoria to facilitate the release of data as soon as possible after its collection ⁶.

Infrastructure

- Promote establishment of publicly accessible data repositories and related networks in relation to marine genetic resources from ABNJ.

Data standards

- Support standard setting for the collection, storage and contextualization of genomic, metagenomic and other 'omic-related data.
- Promote standard setting and interoperability of databases and other tools that facilitate data acquisition, discovery and sharing.
- Promote policies to ensure data preservation.

Intellectual and other property rights

- Cooperate to ensure intellectual and other property rights over data, databases and publications are supportive of public accessibility and sharing of data, information and research results in relation to marine genetic resources from ABNJ.

Capacity building

- Develop bioinformatic and related capacities in developing and less technologically advanced countries to access and mine genomic, metagenomic and other 'omics-related data and databases.

⁽¹⁰³⁾ Personal communication with Graham Shimmiel, Bigelow Laboratory for Ocean Sciences (5 February 2013).

CHALLENGES AND UNCERTAINTIES OF THE CONTINENTAL SHELF EXTENSION PROJECTS: THE PORTUGUESE CASE

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Sumário: *A área abrangida pelo projecto de extensão da plataforma continental portuguesa situa-se entre as maiores no Atlântico e no mundo. A sua realização implica o maior levantamento sistemático de dados jamais efectuado em Portugal sendo que, em 2009, à data da entrega do projecto português junto da Comissão de Limites da Plataforma Continental (CLPC), situava-se entre os maiores levantamentos hidrográficos efectuados para este fim, juntamente com Estados Unidos da América e a França. Ainda assim, pela dimensão que apresenta, muitos dias de campanha no mar são ainda necessários para que se possam reconhecer dos dados necessários e produzir a informação que irá sustentar na globalidade o projecto português.*

No âmbito externo a dúvida que se levanta é a sentida por todos os envolvidos neste tipo de projectos quando chegar a hora da constituição da subcomissão que irá apreciar o projecto de extensão. A fonte normativa por excelência que regula os critérios e os procedimentos inerentes aos processos de extensão da plataforma continental é a Convenção das Nações sobre o Direito do Mar, de 1982 (CNUDM), em particular o artigo 76.º e o Anexo II. Complementarmente, a CLPC publicou, em 1999, as Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf e, em 2004, as Rules of Procedure of the Commission on the Limits of the Continental.

A entrada em vigor destes instrumentos ficou longe de colmatar as ambiguidades inerentes à aplicação dos preceitos convencionais. Esta situação afecta a segurança e certeza dos Estados que têm, ou vão ter, submissões para avaliação pela CLPC, relativamente aos resultados esperados. Os sumários das recomendações, que começaram a ser publicados a partir de 2008, podem constituir um instrumento fundamental de orientação para os Estados, uma vez que reflectem o entendimento da CLPC no que respeita aos conceitos indeterminados contidos na CNUDM e nos restantes instrumentos. Mesmo neste aspecto,

a prática tem demonstrado que a esmagadora maioria dos sumários publicados se abstém de indicar em concreto os critérios usados para a determinação dos elementos essenciais para a determinação do limite exterior da margem continental, bem como a respectiva justificação, ficando-se pela descrição dos elementos geofísicos que compõem as margens continentais e a indicação da localização dos correspondentes parâmetros, sem justificação pormenorizada sobre as decisões tomadas.

A recente tomada de posse na Comissão que terá mandato até 2017, constituída maioritariamente por novos membros, decidiu já sobre novas regras de funcionamento que permitirão a apreciação mais célere das submissões. Estas novas regras de funcionamento poderão levar a que a submissão portuguesa tenha subcomissão da CLPC constituída para a sua apreciação até ao final do presente mandato.

Content: *1. Introduction. 2. The definition of continental margin. 3. Resorting to graphics to compare the legal and geologic representation of article 76's major terms. 4. Methodology for the location of the base of the continental slope. Scientific and Technical Guidelines and Rules of Procedure of the Commission on the Limits of the Continental Shelf. 5. Recommendations/Summary of the Recommendations. 6. Other Scientific and Technical Instruments. 7. Quantitative Approach for the Location of the Base of the Slope. 8. Methodology for the Location of the Base of the Continental Slope. 9. Concluding remarks.*

1. INTRODUCTION

Thirty years have already passed over the signature of the 1982 United Nations Conference on the Law of the Sea (hereinafter referred to as UNCLOS, or the Convention) but the delineation of the outer limit of the continental shelf beyond 200 nautical miles (M) is, at a global level, far from its conclusion. The complexity of the scientific and technical studies needed to carry out the continental shelf extension project associated with the high costs of the ocean surveys to gather high quality data is responsible for such delay. At the beginning of 2013 the Commission on the Limits of the Continental Shelf (hereinafter referred to as the Commission, or the CLCS) had only considered 18 submissions ⁽¹⁾, which is about one fifth of the expected submissions to be considered to the end of this global process.

⁽¹⁾ http://www.un.org/Depts/los/clcs_new/commission_submissions.htm.

After the ratification of UNCLOS, Portugal assumed the continental shelf extension project as a national priority. A Task Group for the Extensions of the Continental Shelf⁽²⁾ was created for that purpose and on 11th May 2009 the Portuguese submission was handed to Mr. Rajan Hariharan Pakshi on behalf of the Secretary-General of the United Nations. This paper focuses on some of the issues that led to the outer limit of the Portuguese continental shelf as it is defined in the Executive Summary of the Portuguese submission⁽³⁾. In particular, it aims to briefly present the views adopted therein regarding the interpretation on the nature of the terms contained in article 76, in particular the continental margin, and the methodology used for determination of the base of the continental slope.

It has been widely diffused that article 76 of UNCLOS contains many terms that are, in their essence, scientific terms. It is also known, and accepted today, that many of those terms do have a legal meaning under article 76. It is of uttermost importance to have a clear understanding on “which is which” regarding the nature of those terms in order to achieve a coherent solution for the outer limit of the continental shelf.

In the Portuguese submission it is assumed that all major terms contained in article 76 of UNCLOS are interpreted in its legal sense⁽⁴⁾ ⁽⁵⁾, but shall be applied under scientific and technical principles.

⁽²⁾ Portuguese official name: Estrutura de Missão para a Extensão da Plataforma Continental (EMEPC). Further details on EMEPC activity may be found in ABREU, Manuel P. et al., *Extensão da Plataforma Continental — Um Projeto de Portugal — Seis Anos de Missão (2004-2010)*. Lisboa: Pentaedro, 2012.

⁽³⁾ http://www.un.org/Depts/los/clcs_new/submissions_files/prt44_09/prt2009executivesummary.pdf.

⁽⁴⁾ Vol. II of the Portuguese submission contains a document named “Principles and Methodologies”, which contains the Portuguese view regarding all major aspects concerning the determination of the outer limit of the continental shelf, namely the legal interpretation and application of article 76 of UNCLOS and the scientific and technical methodology used to calculate that limit.

⁽⁵⁾ Regarding which concepts shall be applied, in the Bangladesh/Myanmar case, International Tribunal for the Law of the Sea (ITLOS) stated that the question

To the moment doctrinal elaboration is scarce regarding the nature of the term “continental margin” ⁽⁶⁾. This term as is contained in article 76 is also one of the most important terms that is assumed in the Portuguese submission as a legal term. The reasoning that supports this understanding is generally described in the following paragraphs.

The nature of the terms contained in article 76 and its applications is expected to be a hot issue as long as that provision is discussed, no matter in which *fora* that discussion takes place. The “continental margin” and the “deep ocean floor”, the last one also known as abyssal plains in the geoscientific community and literature, belong to that group. Depending on their qualification the results for the coastal State may be immense and vary, theoretically, from a broad outer continental to the inexistence of an outer continental shelf at all. On the other hand it seems difficult and inappropriate, due to incoherence, to rely on mixed legal/geological interpretation of the terms contained in article 76. This would lead to inconvenient gaps or overlaps that would be difficult to resolve. The resulting inconsistency on this issue will probably rule against the coastal State.

2. THE DEFINITION OF CONTINENTAL MARGIN

A significant part of the literature concerning the application of article 76 of UNCLOS finds that the term “continental mar-

of the Parties’ entitlement to a continental shelf beyond 200 M raises issues that are predominantly legal in nature. ITLOS: Dispute concerning delimitation of the maritime boundary between Bangladesh and Myanmar in the Bay of Bengal (Bangladesh/Myanmar Case) (N.º 16), paragraph 413.

⁽⁶⁾ In the Bangladesh/Myanmar case, ITLOS made a clear link between the notion of natural prolongation and continental margin under article 76, paragraphs 1 and 4, stating that they refer to the same area. ITLOS Case N.º 16, paragraph 434.

http://www.itlos.org/fileadmin/itlos/documents/cases/case_no_16/C16_Judgment_14_03_2012_rev.pdf.

gin”⁽⁷⁾ shall be read in its geoscientific (geologic/ geomorphologic) sense. This is the view of the Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf (Guidelines)⁽⁸⁾. While recognizing that continental shelf is a juridical term⁽⁹⁾, the Commission emphasizes that the breadth of the continental shelf is determined with a reference to the edge of the geologic continental margin. Taking in consideration the text of article 76 paragraph 1, this means that the continental margin is itself a geological term (hereinafter geological means also geomorphological).

The United Nations Division for Ocean Affairs and the Law of the Sea (DOALOS) is of the view that in the 1982 Convention the term continental margin is used in its geomorphologic sense⁽¹⁰⁾. Also referring to article 76 continental margin, Gudlaugsson wrote that with the increasing advance in geosciences, it has evolved to contain more geological aspects, especially aspects of deep geological structure, being clear that the term is used in article 76 in the original geomorphological sense⁽¹¹⁾. Despite this view, this author added that the definition of

⁽⁷⁾ UNCLOS article 76 paragraph 3: “*The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof.*”

⁽⁸⁾ Namely in its paragraphs 6.1.7: “*Although article 76 refers to the continental shelf as a juridical term, it defines its outer limit with a reference to the outer edge of the continental margin with its natural components such as the shelf, the slope and the rise as geological and geomorphological features*”; and paragraph 6.3.5, first part: “*Article 76, paragraph 1, defines the breadth of the continental shelf with a reference to the edge of the geological continental margin (...).*”

⁽⁹⁾ Ibidem, paragraph 6.1.7.

⁽¹⁰⁾ DIVISION FOR OCEAN AFFAIRS AND THE LAW OF THE SEA, OFFICE OF LEGAL AFFAIRS, *The Law of the Sea: Definition of the Continental Shelf: An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea*. New York: United Nations, 1993, paragraph 31.

⁽¹¹⁾ GUDLAUGSSON, Steinar Thor, “Natural Prolongation and the Concept of the Continental Margin for the Purposes of Article 76”, in *Legal and Scientific Aspects of Continental Shelf Limits*. Boston: Martinus Nijhoff Publishers, 2001, p. 64.

the continental margin in article 76 is a juridical one and departs significantly from the scientific definition of the term continental margin ⁽¹²⁾.

The first sentence of article 76 paragraph 3 establishes the relationship between the continental margin and the deep ocean floor, with a particular reference where there are oceanic ridges. According with this provision any portion of the seabed or subsoil is either part of the continental margin or part of the deep ocean floor, where oceanic ridges are included. The assessment of each specific case, in particular where there is a (geologic) oceanic ridge, may lead to a “chicken and egg” causality dilemma to find which shall be considered first: the oceanic ridge and exclude the continental margin, or the continental margin as determined in accordance article 76 of UNCLOS. In this last situation the deep ocean floor will be the remaining portion of the seabed that is not part of the continental margin ⁽¹³⁾. The way to tackle this situation has much to do with the understanding to be taken from the nature of each of these terms and the rules of legal interpretation.

For the geosciences the concept of the continental margin is always associated to the idea of continental crust. It does not make sense to refer to the continental margin of an oceanic island because “continental margin” must always be related to a continent whose subsoil is com-

⁽¹²⁾ Ibidem, p. 65.

⁽¹³⁾ In the conclusions of the summary of the recommendations of the CLCS in regard to the submission made by the United Kingdom in respect of Ascension Island, the Commission begin to refer in the first sentence of the paragraph 51 that «[the Commission] is of the view that rugged seafloor between the Ascension Island volcanic edifice and axis of the of the MAR is part of the normal deep ocean floor (that includes the axial valley of the MAR)». In the second paragraph the Commission concludes that there is no basis or any support that justifies the determination of the base of the slope zones and associated FOS points at the locations given in the Submission for the Ascension Island region. For the sake of clearness of the reasoning, the text of the paragraphs could have been presented in the reverse order (premise to conclusion).

posed by continental crust. If the island is oceanic in its geological nature, it does not make sense to add to one of its submerged features the prefix “continental”.

In general, it is irrelevant to the geosciences the legal and policy related issues deriving from the width of the continental margin. For the geosciences the observations focus on the facts occurred on the Earth, and conclusions are taken from the scientific knowledge acquired from the interpretation made under scientific principles. The resulting studies seek to know the genesis of the margins and of the plate tectonics and to explain the resulting phenomena, such as seismic activity, or the possible existence of natural resources.

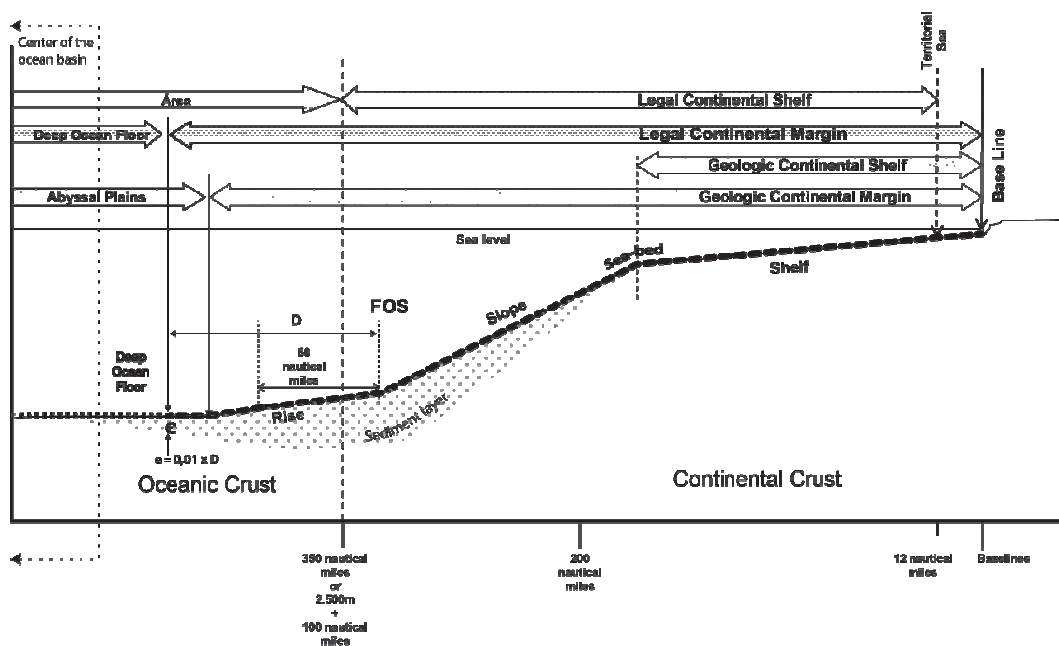
The determination of the outer edge of the continental margin (OECM), as it is referred to in article 76 of UNCLOS and qualify the remaining portion of the seafloor as deep ocean floor in the sense referred to in article 76 paragraph 3, has a completely different purpose. It aims to determine the outer limit of the continental shelf (OLCS), which entitles the coastal State to a set of rights and duties as they are established in international law. Interpreting article 76 of UNCLOS on the basis of geoscientific canons will tend to consider that the continental margin will always be composed by continental crust. Hence, since the continental shelf is closely linked to the continental margin there shall not be any part of the continental shelf that is not continental crust. This view is still endorsed by some geoscientists who study and write about the processes of extension of the continental shelf, either within their States of origin, or in the framework of international bodies, such as the CLCS.

3. RESORTING TO GRAPHICS TO COMPARE THE LEGAL AND GEOLOGIC REPRESENTATION OF ARTICLE 76'S MAJOR TERMS

One way to understand the differences between the geologic continental margin and the legal continental margin is to apply to an abstract

model the rules contained in article 76 of UNCLOS and to assess if the results obtained for each term as interpreted under legal or geologic principles fully overlap each other. Figure 1 was drawn to illustrate over a simple abstract model representing a broad continental margin each major article 76 terms under their legal or geologic interpretation.

Figure 1 — Graphic representation of the scientific and legal concepts over a simplified profile representing a broad continental margin



Considering article 76 paragraph 1⁽¹⁴⁾ of UNCLOS, some important elements may be taken from this part of the provision. First, the continental shelf comprises the seabed and the subsoil of the submarine areas situated beyond the territorial sea of the coastal State. Second, it constitutes the natural extension of the land territory of that State. Third, as a general rule, the outer limit of the continental shelf is the

⁽¹⁴⁾ UNCLOS, article 76 paragraph 1: “*The continental shelf of a coastal State comprises the seabed and the subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of its continental margin.*”

outer edge of the continental margin ⁽¹⁵⁾. At this moment it is already possible to identify important differences between scientific and legal concepts. Only in very particular situations the outer edge of the scientific continental shelf coincides with the outer edge of the scientific continental margin. In this case, what may be understood as a rule in international law is an exception in Nature. It should also be highlighted that between the baselines from where the breadth of the territorial sea is measured (baselines) up to the 12 nautical miles (M) the legal continental shelf does not overlap with the scientific continental shelf because this area corresponds to the territorial sea. From the baselines around the world up to 12 M, which is the domain where the scientific continental shelf is normally present, there is no legal continental shelf, as seabed and subsoil are part of other maritime zone, the territorial sea ⁽¹⁶⁾.

Comparing the first part of article 76, paragraph 1, with paragraph 3, another difficulty arises from geological and legal concepts. In paragraph 1 it is stated that the continental shelf extends to the outer edge of the continental margin. On the other hand, paragraph 3 refers to the “shelf” as one of the elements of the continental margin. The only way to solve this contradiction appears to be the consideration of the term “shelf”, in paragraph 3, in its geological sense. This conclusion does not imply, as described below, that the term “continental margin”, defined in paragraph 3, is referred to in this provision in its geological sense.

In order to find what part of the submerged prolongation of the land mass of the coastal State is part of the continental margin it is necessary to resort to the formulae contained in paragraph 4 of article 76, which has the rules to determine the OECM. The first step to perform this task is to locate the base of the continental slope

⁽¹⁵⁾ Subject to the limits imposed by article 76 paragraphs 5 and 6.

⁽¹⁶⁾ UNCLOS, article 2, paragraph 2.

(hereinafter referred to as base of the slope, or BOS), then calculate the foot of the continental slope (FOS). For the sake of simplicity let's assume in Figure 1 that the FOS is the point of the seabed profile in the lower area of the continental slope (base of the slope) where the rate of depth in relation to distance from land has its highest variation. FOS points are the references from which the OECM is determined.

As seen above, the continental margin may be understood under two quite different perspectives: the geological and the legal perspectives. The drafters of the Convention opted to write article 76, paragraph 4, subparagraph a) by beginning with the sentence “*For the purpose of this Convention, the coastal State shall establish the outer edge of the continental margin (...)*”. This presupposes that there may exist other purposes apart from this one to define the OECM. It seems to be easy to accept that when a criterion is defined to be applied as a general rule, there may exist also situations that can be excluded from that rule. Not all continental rises in the world are 60 M wide counting from the FOS point or are as wide as the 1% sediment thickness formula allows. It is clear for geologists that there are continental margins where a rise is not developed ⁽¹⁷⁾. This fact is not relevant for the application of article 76 because even in the cases where a rise is not developed, the OECM is at least situated 60 M ⁽¹⁸⁾ from the FOS points. No matter the existing

⁽¹⁷⁾ This fact is also recognized in the Guidelines: Paragraph 5.4.4: “[t]he Commission defines the continental slope as the outer portion of the continental margin that extends from the shelf edge to the upper part of the rise or to the deep ocean floor where a rise is not developed”; Paragraph 5.4.5: “The Commission defines the base of the continental slope as a region where the lower part of the slope merges into the top of the continental rise, or into the top of the deep ocean floor where a continental rise does not exist. (...) [S]econdly, the search for its landward edge should start from the lower part of the slope in the direction of the continental rise, or the deep ocean floor where a rise is not developed”; Paragraph 6.2.1: “Some continental margins consist of three elements — the shelf, the slope and the rise — whereas others show no rise (...)” (emphasis added). Other paragraphs make also references to the non-existence of the continental rise, *i.e.*, paragraphs 6.2.3 and 6.2.4.

⁽¹⁸⁾ If sediment thickness rule is not more favorable to the coastal State.

physical reality, paragraph 3 states that the continental margin comprises the shelf, the continental slope and the continental rise that, in this case, does not exist.

Legal and geological terms ⁽¹⁹⁾ contained in article 76, represented in Figure 1, generally do not fully overlap over their entire extension. As referred to before, apart the case of very narrow (geologic) continental shelf countries, this feature is usually confined between the baselines from where the breadth of the territorial sea is measured and the 12 M limit. Within this area, where the geological continental shelf is usually present, there is no legal continental shelf, as this area is part of the coastal State's territorial sea. Similar examples may be referred to the cases of legal continental margin *vs* geological continental margin and deep ocean floor *vs* abyssal plains.

Figure 1 also highlights that, at a basin scale, near the center of the basin the deep ocean floor/abyssal plains are the only concepts that positively do overlap with each other, no matter the particular reality of that area. This is very important when considering the identification of the base of the continental slope (BOS).

All previous arguments tend to reinforce the view that article 76's continental margin is a legal concept. For the delineation of the outer limit of the continental shelf (OLCS), the legal interpretation of the terms contained in article 76 as "continental margin", shall prevail and be applied through scientific-technical evidence and methods. Additional reasoning to support this view is as follows:

- a) Article 76 is part of an international convention that must be interpreted on the basis of the principles of legal interpretation. This is the main factor for the achievement of the purposes that

⁽¹⁹⁾ Here referred to as the terms contained in article article 76 as interpreted in its legal or geologic sense.

- are inherent to the objectives of its provisions, and of UNCLOS itself as a whole, *i.e.*, to establish the OLCS shelf beyond 200 M in a manner that conforms to international law. This conformity presupposes its compliance with the principles of international law.
- b) Despite the fact that the name of the term “continental margin” enclosed in article 76 may suggest a scientific approach for its interpretation and application, its meaning in the provision is senseless in the context it is presented in and cannot be coherently applied under these circumstances. The same is valid for other concepts. One example of this situation is the case of the concepts contained in article 76 paragraph 6 of “submarine ridges” and “submarine elevations”, which shall be interpreted in an integrated manner with the concept of “oceanic ridge” incorporated in paragraph 3. Once again, it is necessary to recall the principles of treaty interpretation in order to provide them with an effective and coherent meaning that will allow their appropriate application in specific real world cases.
 - c) It is important to put forward one central proposition to distinguish legal-scientific terminology. All the terms contained in article 76 are to be given an interpretation that, whilst subsumable in the wording of that article, confers on all provisions thereof a practical and coherent effect. As highlighted before, it is not possible to achieve this result if the interpretation is based on the geological concepts.
 - d) Finally, article 121, paragraph 2, of UNCLOS states that the territorial sea, contiguous zone, EEZ and continental shelf of an island are determined in accordance with the provisions of UNCLOS that apply to other land territory. As regards the application of article 76 this means that, whatever the nature of the crust of the submerged part of the territory (continental or oceanic), the provisions to be applied are the same as in other land territory⁽²⁰⁾.

⁽²⁰⁾ Also known as the principle of crustal neutrality. Summary of the Recommendations of the Commission on the Limits of the Continental Shelf in Regard to

In its genesis the continental margin concept was taken from supposedly average dimensions and characteristics of passive continental margins ⁽²¹⁾. At the time of the Third United Nations Conference on the Law of the Sea, passive continental margins were the better known and widely studied. From this process a legal definition arose for the continental margin, which is intended to be applied as a rule by the coastal States around the world no matter the structure, geochemical composition or width of its geological continental margin.

Taken in consideration the referred to above, it appears that the Guideline's understanding on the geologic nature of the term "continental margin" is a matter of concern for coastal States due to the fact, as mentioned in Rules of Procedure of the Commission on the Limits of the Continental Shelf (Rules of Procedure), the Commission is formally bound to it ⁽²²⁾. Despite the fact that a rigorous and restrictive application of paragraph 6.1.7. and the first part of paragraph 6.3.5. of the

the Submission made by the United Kingdom of Great Britain and Northern Ireland in Respect of Ascension Island on 9 May 2008, p. 6; BREKKE, Harald; SYMONDS, Philip A., "The Ridge Provisions of Article 76 of the UN Convention on the Law of the Sea", in *Legal and Scientific Aspects of Continental Shelf Limits*. Boston: Martinus Nijhoff Publishers, 2004, pp. 180-183.

⁽²¹⁾ Most of the papers published until the entry into of UNCLOS representing graphically the profile of a continental margin refer to a passive divergent margin, *e.i.*, HEDBERG, Hollis D., "Ocean Boundaries and Petroleum Resources". *Science*. Vol. 191. n.º 4231 (1976) 1009-1018 (p. 1010); FRANCALANCI, G. P., *Geological Interpretation of Article 76 of the United Nations Convention on the Law of the Sea*. Monaco: IHO, 1990 (Special Publication N.º 56), p. 23.

⁽²²⁾ Rules of Procedure of the Commission on the Limits of the Continental Shelf (CLCS/40/Rev. 1):

- Annex III, paragraph III, 5. 1: "*The subcommission shall undertake a preliminary analysis of the submission in accordance with article 76 of the Convention and the Guidelines (...)*";
- Annex III, paragraph IV, 9. 1: "*The subcommission shall conduct an examination of the submission based on the Guidelines in order to evaluate (...)*". This

Guidelines has not always been taken by the CLCS, uncertainty remains for submitting States on what will be the views of the subcommission that will consider the submission containing the outer limits of the continental shelf beyond 200 nautical miles.

Another point regarding the definition of the term “continental margin”, its nature and the application of article 76 is associated to its relation with the term “deep ocean floor” and the aforementioned “chicken and egg” dilemma. In the summary of the recommendations regarding Ascension Island, the CLCS expressed the view that “*the deep ocean floor in the sense of article 76 is the area seaward of the outer edge of the continental margin. However, the opposite also applies, i.e., that the continental margin is the area landward of the deep ocean floor. This concept is reflected in paragraph 5.4.5 of the Guidelines*”⁽²³⁾ ⁽²⁴⁾.

Considering this sentence *per se*, it seems to enclose an obvious relation between the continental margin and the deep ocean floor. However, although in some cases the final result is the same, this methodology is highly debatable when this view is to be applied to a particular case under the light of article 76, because of the following reasons:

- a) The provisions contained in article 76, namely paragraphs 1, 3 and 4, aim to determine the natural prolongation of the land territory in order to define the continental margin and the

sentence is followed by a list of important substantive legal and technical issues used to determine the OLCS;

- Annex III, paragraph V, 11. 1: “*The recommendations prepared by the subcommission shall be in accordance with article 76 of the Convention, the Statement of Understanding, these Rules and the Guidelines*”.

⁽²³⁾ Paragraph 23(IV).

⁽²⁴⁾ Based on this concept, the first phrase of the conclusions regarding Ascension Island’s submission were “*The Commission is of the view that the rugged seafloor between Ascension Island volcanic edifice and the axis of the is part of the deep ocean floor (that includes the axial valley of the MAR)*”. Paragraph 51 of the summary of the recommendations.

continental shelf ⁽²⁵⁾. Their purpose is not primarily to determine the deep ocean floor although this results from the determination of the OECM. In short, the application of article 76 shall be “continental margin oriented”, not “deep ocean floor oriented”.

- b) To assume that the continental margin is the area landward of the deep ocean floor as a first reference may be understood as an inversion of the principle that the land dominates the sea, invoked by the International Court of Justice in the North Sea Continental Shelf Case ⁽²⁶⁾.
- c) Paragraph 5.4.5 of the Guidelines concerns the definition of the base of the continental slope. It contains the two step procedure to be taken by the coastal States to find this feature. It appears to be difficult to find another meaning for this paragraph, apart from the determination of the BOS, even resorting to an extensive interpretation of that provision.

4. METHODOLOGY FOR THE LOCATION OF THE BASE OF THE CONTINENTAL SLOPE. SCIENTIFIC AND TECHNICAL GUIDELINES AND RULES OF PROCEDURE OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF

The Convention, with its annexes, and the Final Act are the primary legal sources to be considered for the delineation of the OLCs beyond 200 M from the baselines. However, the provisions contained in UNCLOS itself are clearly insufficient to provide submitting States with the neces-

⁽²⁵⁾ In paragraph 437 of the Bangladesh/Myanmar Case (N.º 16), the Tribunal mentioned that the reference to natural prolongation in article 76 paragraph 1 of the Convention should be understood in light of the subsequent provisions of the article defining the continental shelf and the continental margin.

⁽²⁶⁾ North Sea Continental Shelf, Judgment, I.C.J. Reports 1969, p. 3. Paragraph 96.

sary information and procedures to guide them in establishing the OLCS in a consistent and uniform manner. In order to overcome the vagueness of UNCLOS considering the practical details and methodologies that may grant coastal States the necessary tools to prepare their submission, the Commission designed the Guidelines “[w]ith a view to ensuring a uniform and extended State practice during the preparation of scientific and technical evidence submitted by coastal States”⁽²⁷⁾.

Having this in mind and assuming that the Guidelines and the Rules of Procedure are the most developed set of rules and procedures to be followed for the preparation of the submission, these instruments shall be fully adopted as long as they do not conflict with UNCLOS and/or the principles of International Law as they are widely accepted by the international community. It must be highlighted that the Guidelines and the Rules of Procedure are not legally binding to coastal States as they are not an integral part of the Convention⁽²⁸⁾.

There are some important subjects in the Guidelines that are not sufficiently clear and elaborated to provide the coastal State with the information needed to prepare its submission. The qualification of seabed highs and precise rules for the determination of the base of the slope, amongst others, may be pointed out as examples of that situation.

5. RECOMMENDATIONS/SUMMARY OF THE RECOMMENDATIONS

Previous decisions and considerations of the CLCS regarding particular scientific, technical and legal aspects contained in submissions

⁽²⁷⁾ Guidelines, paragraph 1.4.

⁽²⁸⁾ SUAREZ, Suzette V., *The Outer Limits of the Continental Shelf—Legal Aspects of Their Establishment*. Berlin: Springer, 2008, p. 129; KUNOY, Bjorn, “The Terms of Reference of the Commission on the Limits of the Continental Shelf: A Creeping Legal Mandate”. *Leiden Journal of International Law*. Vol. 25. (2012) 116.

already presented may be considered as a complementary tools for the application of article 76 of UNCLOS. They are the evidence of the subsequent practice followed by the CLCS regarding its view on the application of the rules contained in article 76 of UNCLOS, its Annex II, the Final Act and their own Guidelines and Rules of Procedure. The solution already adopted by the Commission in some specific situations may be particularly important in situations where the technical/legal solution contained in the Guidelines is considered insufficient or not completely clear.

The location of the base of the slope is one of the most important parameters to be determined in a submission because it is where usually the foot of the slope (FOS) is determined. Unfortunately to date only four recommendations ⁽²⁹⁾ contain detailed information on how the base of the slope was determined. Among these, only the recommendations, as well as its summary, corresponding to the Republic of Ireland regarding the Porcupine Region are really detailed and helpful to other submitting States to understand the analysis taken by the CLCS that led to the Irish OLCS in that region.

Regrettably most of other recommendations or summaries of the recommendations are no more than straight descriptions of the geologic features of the coastal State, most of them already contained in the executive summary. They are nearly useless for the purpose of

⁽²⁹⁾ Ireland: 22 images:

http://www.un.org/Depts/los/clcs_new/submissions_files/irl05/irl_summary_of_recommendations.pdf.

Indonesia: 6 images:

http://www.un.org/Depts/los/clcs_new/submissions_files/idn08/Summary%20Recommendations%20for%20Indonesia.pdf.

Philippines: 2 images :

http://www.un.org/Depts/los/clcs_new/submissions_files/phl22_09/phl_rec.pdf.

and Japan: 1 image:

http://www.un.org/Depts/los/clcs_new/submissions_files/jpn08/com_sumrec_jpn_fin.pdf.

understanding how the base of the slope was calculated, with no profile analysis that justifies the adoption of the several parameters contained in article 76 that contributed to the delineation of the OLCS.

The large majority of the images contained in the recommendations or in the summaries of the recommendations only indicates the location of the FOS points and the OLCS on maps or charts designed with a bathymetric based color pallet. Although visually very attractive those charts or maps do not provide the information needed that may help on the rationale that led to that particular solution. The bathymetric reality around seabed features is masked by the color pallet which may induce different location for the location of the base of the slope region and the corresponding FOS points.

It is also important to highlight that the Guidelines mentions that the Commission will not accept methods based on a purely visual perception of the bathymetric data ⁽³⁰⁾. This means that behind the maps or charts contained in many recommendations or summary of the recommendations published by the Commission indicating the location of the FOS points and the OLCS, there may exist relevant information that has not been made public. The recommendations and the summaries of the recommendations should be a privileged source of relevant information that could be very helpful to support submitting States on the preparation or improvement of their submissions.

6. OTHER SCIENTIFIC AND TECHNICAL INSTRUMENTS

In addition to the instruments already mentioned the contributions and doctrine offered by many scientific and technical publications may be followed by the coastal States to prepare their submissions. Prefer-

⁽³⁰⁾ Guidelines, paragraph 5.4.7.

ential attention should be paid to scientific and technical information contained in documents issued by the Organizations indicated in Annex II, article 3 paragraph 2 of UNCLOS and in the Annex of the Guidelines⁽³¹⁾, namely the Intergovernmental Oceanographic Commission of UNESCO, the International Association of Geodesy (IAG) and the International Hydrographic Organization (IHO). Those contributions shall be considered equally valid as an important source for the application of article 76 of UNCLOS, as long as the rules and/or procedures contained therein conform to the legal framework of UNCLOS, the principles of International Law, the views and methodologies contained in the Guidelines, and are not contradicted in a consistent manner by a substantial part of the geoscientific literature.

A particular reference shall be made to the Manual on Technical Aspects of the United Nations Convention on the Law of the Sea — 1982 (TALOS), prepared by the International Oceanographic Commission, International Hydrographic Organization, International Association Of Geodesy Advisory Board on the Law of the Sea (ABLOS), which is composed by representatives of IHO, IAG and the Division for Ocean Affairs and the Law of the Sea (DOALOS).

7. QUANTITATIVE APPROACH FOR THE LOCATION OF THE BASE OF THE SLOPE

In most circumstances the determination of the foot of the continental slope (FOS) requires a previous analytical calculation of the base of the slope which, according to article 76 paragraph 4(b) of UNCLOS, is the area where the maximum change in gradient will be calculated. The Guidelines lends preference to geomorphologic methods for the location of the base of the continental slope, which is mentioned several times throughout the document. Regarding the seabed features that are related to the determination of the base of the slope, the Guidelines

⁽³¹⁾ Pages 88 to 91.

mentions in paragraph 5.4.4. that “*The rise, in turn, is the wedge-shaped sedimentary body having a smaller gradient than the continental slope. Many continental margins, however, depart from this ideal picture (see chap. 6, sect. 6.2, and figs. 6.1A-6.1F), and in such cases geological and geophysical data may be used to assist in identifying the region referred to here as the base of the continental slope*”. Whereas the “ideal picture” is verified preference should be given to morphologic data.

Paragraph 5.4.6. of the Guidelines provides additional information on this issue, stating that “*As a general rule, whenever the base of the continental slope can be clearly determined on the basis of morphological and bathymetric evidence, the Commission recommends the application of that evidence. Geological and geophysical data can also be submitted by coastal States to supplement proof that the base of the continental slope is found at that location.*”

When the curvature of the seabed along the base of the continental slope is relatively constant, or where irregular seabed topography reveals a number of local *maxima* it is possible to resort to the values contained in TALOS to identify the base of the continental slope. This quantitative approach, allows the identification of the geomorphologic domains that make part of the continental margin, based on internationally accepted values. This approach is sustained by the following argumentation:

- a) TALOS does not contain a definition for “base of the continental slope”. However, it states that the continental slope is the part of the continental margin that lies between the shelf and the rise ⁽³²⁾. It mentions also that the slope may not be

⁽³²⁾ INTERNATIONAL OCEANOGRAPHIC COMMISSION, INTERNATIONAL HYDROGRAPHIC ORGANIZATION, INTERNATIONAL ASSOCIATION OF GEODESY, *A Manual on the Technical Aspects of the United Nations Convention on the Law of the Sea — 1982*, Special Publication N.º 51. 4rd ed. Monaco: International Hydrographic Bureau, 2006. App. 1-10, 22.

uniform or abrupt and may locally take the form of terraces and the gradients are usually greater than 1.5.°⁽³³⁾. Regarding the continental rise, TALOS defines it as a submarine feature which is part of the continental margin lying between the continental slope and the deep ocean floor; simply called the “Rise” in the Convention⁽³⁴⁾, and usually has a gradient of 0.5.° or less and a generally smooth surface consisting of sediment⁽³⁵⁾.

- b) Despite the fact that a substantial part of the doctrine accepts the value of 1.5.° as indicative of the lower part of the continental slope, the same may not be so consensual concerning 0.5.° as a typically value for the upper part of the continental rise. It is also true that there is not a value that is commonly accepted by geoscientists that may represent the gradient of the upper part of the continental rise.
- c) In the absence of values widely accepted for the continental slope and for the continental rise (in particular this one) there is no objective reason not to accept the values contained in TALOS.
- d) Consequently, the BOS may be considered as the region located between the points where the values, 0.5.° and 1.5.°, are verified consistently. Thus, it is possible to calculate the FOS within that area by the method of the maximum change of gradient using the methodology indicated in paragraph 5.4.5. of the Guidelines.
- e) Those values were implicitly accepted as valid by the Commission in the summary of the recommendations, regarding the partial submission made by Ireland on 25 May 2005, as the values contained therein fall in the range referred to in TALOS for the continental slope and for the rise.

⁽³³⁾ Ibidem, App. 1-10, 22.

⁽³⁴⁾ Ibidem, App. 1-10, 20.

⁽³⁵⁾ Ibidem, App. 1-10, 20.

8. METHODOLOGY FOR THE LOCATION OF THE BASE OF THE CONTINENTAL SLOPE

The determination of the FOS points in accordance with article 76 paragraph 4(a) of UNCLOS requires the previous location of the BOS. In a real life situation, in order to locate the BOS on the basis of accepted parameters it is necessary to follow the steps indicated in Figure 2. The first step requires the evaluation in detail of all settings of the bathymetric profile considered on a basin scale. As referred to in 3. above and shown in Figure 1 above, the center of the oceanic basins, where deep ocean floor (legal) and the abyssal plains (geologic) always overlap, should be the starting point for the landward search of the continental margin features. From here a second step shall be performed at a regional scale consisting on the location on the BOS zone. Finally, the third step consists on the FOS determination within the BOS correctly determined. This methodology is in line with the referred to in paragraph 5.4.5. of the Guidelines, regarding the location of the BOS:

“First, the search for its seaward edge should start from the rise, or from the deep ocean floor where a rise is not developed, in a direction towards the continental slope. Secondly, the search for its landward edge should start from the lower part of the slope in the direction of the continental rise, or the deep ocean floor where a rise is not developed.”

Figure 2 — Geographic approach for the location of the BOS

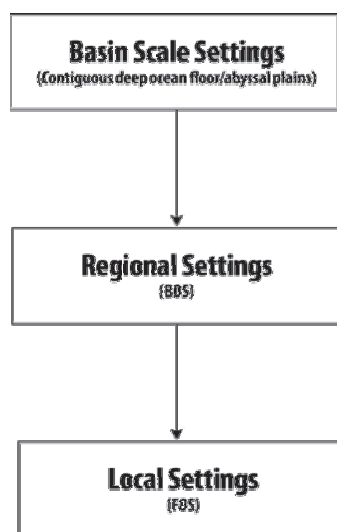
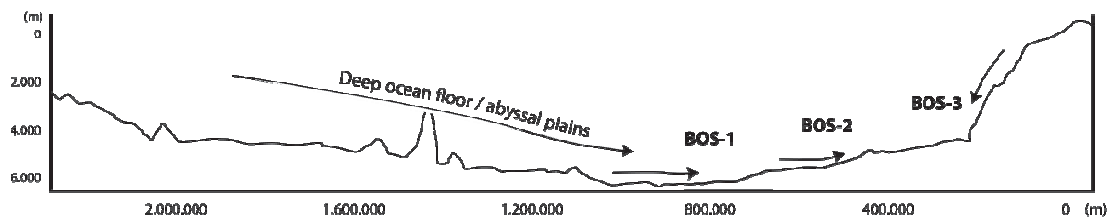


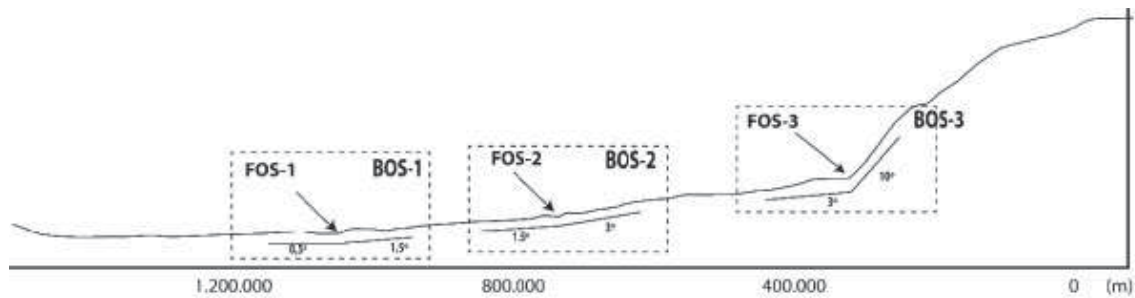
Figure 3 as well as Figure 4 represent a practical example of this methodology. A rough analysis by visual perception of the profile based only on its bathymetry with a convenient color scale, strongly suggests BOS-3 and FOS-3 as the most eligible features of the profile. For the gradients at stake visual perception is definitely not adequate to identify correctly such small slopes as those that correspond to the values starting from $0.5.^{\circ}$ to $1.5.^{\circ}$. Analytical and computational calculation are, therefore, mandatory to determine correctly the BOS and the FOS points.

Figure 3 — Profile of the morphology of the seabed on a wide basin scale. Representation of the procedure indicated in paragraph 5.4.5. of the Guidelines — 1st, the search of the seaward edge of the BOS starting from the rise towards the continental slope; 2nd, the search of the landward edge of the BOS starting from the lower part of the slope in the direction of the continental rise



Considering the angles of the seabed (filtered) represented in Figure 4 for BOS-1, BOS-2 and BOS-3, and the values for the rise and the slope referred to in TALOS, it is clear that BOS-1 satisfy all the conditions to be elected by the coastal State. There is no reason, legal or scientific, to be imposed to a coastal State the adoption of FOS points located in BOS zones with values as high as those indicated in BOS-2 and BOS-3.

Figure 4 — Representation of the profile portraying multiple BOS candidates. Filtered values for BOS1: 0.5.º-1.5.º, BOS2: 1.5.º-3.º, BOS3: 3.º-10.º



It may be argued that in some circumstances BOS-1 and BOS-2 may lie on oceanic crust, and such is not admissible for the determination of the outer edge of the continental margin and the OLCs. If so, it shall be recalled that nor UNCLOS neither the Guidelines mention that the BOS may not be located in oceanic crust. The principle of crustal neutrality referred to in article 121(2) of UNCLOS implies that there shall be no difference between land territory and islands⁽³⁶⁾ regarding the determination of the continental shelf in accordance with the provisions of the Convention.

Once identified the BOS region that conforms with the prerequisites indicated above, the location of the FOS is usually determined by computational analysis. In the Portuguese submission this step was performed with recourse to an EMEPC in-house application, the FosMiner⁽³⁷⁾.

9. CONCLUDING REMARKS

The outer limit of the Portuguese continental shelf as is referred to in the executive summary was drafted taking into account that the most

⁽³⁶⁾ Rocks not included.

⁽³⁷⁾ CAMPOS, Aldino S. de, *Modelling the Continental Shelf Extension Near the Foot of the Slope Fuzzy-Band*. Lisboa: Instituto Superior Técnico, 2009 (PhD Thesis. Territory Engineering).

important terms contained in article 76 of UNCLOS, namely “continental shelf”, “continental margin” and “deep ocean floor”, are legal in their nature. This assumption also embodies the interpretation to be taken concerning the provisions of the Guidelines that lead to the location of the base of the slope zone, which is the region in the Portuguese submission where all the FOS points are calculated as the maximum change in gradient.

The base of the slope zone is in almost every circumstances the most important feature to be determined in a submission. For an appropriate location of the base of the slope zone it is of uttermost importance to have full cross basin profiles that may clearly indicate where the deep ocean floor/abyssal plains are located. This procedure will allow the filtering of inappropriate base of the slope zones and proceed in a proper manner with the application of the rules of the Guidelines for the location of the base of the slope. In many situations this task may be carried out with recourse to the values contained in TALOS, as they are the only existing quantitative references that may lead to a coherent location of that feature.

Although the full set of rights established in article 77 of UNCLOS will be exercised only after the publication of the outer limit of the continental shelf based on the recommendations of the CLCS, Portugal took the decision to assume the jurisdiction on environmental protection of marine protected areas (MPA) situated on the continental shelf beyond 200 M within the framework of the OSPAR Commission. The first MPA to be proposed was Rainbow ⁽³⁸⁾, in Horta, Azores, in 2006. In 2010 another four MPA's (Altair, Antialtair, Mid Atlantic Ridge North of Azores and Josephine) were also proposed and accepted by the OSPAR Commission.

⁽³⁸⁾ For further development in this issue RIBEIRO, Marta Chantal, “The 'Rainbow': The First National Marine Protected Area Proposed Under the High Seas”. *The International Journal of Marine and Coastal Law*. Vol. 25. (2010) 183-207.

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GLOBAL PERSPECTIVE AND THE SETTLEMENT OF DISPUTES

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Abstract: *The Convention on the Law of the Sea sets new standards as far as the settlement of international disputes is concerned, although the system may look quite traditional at first glance. It suffices to mention two issues, namely that the system on the settlement of international disputes is mandatory in the sense that States having adhered to the Convention are bound to settle their disputes, if they do not agree otherwise, through the mechanisms as provided for by Part XV. States parties to the Convention only have the possibility to make a declaration under article 287 of the Convention but they may not unilaterally opt out of the system altogether. This is different from the settlement of international disputes as provided for under the Charter of the United Nations. One should, however, not overemphasize this development. Most of the cases before the International Court of Justice (ICJ) are brought on the basis of an agreement of the parties to the dispute and the same is true for the contentious cases before International Tribunal for the Law of the Sea (Tribunal).*

What may be more relevant for the future is that under the dispute settlement regime for deep seabed mining activities, natural or juridical persons have standing. Although no case has so far reached the Seabed Disputes Chamber of ITLOS, it is to be assumed — after several exploration licenses have been granted — that the situation will change. This may have an impact upon the settlement of investment disputes where traditionally a juridical or a natural person will initiate proceedings against a State which is the same scenario as for most potential deep seabed mining disputes.

The presentation will deal with the following issues considered as challenging: Whether the dispute settlement system is appropriate to adjudicate claims striving for the protection of the global commons; the interrelationship between international law and national law; and whether international courts and tribunals are to be considered as legislators.

1. INTRODUCTION

The Convention on the Law of the Sea sets new standards as far as the settlement of international disputes is concerned, although the system may look quite traditional at first glance. It suffices to mention two issues, namely that the system on the settlement of international disputes is mandatory in the sense that States having adhered to the Convention are bound to settle their disputes, if they do not agree otherwise, through the mechanisms as provided for by Part XV. States parties to the Convention only have the possibility to make a declaration under article 287 of the Convention but they may not unilaterally opt out of the system altogether. Therefore in my view the decision of the Arbitral Tribunal in the Southern Bluefin Tuna cases was hardly sustainable. In that respect the settlement of the Convention is different from the settlement of international disputes as provided for under the Charter of the United Nations. One should, however, not overemphasize this development. Most of the cases before the International Court of Justice (ICJ) are brought on the basis of an agreement of the parties to the dispute and the same is true for the contentious cases before the International Tribunal for the Law of the Sea (Tribunal or ITLOS).

What may be more relevant for the future is that under the dispute settlement regime for deep seabed mining activities, natural or juridical persons have standing. Although no case has — so far — reached the Seabed Disputes Chamber of ITLOS, it is to be assumed after several exploration licenses have been granted that the situation will change. This may have an impact — apart from the impact upon the law of the sea — upon the settlement of investment disputes where traditionally a juridical or a natural person will initiate proceedings against a State which is the same scenario as for most potential deep seabed mining disputes.

2. PARTICULAR CHALLENGES

Let me first address the challenge the dispute settlement system is facing.

2.1. Competition between various international courts and tribunals

It is a well-known fact that international courts and tribunals are in competition with arbitral tribunals. This is particularly true for cases concerning the delimitation of marine spaces — the respective jurisprudence, so far, was established by the International Court of Justice ⁽¹⁾ and arbitral tribunals ⁽²⁾. Arbitral tribunals are considered to have, from the point of view of potential parties, several advantages — perhaps more psychological than real. One of the perceived advantages is that the parties can influence the composition of the bench — although this ‘advantage’ may be more psychological than real. Other perceived advantages of arbitral tribunals are the smaller number of judges involved and the influence parties have on the Rules of Procedure. Finally, it is

⁽¹⁾ North Sea Continental Shelf Cases (Germany/Denmark; Germany/Netherlands), Judgment, ICJ Reports 1969, p.3; Continental Shelf (Tunisia/Libyan Arab Jamahiriya), Judgment, ICJ Reports 1982, p. 18; Delimitation of the Maritime Boundary in the Gulf of Maine Area (Canada/United States of America), Judgment, ICJ Reports 1984, p. 246; Continental Shelf (Libyan Arab Jamahiriya/Malta), Judgment, ICJ Reports 1985, p. 13; Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark/Norway), Judgment, ICJ Reports 1993, p. 38; Maritime Delimitation and Territorial Questions between Qatar and Bahrain, Judgment, ICJ Reports 2001, p. 40; Land and Maritime Boundary between Cameroon and Nigeria (*Cameroon v. Nigeria: Equatorial Guinea Intervening*), Judgment, ICJ Reports 2002, p. 303; Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua/Honduras), Judgment, ICJ Reports 2007, p. 659; Maritime Delimitation in the Black Sea (Romania/Ukraine), Judgment, ICJ Reports 2009, p. 61.

⁽²⁾ Award of the Arbitral Tribunal Concerning the Delimitation of the Maritime Boundary between Guinea and Guinea-Bissau, (14 February 1985) ILR vol. 77, p. 635; Award of the Arbitral Tribunal concerning the Maritime Boundary between Barbados and the Republic of Trinidad and Tobago (11 April 2006), Reports of International Arbitral Awards vol. XXVII, p.147; Award of the Arbitral Tribunal between Guyana and Suriname (17 September 2007) available at <www.pca-cpa.org/upload/files/Guyana-Suriname%20Award.pdf>; Award of the Arbitral Tribunal Concerning the Maritime Delimitation between Eritrea and Yemen (Second Stage of the proceedings), (17 December 1999), Reports of International Arbitral Awards, vol. XXII, p. 335.

believed that smaller benches are more predictable as far as the judgment or award is concerned. A definitive disadvantage of arbitral tribunals is the higher costs compared to the cost of a case before the ICJ or the ITLOS. What is more important though is that proceedings before arbitral tribunals are at least in general not open for intervention, the hearings are not public and access by the public to the documentation of the written proceedings is not necessarily made available. Therefore arbitral tribunals focus predominantly on dispute settlement and less on developing international law.

To accommodate interest in a smaller bench the ICJ and ITLOS have opened the possibility of establishing *ad hoc* chambers to deal with a particular case. Account has to be taken of the fact, though, that the parties have made less use of this procedural option than expected. This may be due to the fact that such *ad hoc* chambers still are too closely linked to the international court or tribunal to which they belong or, in other words, do not offer the parties the influence concerning the composition of the bench as desired.

2.2. Who is protecting common interests — the question of standing

The UN Convention on the Law of the Sea is not only protecting the interests of its member states but also the interests of all states including the interests of future generations. In this respect it is correct to say that the Convention contains the rules for the management of the global commons. This is particularly evident in respect of the deep seabed, the so-called Area, which has been declared to be the common heritage of mankind. The principle not only covers the Area but also its mineral resources.

The common heritage principle is at the cornerstone of the regime governing this Area and its mineral resources. The International Seabed Authority has the mandate to administer the Area and its resources. It has legislative as well as executive functions. The member states form-

ing the International Seabed Authority, as well as the Authority as such, are to be considered trustees of the international community. This means they must not be guided by considerations serving their own national interest but by the interests of the international community as well as those of future generations. The common heritage principle is the basis for the management system, for the allocation of and access to the resources, for the distribution of revenues and the protection of the marine environment. Due to time restraints I shall not go into details.

Unfortunately this regime is not fully consistent and is facing certain problems. Firstly, new discoveries have indicated that there are not only mineral resources at the deep seabed but also living ones and it is questionable whether these too are covered by the jurisdiction of the International Seabed Authority. Secondly, the boundaries of the Area are not finally described. They are established by the outer limits of the continental shelves appertaining to coastal States. This delineation process is covered in the Convention only to a certain extent, mainly through the establishment of a procedure under the jurisdiction of the Continental Shelf Commission. The Continental Shelf Commission, though it has only recommendatory power, to a certain extent directs the delineation of the outer continental shelf by the coastal State concerned since article 76, paragraph 8, of the Convention prescribes that the outer limits of a continental shelf established by the coastal State concerned are final and binding to the extent they are based upon the recommendation of the Continental Shelf Commission. What is critical, though, is that the International Seabed Authority has no impact upon this delineation process for the outer continental shelves and equally has no possibility later to challenge the delineation issued by the coastal State concerned.

This raises the question to what extent the International Tribunal for the Law of the Sea may become involved or, to put it into different words, may be called upon to defend the international commons. The question boils down as to whether an individual State has the compe-

tence, or better to say the standing, to challenge a particular delineation of an outer continental shelf before the International Tribunal for the Law of the Sea. It has to be taken into account that an *actio popularis* is, so far, unknown in international procedural law. One has to consider several scenarios. To the extent a particular delineation constitutes an infringement on the rights of the claiming State (first scenario) there is no problem in respect of its standing. It is, however, questionable whether a State may bring a claim against the delineation of an outer continental shelf on behalf of the international community arguing that this delineation means an encroachment upon the international Area. My answer would be affirmative. I must confess, though, that there is much uncertainty in this respect. One could argue that the claimant State has a potential interest in mining the Area in question as part of the deep seabed (second scenario) and therefore its rights are infringed if such an area, where there was an interest in mining, is being included in the outer continental shelf of a particular coastal State. In such a case the State concerned would not defend the interests of the international community directly, but rather its own interests and the interests of the international community would receive protection rather indirectly. This brings me to my third scenario. Is it possible for a State having no potential interest in deep seabed mining to bring a case before the Tribunal arguing that a particular delineation of an outer continental shelf means an infringement of the Area? One may argue that the Law of the Sea Convention constitutes a package and every single State party has an interest, a justified interest one should say, to protect this regime in its entirety. To justify the standing of the particular State, one may refer to the Draft of the International Law Commission on State responsibility which provides that one State party to a treaty regime may defend this regime on behalf of the community of such a regime. This approach I am putting forward has not yet been tested.

The UN Convention on the Law of the Sea protects common interests not only in respect of the deep seabed and its resources but also in respect of fisheries as well as the marine environment as such. Here similar questions and problems arise as I have mentioned already. It is

a very questionable whether the Tribunal has the mandate to protect the common interests in respect of fisheries in the marine environment. There is one procedural rule to which I would like to draw your attention, though. As is the case with all international courts and tribunals, the Tribunal has the mandate to issue provisional measures. Such provisional measures may not only be issued to protect the rights of parties but also to protect the marine environment. This gives an indication about the particular responsibility of the Tribunal in this respect.

Nevertheless, the procedural rules in this respect are not tailored to the protection of community interests. It is questionable whether this can be achieved in a procedure which, as a matter of principle, is of an adversarial nature. Therefore one should reflect upon whether advisory opinions of the Tribunal would not be the more appropriate approach. Article 138 of its Rules provides for such a possibility. The Seabed Disputes Chamber of the Tribunal has so far issued the only advisory opinion dealing with the responsibility of sponsoring States in deep seabed mining. This advisory opinion has been well received. It profited from a procedure which allows a significant group of States to voice their views on the issue at stake. This included States and international organisations not having a direct interest in the issue. The advantage of the advisory opinion procedure is that it does not artificially render issues dealing with the common interest into a bilateral straitjacket.

2.3. The interaction between international and national law

In deep seabed mining, but also as far as fishing is concerned, States, be it coastal States (concerning pollution or fishing), port States (concerning pollution and fishing) or sponsoring States, play a significant role in the enforcement of the Convention on the Law of the Sea as well as the rules developed there either by IMO, fishery organizations or the International Seabed Authority. States implement enforcement either by issuing the necessary laws or by taking direct enforcement action or both. Sponsoring States are even under an obligation to establish the

necessary national legal framework, otherwise they may face international responsibility or liability.

Such actions of States may be scrutinised by ITLOS or other adjudicative bodies, to the extent they have jurisdiction. An example to illustrate my point is article 73 of the Convention. The international court in question then has to decide whether the enforcement actions undertaken by the State, as well as the particular national laws upon which they are based, are in conformity with its international obligations. The jurisprudence of ITLOS demonstrates the complexity which derives from the interaction of international and national law in the *Hoshinmaru case*. Due to the wide wording of article 73 of the Convention the Tribunal felt mandated even to consider whether human rights had been violated by the coastal State.

2.4. International courts and tribunals as law-makers?

It has been stated occasionally that international courts and tribunals act as law-makers. Such a view may very much depend on the interpretation of the notion of law-making. Although it may be advantageous for the progressive development of international law to consider international courts and tribunals as law-makers, one should not confuse law-making with interpretation. This is particularly true in respect of the interpretation of international treaties such as the Convention on the Law of the Sea. The Convention contains many open clauses, I would like to refer to them as blanket clauses, which are to be filled with substance by those who implement them or adjudicate them. These blanket clauses are the mechanism to render these treaties as living instruments open for a moderately progressive development, but providing a frame to such development. This is not only true in respect of the common heritage principle but also in respect of the notion of 'reasonableness' contained in several provisions of the Law of the Sea Convention. In this respect a rich jurisprudence exists of the Tribunal which has developed gradually. But this is also true in respect of the delineation of the outer continental shelf as well as a delimitation of continen-

tal shelves between adjacent or opposing states. Being called upon to decide the latter dispute brings the court or tribunal into the position of filling the notion of equity with substance, and even with a substance which is clear, and the reasons for adjudicating in this and not in another way is transparent. But this has nothing to do with law-making, it is the interpretation of a particular rule and the provisions of the Vienna Convention on the Law of Treaties apply, in particular the rule that in interpretation the object and purpose of the respective rule is to be taken into account. In respect of the maritime delimitation with the view to achieving equitable results, a significant jurisprudence of international courts and tribunals exists. Such jurisprudence is referred to by other courts and tribunals; as one can see in the judgment of the International Tribunal for the Law of the Sea on the delimitation of the Bay of Bengal, it very much referred to the jurisprudence of other international courts or tribunals. Nevertheless, the Tribunal did not consider this jurisprudence as being binding, but rather as an *acquis judiciaire* upon which the jurisprudence of the Tribunal could build.

3. CONCLUSION

Let me briefly conclude: I hope I was able to demonstrate that the UN Convention on the Law of the Sea constitutes a modern international treaty which is designed as a framework for the future and progressive development of the law of the sea. Such progressive development can be achieved through additional international agreements (for example implementation agreements), regional agreements, specific agreements on certain issues, acts of international organisations (for example IMO or FAO) and unilateral acts of individual States. Also the national legislation on the law of the sea, as well as the jurisprudence of international as well as national courts, is to be taken into account. The reason why such an international treaty has been developed is that the scientific and economic relevance of the sea, and the information on it, is in a permanent process of development. Apart from that, and most prominently, the Law of the Sea Convention is meant not only to protect the interests of individual States but also of the international community as such.

To achieve this objective the interests of the international community which are changing, as well as new insights in the Area, have to be taken into consideration. The nature of the Convention, in particular its objective to protect the international commons, has to be taken into consideration when assessing the dispute settlement system it has established. It is unfortunate that the modern approach of the Convention is not reflected fully in the dispute settlement system. However this system as such is quite flexible and the academic world as well as international courts and tribunals are called upon to make use of its progressive elements and to assist in providing a forum for the better protection of the global commons than was hitherto the case.

SESSÃO III

**DESAFIOS DA INVESTIGAÇÃO
CIENTÍFICA MARINHA**

SESSION III

**CHALLENGES OF MARINE
SCIENTIFIC RESEARCH**

THE IMPACT OF TECHNOLOGICAL DEVELOPMENTS ON THE INTERNATIONAL LEGAL REGIME OF MARINE SCIENTIFIC RESEARCH

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Abstract (*): The scientific investigation of the ocean is of utmost importance, both for the effective use of the ocean and the management of its natural resources, and for increasing our knowledge and understanding of the planet Earth.

Like all other activities at sea, the conduct of these scientific investigations is governed by rules of international law. International law distinguishes between various categories of such scientific investigations, one of which is designated by the term “marine scientific research” (MSR). Another category involves research for the economic exploitation of natural resources, which is called “exploration” and is subject to a different regime. However, there are no generally accepted precise definitions of these (and other related) notions yet.

The current international legal regime for marine scientific research, as reflected in Part XIII of the UN Convention on the Law of the Sea (LOSC), was developed in the mid-1970s. It was mainly based on the

(*) The author only provided the abstract.

classical mode of conducting MSR, by means of vessels engaged in cruises to obtain data in the marine environment. The LOSC also referred to research installations and equipment and made these subject to the same regime without contemplating differentiations in the applicable rules.

Already at that time other means for collecting oceanographic data were being used or developed, such as remote sensing from aircraft (which was covered by the LOSC regime) and remote sensing from space (which was not covered by this regime).

However, since the adoption of the LOSC in 1982 significant changes have occurred in the conduct of MSR and it can be expected that these developments will only continue at greater pace and result in a significant shift in the modes of collecting oceanographic data at sea. These new means of ocean data collection involve the use of floats, gliders and drifters, which can also be remotely controlled, as well as increasing use of voluntary observing ships. The so-called *ARGO*-floats are a well-known example of this, and the *OceanScope* project is an ambitious proposal for a new and vastly expanded way of routinely collecting ocean data. As is evident from discussions in the Advisory Body of Experts on the Law of the Sea of the Intergovernmental Oceanographic Commission (IOC/ABE-LOS), States have different views on the application (and even applicability) of the current rules on MSR to these new methods of ocean data collection.

It is the purpose of the communication to explain and examine the legal and policy issues raised by these new methods of collecting oceanographic data, and to propose some ways to find solutions.

POR MARES NUNCA DE ANTES NAVEGADOS: GESTÃO DO RISCO E INVESTIGAÇÃO CIENTÍFICA NO MEIO MARINHO

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Sumário: *É comum a afirmação de que o princípio da precaução nasce — para o Direito Internacional — no Direito do Mar. Apesar de tal afirmação não corresponder exactamente à verdade e de ser, de resto, duvidoso, que se possa caracterizar um “princípio” da precaução, certo é que o estudo do ambiente marinho se tem vindo a pautar por uma abordagem crescentemente científica, característica de uma nova atitude perante a necessidade de gestão dos riscos ambientais. A Ciência constitui apoio fundamental para a compreensão dos fenómenos marinhos e da dinâmica do mar e das formas de vida que o habitam, tendo os padrões científicos sido absorvidos não só pela normatividade internacional, como também pela jurisprudência do Tribunal Internacional para o Direito do Mar, muito especialmente na jurisprudência Southern bluefin tuna. E como não há Ciência sem investigação científica, este é um domínio ao qual os instrumentos de regulação incidentes sobre o mar não ficam indiferentes, muito concretamente a CNUDM, que lhe dedica a parte XII.*

Apesar desta atenção, a Convenção não é particularmente clara na diferenciação entre investigação pura e investigação aplicada, pelo que caberá ao intérprete/aplicador destrinçar as situações e descortinar as normas concretamente aplicáveis. Depois de passarmos as soluções normativas, veremos que a investigação científica surge, na CNUDM, com potencial sobretudo a dois níveis: gestão do risco de esgotamento de stocks piscícolas e prevenção da poluição por hidrocarbonetos.

Abstract: *It's common to read that the precautionary principle was born — to International Law — at the Law of the Sea. Even if that statement isn't accurate and considering it's doubtful that a precautionary “principle” can be characterized, the truth is the scientific approach towards the marine environment is crescent, namely because of risk management. Science constitutes a fundamental support for the understanding of marine*

phenomena and its dynamics. The scientific patterns were absorbed by international norms and also by the jurisprudence, mostly in the Southern bluefin tuna case, decide by the ITLOS.

There's no Science without research — so, the UNCLOS dedicates its Chapter XII to "Marine scientific research". Despite this regulation, the UNCLOS isn't particularly clear about the difference between pure scientific research and applied research; this, of course, complicates the task of the interpreter. After briefly analyzing the solutions of the UNCLOS, we will see that scientific research is relevant in two main fields: risk management of fish stocks and pollution prevention.

1. GESTÃO DO RISCO PARA O AMBIENTE MARINHO E PRECAUÇÃO: UM MAR DE INCERTEZA

Associar Camões a este texto não tem apenas a conotação óbvia com a epopeia marítima portuguesa imortalizada *n'Os Lusíadas*. O destino, sócio-económico e geográfico, desde muito cedo uniu Portugal ao mar, aliança que de certa forma ganhou uma especial memória com a designação, por sugestão portuguesa, do ano de 1998 como *Ano Internacional dos Oceanos*, pela ONU, e com a inerente organização da Expo '98 sob a égide desse tema. Na verdade, com a referência aos navegadores portugueses quisemos também ressaltar a origem do termo "risco", que terá sido introduzido por aqueles, para expressar a incerteza que envolvia as viagens de descobrimento de novas terras ⁽¹⁾. Mar, incerteza e risco: três conceitos ligados desde há séculos, que encontram na lógica da precaução, em finais do século XX, um novo entrelaçamento.

Na verdade, o "princípio da precaução" ganhou visibilidade através do Direito do Mar, em finais da década de 1980, na Declaração resultante da Segunda Conferência Ministerial do Mar do Norte, sobre poluição marítima. Desta Declaração de Londres (1987) consta uma tomada de posição quanto à vinculação dos signatários a uma atitude de precaução que, sem embargo de anteriores referências esparsas a esta

⁽¹⁾ Cfr. Anthony GIDDENS, *Runaway world*, 2.^a ed., Londres, 2002, p. 21.

noção, tem sido identificada como a primeira formulação do princípio (cfr. o artigo XVI/1).

Esta atitude antecipativa de gestão do risco prende-se com a evolução, promovida pela atenção emergente dos anos '1970 às questões ambientais, no tratamento das questões relativas à preservação do meio marinho ⁽²⁾: de uma abordagem baseada num pressuposto de que a *capacidade de assimilação/aproveitamento* era *tendencialmente ilimitada* (cfr. Convenções de Londres, de 1972 e 1973) — a qual justificava a adopção de medidas preventivas apenas quando o risco para o ambiente fosse iminente —, passou-se para um modelo de *capacidade de assimilação/aproveitamento tendencialmente limitada* (cfr. a Convenção de Montego Bay, Parte XII), com a implementação de uma atitude permanentemente preventiva por parte dos Estados, e ter-se-á transitado, no final dos anos '1980 (cfr. a Declaração de Londres de 1987, *supra* mencionada), para um quadro de *tendencial incapacidade de assimilação/aproveitamento*, que obriga à abstenção de intervenções potencialmente lesivas do meio marinho, mesmo que os dados científicos não permitam estabelecer, com segurança, o nexo de causalidade entre a intervenção projectada e o dano pressentido ⁽³⁾.

O percurso da lógica de precaução, tanto no âmbito do Direito Internacional Ambiental geral como no especial — para o que aqui releva, no Direito do Mar —, tem sido tudo menos linear, apesar de algumas declarações entusiásticas de alguma doutrina no sentido da sua ascensão a princípio de Direito Internacional (Ambiental) geral. A deriva terminológica é grande, as reticências dos tribunais internacionais são conhecidas e a prática dos Estados não ajuda à consistência do princípio.

⁽²⁾ Sobre esta evolução, veja-se STUART M. KAYE, *International fisheries management*, The Hague/London/Boston, 2001, pp. 43 segs.

⁽³⁾ Na formulação de Malgosia FITZMAURICE (*Contemporary issues in International Environmental Law*, Cheltenham/Northampton, 2009, p. 3), tal evolução parte de um modelo curativo, passando para um modelo preventivo e configura hoje (pelo menos teoricamente), um modelo antecipativo (*curative; preventive; anticipatory*).

Com efeito, desde a fórmula *forte* da *Carta Mundial da Natureza*, de 1982 [cfr. o princípio 11/b)] até à fórmula *fraca* da *Declaração do Rio de Janeiro*, de 1992 (cfr. o princípio 15), há quem tenha contabilizado, logo em 1993, doze diferentes definições ⁽⁴⁾; o Tribunal Internacional de Justiça (=TIJ) negou-lhe a natureza de princípio, no Acórdão *Gabcikovo-Nagymaros* (1997), preferindo a prevenção como base de medidas antecipativas de riscos, e o Tribunal Internacional para o Direito do Mar (=TIDM) furtou-se a utilizar a noção, antes falando em “prudence and caution” na decisão sobre medidas provisórias *Southern Bluefin Tuna* (1999); a França negou à precaução a natureza de princípio, perante o TIJ, no âmbito do caso dos ensaios nucleares II (1995) contra Austrália e Nova Zelândia, mas alegou-o como fundamento do embargo à carne de vaca inglesa perante o Tribunal de Justiça da União Europeia (=TJ), num caso que a opôs à Comissão Europeia, em 2000 ⁽⁵⁾.

A verdade é que da noção que ganhou amplificação mundial com a Declaração do Rio de Janeiro — enquanto *approach*, não enquanto *principle*... — é tarefa árdua extrair um sentido unívoco de aplicação, tantas são as “reservas” (muito diferentes “capabilities”; dificuldade de preenchimento dos conceitos “threat”, “serious” e “lack of full scientific certainty”; avaliação do que é “cost-effective”):

“In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

A ambiguidade do conceito é tal que Malgosia FITZMAURICE defende que, mais que perseguir a definição da sua natureza (de princípio; de

⁽⁴⁾ D. VANDERZWAAG, “The concept and principles of sustainable development: “Rio-formulating” common law doctrines and environmental laws”, *in* WYAJ, 1993, pp. 39 segs., 46.

⁽⁵⁾ Acórdão de 13 de Dezembro de 2001, Caso C-1/00.

máxima de orientação jurídica ou política; de duplicação da prevenção ou de *aliud* em face desta), mais útil parece ser analisar a sua configuração em cada instrumento internacional, numa tentativa de apreender se daí resultam soluções originais, ou seja, diferentes — porque mais exigentes — daquelas a que se chegaria se se adoptasse uma pura lógica de prevenção, de reacção apenas perante um risco iminente ⁽⁶⁾. A verdade é que a precaução, na sua versão forte, só em escassos e determinados domínios será operativa, porque a directriz *na dúvida, abstém-te*, em raros casos se justificará (diminutas serão as hipóteses em que um risco sobre bens jurídicos fundamentais se traduz numa *total* incerteza quanto a eclosão e efeitos e numa *ínfima* estimativa de benefícios para a saúde e para o ambiente). Em contrapartida, a sua versão fraca — *na dúvida, age de modo a minimizar eventuais riscos*, sopesando o custo das medidas de minimização e o benefício em prevenção de riscos para a saúde e ambiente, utilizando a melhor técnica disponível —, equivale a um alargamento da noção de prevenção, dos tradicionais perigos aos novos riscos, temperada pela concordância entre os valores em jogo. Como na sociedade de risco “a única certeza é a incerteza” ⁽⁷⁾, o objecto da prevenção, actualmente, alarga-se a domínios de intensa incerteza, ou seja, o seu objecto é sobretudo a antecipação de riscos — numa lógica de equilíbrio entre a protecção de valores contextualmente antagónicos num cenário de ausência de consensos científicos e com recursos escassos. O “interface ciência-política” (*science-policy interface*) na construção do desenvolvimento sustentável a que a Declaração da cimeira Rio + 20 (*The future we want*) por várias vezes alude mais não é do que a concretização desta ideia.

2. DUE DILIGENCE E PRECAUÇÃO

Não podendo, a partir dos dados disponíveis, caracterizar-se um princípio (por ausência de conteúdo “normativo”) há, todavia, traços

⁽⁶⁾ Malgosia FITZMAURICE, *Contemporary issues...*, cit., pp. 6-7.

⁽⁷⁾ Nicolas DE SADELEER, *Environmental principles — From political slogans to legal rules*, Oxford, 2002, pp. 17-18.

inovatórios que a lógica de precaução introduziu — essencialmente, apontando para uma diferença de grau, mas não de espécie, relativamente à prevenção tradicional. Tais inovações prendem-se, justamente, com a gestão da incerteza e materializam-se em deveres procedimentais que ganham uma noção de síntese no procedimento de avaliação de impacto ambiental ⁽⁸⁾, a que a Declaração do Rio de Janeiro deu destaque, no princípio 17 e que foi recentemente considerado como princípio geral de Direito Internacional do Ambiente pelo TIJ (*Caso das celulosas do rio Uruguai*, 2010) e pelo TIDM (*Caso 17 — Parecer sobre a responsabilidade do Estado por concessão de operações desenvolvidas na Área* — 2011).

O avolumar de riscos para o ambiente, induzidos pela técnica e que se traduzem em alterações irreversíveis nos processos naturais, deve corresponder a uma avaliação e gestão desses mesmos riscos de forma cada vez mais antecipativa. Deveres como elaboração de estudos de impacto ambiental, fornecimento de informação, promoção de consultas, criação de estruturas de participação pública, notificação de acidentes, elaboração de planos de emergência, foram emergindo paulatinamente, da jurisprudência para declarações e convenções, do âmbito específico para o âmbito geral. Vejam-se os princípios 10, 17, 18, 19 da Declaração do Rio de Janeiro, que trouxeram para o âmbito geral vários deveres associados à prevenção, alguns transitados da Convenção de Montego Bay — cfr. os artigos 198, 199, 200, 204 e 206.

Esta metodologia de cooperação preventiva espelha a *due diligence* a que os Estados e entidades sob sua jurisdição estão vinculados no âmbito da realização de actividades que possam causar impactos significativos para o ambiente. Trata-se fundamentalmente de um conjunto de obrigações de meios e não tanto de resultado, em razão da densa incerteza que envolve as questões da protecção ambiental (e sanitária). Também por isso é essa a metodologia enunciada pela CDI nos *Draft articles on prevention of transboundary harm from hazardous activities*

⁽⁸⁾ Cfr. Malgosia FITZMAURICE, *Contemporary issues...*, *cit.*, p. 30.

(2001), porventura o mais completo padrão de cooperação preventiva com vista à protecção ambiental no Direito Internacional actual.

A redução da incerteza só através da pesquisa científica e da experimentação técnica pode ser prosseguida. Não podendo garantir-se os resultados num amplo conjunto de situações, em razão da dinâmica dos fenómenos e da inconclusividade das avaliações, a obrigação de recolha, tratamento, divulgação e actualização de dados constitui procedimento incindível da observância dos deveres assinalados. A *due diligence* que traduz a atitude de cooperação preventiva para a antecipação e redução de riscos ambientais e sanitários materializa-se num *devido procedimento* avaliativo de tratamento da informação a partir da melhor base científica disponível, no âmbito da qual o incentivo à criação científica, o apoio à investigação, a formação de especialistas e o financiamento de novas tecnologias, assumem um papel decisivo.

3. GESTÃO ANTECIPATIVA DO RISCO E CIÊNCIA NO DIREITO DO MAR

Apesar de a questão ambiental ter ganho eco mundial com a Conferência de Estocolmo, em 1972, o século XX regista algumas tomadas de posição anteriores, concretizadas em pontuais instrumentos internacionais — alguns deles, justamente, com incidência no ambiente marinho. A ligação entre a ciência e o Direito Internacional do Ambiente terá despontado na *Convenção sobre a caça de focas no Mar de Bering*, de 1911, baseada na decisão do tribunal arbitral constituído em 1889, a qual, por seu turno, se fundou num extenso estudo sobre o habitat de espécies migratórias. Um segundo momento pode ser identificado na investigação iniciada em 1926 sobre poluição marinha, que culminou com a assinatura da *Convenção de Londres* sobre prevenção da poluição por hidrocarbonetos, de 1954, com soluções fortemente filiadas em descobertas científicas. Em terceiro lugar, refiram-se as pesquisas levadas a cabo pelo Conselho Internacional para a exploração do mar, constituído em 1902, por cientistas de Estados costeiros dos Mares do Norte e

Atlântico norte, cujas conclusões foram acolhidas na primeira conferência sobre Direito do Mar promovida pela Liga das Nações em 1930 — não tendo sido, infelizmente, devidamente incorporadas na regulação da pesca do arenque, hoje espécie sobre-explorada ⁽⁹⁾.

A dinâmica do ambiente marinho e as contínuas descobertas de recursos, minerais e energéticos, nos fundos marinhos, pontuaram a segunda metade do século XX e desembocaram numa intensa mediação entre a ciência e a regulação das actividades no mar, desde a prevenção e controlo da poluição, à gestão da biodiversidade marinha, até ao aproveitamento dos potenciais mineral e energético marinhos. Pode mesmo afirmar-se que a determinação da adopção de medidas provisórias pelo TIJ, no sentido da ordem de suspensão dos ensaios nucleares franceses à superfície nos mares do Pacífico, solicitada pela Austrália e Nova Zelândia e um conjunto de Estados austrais (caso *Ensaaios nucleares I*, 1973), constitui um afloramento precoce da lógica de antecipação de riscos, uma vez que ocorrendo a deflagração dos engenhos em alto mar, não havia certezas sobre a contaminação radioactiva extensível a espaços marinhos sob jurisdição daqueles Estados — mas na dúvida e perante a urgência de evitar danos irreversíveis ao ambiente e à saúde, o Tribunal decretou a suspensão.

Esta sensibilidade crescente à contribuição da ciência e da tecnologia para a protecção do ambiente foi registada na Declaração de Estocolmo (cfr. o princípio 18). Vinte anos mais tarde, a Declaração do Rio retoma o elogio da ciência na promoção da qualidade ambiental, mas sublinha também o imperativo de partilha do conhecimento, numa lógica de cooperação internacional (cfr. o princípio 9). Muito recentemente, a Declaração final da cimeira Rio + 20 ilumina a contribuição decisiva da comunidade epistemológica para a gestão racional dos recursos, acentuando a tónica das responsabilidades comuns mas diferenciadas (cfr. o ponto 48).

⁽⁹⁾ Cfr. Patricia BIRNIE, “Law of the Sea and ocean resources: implications for marine scientific research”, in *IJM&CL*, 1995/2, pp. 229 segs., 231-232.

Também o TIJ, já na década de 1990, deixou bem clara a importância que reconhece à componente científica no âmbito da protecção do ambiente. Conforme obtemperou no Acórdão *Gabcikovo-Nagymaros* (consid. 140),

“(...) Owing to new scientific insights and to a growing awareness of the risks for mankind — for present and future generations — of pursuit of such interventions [for economic and other reasons] at an unconsidered and unabated pace, new norms and standards have been developed, set forth in a great number of instruments during the last two decades. Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past.”

No Direito do Mar, porventura a mais paradigmática jurisprudência sobre a articulação entre conhecimento científico e protecção do meio marinho é o Acórdão *Southern Bluefin Tuna*, do TIDM, prolatado em 1999. Estava em causa rebater a prática de sobrepesca do atum azul por parte do Japão, contestada pela Nova Zelândia e Austrália em virtude de provocar exaurimento de stocks, mas defendida pelos nipónicos com base na alegação de que se trataria de um programa de pesca experimental a levar a cabo entre 1998 e 2000. O atum azul é espécie protegida por uma *Convenção para a Conservação do atum azul*, celebrada entre os três Estados em 1993, à qual acresceriam as normas da CNUDM (ratificada pelos três Estados) sobre gestão racional da pesca em alto mar — nomeadamente, os artigos 64 e 116 a 119, que apontam para a necessidade de salvaguarda do melhor nível de sustentabilidade ou regenerabilidade da espécie piscícola em causa (*maximum sustainable yield*, rendimento máximo sustentável).

A controvérsia científica sobre o estado dos stocks levou o Japão a sustentar que se estaria perante uma controvérsia científica e não jurídica (§ 42). No entanto, o TIDM considerou que, estando ambas as partes de acordo quanto à severa depleção da espécie, que teria atingido míni-

mos históricos e constituía razão de preocupação séria em termos biológicos (§ 72), qualquer tipo de actividade de captura, ainda que alegadamente a título puramente experimental, poderia causar dano irreversível e apelando à prudência e precaução (*prudence and caution*), preventivamente, deveria ser sustada — mesmo que os dados científicos apresentados quanto às causas da depleção fossem contraditórios.

A sustentação científica ganha, portanto, cada vez maior relevo nos litígios ambientais ⁽¹⁰⁾, ainda que por recurso às conclusões mais plausíveis e não às verdades incontestáveis. De realçar nesta sede é, identicamente, a representação da Comissão Oceanográfica Intergovernamental junto do TIDM na fase oral do processo de consulta que lhe foi submetido no caso 17 ⁽¹¹⁾, a propósito da responsabilidade dos Estados por actividades desenvolvidas por entidades por si patrocinadas na Área. Este parecer — o primeiro a ser solicitado ao Tribunal de Hamburgo e a primeira vez que uma pronúncia reuniu a unanimidade — envolve matérias altamente complexas do ponto de vista técnico e científico, para além de jurídico, na medida em que se prende com a fixação de *standards* de gestão preventiva do risco para o ambiente marinho em razão do desenvolvimento de actividades na Área.

Com efeito, no ambiente marinho — como no ambiente em geral —, a dinâmica física e biológica recomenda uma atenção constante, um estudo atento, uma avaliação criteriosa. O conceito de “abordagem ecossistémica” (*ecosystem approach*), que encontramos, por exemplo, na definição do Comité da Biodiversidade da Convenção OSPAR de 1992,

⁽¹⁰⁾ Acrescente-se que a Austrália propôs uma acção contra o Japão junto do TIJ, em 1 de Junho de 2010, por alegada violação das normas relativas à proibição da pesca da baleia, genericamente vedada desde 1985/86 por uma moratória emanada da Comissão baleeira internacional, com base na Convenção Internacional sobre a pesca da baleia — que ambos os Estados ratificaram —, e que se baseia na grande incerteza científica sobre o estado dos stocks.

⁽¹¹⁾ Bem como a União Internacional para a Conservação da Natureza.

reflece particularmente a perspectiva abrangente e entrecruzada dos ecossistemas entre si, e entre estes e a actividade humana:

“The comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of marine ecosystems, thereby achieving sustainable use and ecosystem goods and services and maintenance of ecosystem integrity.”

Conforme realça TANAKA ⁽¹²⁾, a abordagem científica dos ecossistemas é especialmente relevante nos chamados *grandes ecossistemas marinhos* (“large marine ecosystems”), massas de água extensíveis por áreas de cerca de 200,000 metros quadrados desde a linha de costa e que albergam em torno de 95% das espécies piscícolas ⁽¹³⁾, atravessando e entrecruzando áreas marinhas sob jurisdição de diferentes Estados, cuja cooperação na investigação das suas características é decisiva. O Conselho Internacional para exploração do mar tem vindo, desde 2001, a assessorar os Estados no levantamento e partilha de informação sobre estes ecossistemas.

Não se estranha, portanto, que a CNUDM esteja polvilhada de referências à investigação científica, apoio indispensável de procedimentos de avaliação de riscos credíveis, como veremos de seguida.

4. INVESTIGAÇÃO CIENTÍFICA E PROTECÇÃO DO MEIO MARINHO NA CNUDM

A investigação científica marinha é uma componente ineliminável do objectivo de protecção do ambiente marinho. Pense-se desde logo

⁽¹²⁾ Yoshifumi TANAKA, “Obligation to co-operate in marine scientific research and the conservation of marine living resources”, in *ZaöRV*, 2005, vol, 65, pp. 937 segs, 952 segs.

⁽¹³⁾ Foram já identificados 64 grandes ecossistemas marinhos no mundo, “regions of ocean and coastal space that encompass river basins and estuaries and extend out to the seaward boundary of continental shelves and the seaward margins of coastal current systems — cfr. *The UNEP large marine ecosystem Report — a perspective of changing conditions in LMEs of the world’s regional seas*, disponível em <http://www.lme.noaa.gov/>.

na controvérsia *Bluefin tuna* e nos métodos de avaliação do máximo rendimento sustentável, pressuposto do exercício lícito da pesca de determinada espécie piscícola; ou no estudo de aproveitamentos energéticos do potencial marinho, fundamentais para a reconversão energética decorrente da luta contra o aquecimento global e através da substituição dos combustíveis fósseis por fontes de energia renovável (energia das ondas, das correntes, geotérmica); ou na análise geográfica e geofísica dos fundos marinhos e das placas tectónicas em que assentam, com relevo na preservação da fauna de grande profundidade e na prevenção de maremotos; ou ainda na investigação meteorológica e climatológica dos oceanos, que traz dados importantes para a compreensão dos meios marinho e atmosférico e suas interacções.

A investigação científica marinha tem antecedentes nas viagens do *Challenger*, em finais do século XIX, mas o marco determinante das pesquisas sistemáticas residirá porventura no estudo de métodos sonoros para detecção de submarinos, durante a II Guerra Mundial, tendo vindo a desenvolver-se contínua e proficuamente desde então, e relevando hoje nos mais variados domínios, do puramente científico ao assumidamente comercial, do da alimentação ao energético, do turístico ao geológico. Com a criação da Comissão Oceanográfica Intergovernamental, em 1960, no âmbito da UNESCO, a investigação científica marinha institucionalizou-se. Como objectivo genérico, a Comissão promove a cooperação internacional no âmbito da investigação científica marinha, desenvolvendo neste vasto campo de acção diversos programas de espectro mundial — como o *Global Ocean Observing System* (= GOOS), um observatório mundial do estado dos oceanos —, bem como, a título regional e sectorial, vários programas dedicados aos sistemas de gestão do meio marinho e da orla costeira, à prevenção de riscos tecnológicos e naturais (como o incremento de sistemas de alerta precoce contra maremotos), à observação e tratamento de dados sobre os efeitos das alterações climáticas nos oceanos e seus ecossistemas ⁽¹⁴⁾.

⁽¹⁴⁾ Todos os programas estão descritos no sítio da Comissão: <http://www.ioc-unesco.org/>.

Uma das áreas que mais atenção recente tem merecido é, precisamente, a da contribuição dos oceanos para a luta contra o aquecimento global, domínio onde o GOOS tem actuado em estreita colaboração com o Painel Internacional para as Alterações Climáticas, procedendo à monitorização da absorção de carbono pelos oceanos no âmbito do *International Ocean Carbon Coordination Project* (IOCCP). De resto, a investigação científica marinha é também objecto de atenção por parte de outras entidades na órbita da ONU, como a *Food and Agriculture Organization* (FAO) ⁽¹⁵⁾, a *World Meteorological Organization* (WMO), a *International Hydrographic Organization* (IHO) ou o *Joint Group of Experts on the scientific aspects of marine environmental protection* (GESAMP).

Em Portugal, merece destaque o papel da Universidade do Algarve e dos seus dois centros de investigação no domínio da investigação científica marinha, um dos quais (CCMAR) com o estatuto de Laboratório Associado (à unidade de I&D CIIMAR, da Universidade do Porto). A pesquisa desenvolvida incide especialmente sobre recursos biológicos (pesca e aquacultura), tecnologias alimentares, geociências marinhas e ambiente marinho e costeiro ⁽¹⁶⁾.

4.1. A indefinição do conceito de “investigação científica marinha”

Os autores convergem em que não resulta da CNUDM nenhuma definição de *investigação científica marinha* ⁽¹⁷⁾, apesar de a Parte XIII da

⁽¹⁵⁾ De relevar é a aprovação, pela FAO, de um *Código de Conduta sobre pesca responsável*, em 1995, no qual se apela tanto à investigação científica dos Estados (costeiros), como à cooperação internacional nesta sede.

⁽¹⁶⁾ Cfr. João PINTO GUERREIRO, “Investigação científica marinha: um contributo para o país”, in *Novas fronteiras*, n.º 20, 2006, pp. 61 segs., 66.

⁽¹⁷⁾ Cfr. Patricia BIRNIE, *Law of the Sea...*, cit., p. 241; M. STOLKER, *Marine scientific research and customary law — legal regime within the exclusive economic zone*, in *Thesaurus Acroasium*, 1998, pp. 437 segs., 437; Yoshifumi TANAKA, *Obligation to*

Convenção a ter por objecto. TANAKA refere que a expressão tem um sentido amplo que se traduz em qualquer estudo ou investigação que tenha por objecto o meio marinho (aí se compreendendo fundos marinhos e subsolo marinho, coluna de água e camada atmosférica sobre o mar). Para o Direito Internacional, contudo, a investigação científica divide-se em “pura” e “aplicada”, consoante a sua finalidade seja o aprofundamento do conhecimento de um determinado meio, no primeiro caso, ou tenha por objectivo a análise desse funcionalmente a um aproveitamento lucrativo, no segundo. Dir-se-ia que parece resultar da interpretação sistemática da Parte XIII que as actividades de investigação aqui visadas são actividades, se não imediatamente lucrativas, pelo menos com potencial económico. No entanto, tal não significa, segundo BIRNIE, que o regime se não aplique também a actividades de pesquisa pura ⁽¹⁸⁾.

O ponto principal a ter em conta no que tange à aplicação ou não da Parte XIII prende-se com a necessidade de consentimento do Estado costeiro relativamente a actividades de investigação realizadas em áreas marinhas sob sua soberania ou jurisdição — ou seja, até ao limite da sua zona económica exclusiva. Se se aceita que, no mar territorial, qualquer actuação que se não traduza no mero atravessamento possa não ser considerada passagem inofensiva e, portanto, deva ser expressamente autorizada (cfr. o artigo 19/2/j) da CNUDM), diferentemente se perspectiva a questão no que concerne a outros espaços de mar quanto a actividades de pesquisa pura. A CNUDM foi sensível a essa questão — que presuppõe a assimilação da estreita ligação entre investigação e protecção do ambiente marinho —, determinando a redução da amplitude de fundamentos de não oposição dos Estados costeiros em face de pedidos de Estados ou Organizações Internacionais relativos a projectos de investi-

co-operate..., *cit.*, pp. 938-940; Marko PAVLIHA e Norman MARTÍNEZ GUTIÉRREZ, “Marine scientific research and the 1982 United Nations Convention on the Law of the Sea”, in *O&CLLJ*, 2010/1, pp. 115 segs., 117-118.

⁽¹⁸⁾ A autora, citando A. Soons, admite que a investigação científica pura possa ainda ser submetida aos cânones regulatórios da parte XIII, tendo em mente a sua instrumentalidade — Patricia BIRNIE, *Law of the Sea...*, *cit.*, p. 242.

gação na zona económica exclusiva ou na plataforma continental “exclusivamente com fins pacíficos e com o propósito de aumentar o conhecimento científico em benefício de toda a Humanidade” (artigo 246/3).

Ou seja, para todas as actividades de investigação científica na zona económica exclusiva ou na plataforma continental do Estado costeiro vale a regra de solicitação da sua realização (ao Estado costeiro) com seis meses de antecedência relativamente ao início do projecto (artigo 248) e da possibilidade de manifestação de oposição até quatro meses após o recebimento do pedido (artigo 252), sob pena de consentimento implícito. Todavia, a discricionariedade dos Estado é *prima facie* limitada relativamente às actividades de pesquisa pura, desde logo porque o artigo 246/3 apela ao consentimento expresso e rápido (“... os Estados costeiros devem estabelecer regras e procedimentos para garantir que tal consentimento não seja retardado nem denegado sem justificação razoável”), e depois porque lhes é vedado, em circunstâncias normais ⁽¹⁹⁾, oporem-se a estas pesquisas, ao contrário do que sucede face a pedidos de investigação aplicada, nos termos do artigo 246/5 ⁽²⁰⁾.

Cumprido, no entanto, chamar a atenção para (pelo menos) dois obstáculos a esta abertura: por um lado, o facto de o artigo 246/3 não estabelecer desde logo um prazo de consentimento implícito mais curto do que o previsto no artigo 252 (quase implicando, ao invés, um entendimento mais estrito, no sentido da necessidade de um consenti-

⁽¹⁹⁾ Para Marko PAVLIHA e Norman MARTÍNEZ GUTIÉRREZ (*Marine scientific research...*, *cit.*, pp. 121-122), circunstâncias não normais serão casos de conflito armado, mas também, porventura, de pendência de uma questão de delimitação do espaço marinho entre o Estado costeiro e o Estado solicitante, sendo que será a este que cumpre fazer a prova da anormalidade.

⁽²⁰⁾ M. STOLKER, *Marine scientific research...*, *cit.*, p. 444, louvando-se em Attard, afirma que a diferença entre os regimes em razão do tipo de investigação se resume, quanto a projectos de investigação pura, a que cabe ao Estado costeiro justificar a não concessão de autorização, enquanto que relativamente a projectos de investigação aplicada, cabe ao dono do projecto caracterizar a desadequação dos fundamentos de recusa avançados pelo Estado costeiro.

mento explícito); por outro lado, a utilização do conceito indeterminado “circunstâncias normais”, propício a aproveitamentos indevidos.

O Estado costeiro, ainda que consinta implícita ou explicitamente na realização da actividade solicitada, pode ordenar a suspensão desta, nos termos do artigo 253, em razão de incumprimento de condições previamente estabelecidas entre o Estado costeiro e a entidade pesquisadora ou de alteração unilateral das mesmas pela última.

Uma última nota relativamente à investigação científica na Área, sob jurisdição da Autoridade Internacional para os Fundos marinhos. O artigo 143 dispõe que tal investigação deve pautar-se pela exclusiva prossecução de fins pacíficos, estando submetida ao regime da Parte XIII — o que não veda à Autoridade a possibilidade de, por si ou através de entidades concessionárias, levar por diante investigação aplicada. O regime de gestão internacional, particularmente tributário da lógica de equidade intra e intergeracional, delinea intensos deveres de cooperação internacional, partilha de informação e transferência de tecnologias entre Estados mais e menos desenvolvidos (cfr. os artigos 143 e 144).

4.2. Os princípios que regem a investigação científica marinha

Existe, como vimos, uma presunção de consentimento do Estado costeiro em face de pedidos de investigação científica marinha, acentuado quanto a investigação pura na medida em que a discricionariedade do Estado se vê reduzida em razão da relevância colectiva que a actividade reveste. Tal não significa, porém, que a investigação científica marinha em prol do melhor conhecimento e protecção do mar se faça à margem da prevenção de riscos para o meio marinho. Tal preocupação decorre, desde logo, da previsão ampla do artigo 192, concretizando-se relativamente à Área (no artigo 145) e encontrando a sua pauta no artigo 240, sede do lote de princípios gerais aplicáveis a quaisquer actividades de investigação marinha (que depois, algo tautologicamente e decerto em virtude da opção de não definição da noção, se vão repetindo nas disposições seguintes).

A importância da ciência para a protecção do meio marinho leva-nos a acrescentar aos princípios mencionados — e na lógica do princípio da cooperação preventiva em sede de investigação científica que se retira dos artigos 197 e 200 da CNUDM ⁽²¹⁾ —, a pauta da Secção II da Parte XIII, relativa à *Cooperação Internacional*, nomeadamente o disposto no artigo 242/2, que apela à disponibilização, entre Estados e Organizações Internacionais, de dados resultantes das actividades de investigação científica marinha que permitam evitar ou minimizar danos para a saúde e para o meio ambiente ⁽²²⁾. O artigo 249/1/e) confirma que existe um dever de cooperação de boa fé na troca de informações científicas entre Estados e Organizações internacionais, mesmo que tais informações resultem de projectos de investigação científica marinha com propósito lucrativo, desde que a sua transmissão salvguarde os direitos comerciais do Estado que a promove. A consistência e a efectividade deste dever de cooperação têm sido, no entanto, bastante contestadas, em virtude de se tratar essencialmente de uma obrigação de meios e não de resultado.

Sublinhe-se que a cooperação internacional se realiza, antes de mais, através da colaboração entre Estado costeiro e entidades que levam a cabo as pesquisas científicas ⁽²³⁾. Como vimos, no plano da pesquisa aplicada, o Estado costeiro deve autorizar ou pelo menos não se opor à realização destas, o que subentende uma atitude cooperante e sintonizada com o objectivo proposto. Por seu turno, a entidade que se propõe realizar a investigação deve fornecer toda a informação relevante ao Estado costeiro, detalhando as condições de execução do projecto — nos termos do artigo 248 (natureza e objectivos; metodologia e meios de

⁽²¹⁾ A propósito do caso *Southern Bluefin Tuna*, Yoshifumi TANAKA (Obligation to co-operate., *cit.*, p. 956) realça a fundamentalidade da cooperação, desde logo no estabelecimento de uma metodologia de avaliação baseada em critérios consensualmente obtidos, sob pena de se abrir constante espaço à litigiosidade.

⁽²²⁾ Sobre a cooperação entre Estados através de organizações internacionais, Fernando LOUREIRO BASTOS, *A internacionalização dos recursos naturais marinhos*, Lisboa, 2005, pp. 667 segs.

⁽²³⁾ Neste sentido, Yoshifumi TANAKA, *Obligation to co-operate...*, *cit.*, p. 942.

execução; delimitação das áreas geográficas de incidência; datas de chegada e abandono dos locais; nome dos responsáveis pelo projecto; indicação da possibilidade de apoio, participação ou representação do Estado costeiro no projecto de investigação).

Enfim, o Estado ou Organização internacional responsável pelo projecto deve cumprir as condições estabelecidos pelo Estado costeiro, conforme enunciadas no artigo 249, tanto no que toca a obrigações de abstenção de perturbação do exercício dos poderes de jurisdição do Estado costeiro sobre a zona, como no que concerne a não obstrução de possibilidades de uso do mar por outros Estados (na medida do possível), como ainda no que tange a obrigações de prestação de informação sobre a evolução da investigação, seus resultados e conclusões — disponibilizando-a ao Estado costeiro e a instâncias internacionais com competências nos domínios em jogo —, como, enfim, no que respeita a obrigações de retirada de equipamentos quando a investigação estiver finalizada (ou caso o Estado costeiro tenha imposto a suspensão ou cessação da actividade, nos termos do artigo 253).

4.3. Gestão do risco e investigação científica marinha na CNUDM: alguns exemplos

A sustentação científica das medidas de preservação do meio marinho e de gestão racional dos seus recursos tem na CNUDM duas grandes linhas de força no âmbito da gestão do risco. Por um lado, no plano da gestão preventiva do risco de esgotamento de stocks promovida pelos artigos 61 e 62 da CNUDM, relativos à pesca na zona económica exclusiva e ao limite do “máximo rendimento sustentável” que aí se indica como referencial económico-ambiental. Esta metodologia de avaliação de risco viria a ser sensivelmente alterada, para as espécies transzonais e altamente migratórias, com o Acordo de Nova Iorque, de 1995. Com efeito, o artigo 6 deste Acordo, numa abordagem alegadamente precaucionista, admite a adopção de medidas cautelares com vista à salvaguarda dos stocks perante *dúvidas razoáveis* sobre a sua sustentabilidade, enquanto que o artigo 61/2 da CNUDM aponta apenas para a fixação

de quotas de pesca que não *ameace perigosamente* os níveis de reprodução das espécies (aplicável por remissão do artigo 64 da CNUDM).

Os critérios em que se baseia a fixação dos limites devem atender à melhor informação disponível e utilizar as melhores técnicas, conforme dispõem os artigos 61, 62 e também o artigo 119 (para a pesca em alto mar). Como expressamente decorre do n.º 2 do artigo 119, “*Periodicamente devem ser comunicadas ou trocadas informações científicas disponíveis, estatísticas de captura e de esforço de pesca e outros dados pertinentes para a conservação das populações de peixes, por intermédio das organizações internacionais competentes, sejam elas sub-regionais, regionais ou mundiais, quando apropriado, e com a participação de todos os Estados interessados*”. Questionável é que nesta avaliação os critérios ecológicos não sejam suficientes para fundamentar os limites, entrando também em linha de conta os aspectos económicos...

TANAKA sublinha a importância da cooperação neste âmbito, em razão da dinâmica do meio e do intenso trânsito de espécies de zona para zona, entre alto mar e zonas económicas exclusivas múltiplas. O n.º 5 do artigo 61 estabelece a necessidade de entrecruzamento de informação, promovendo a protecção alargada e prevenindo manipulação unilateral de dados ⁽²⁴⁾. De resto, o artigo 5/k) do Acordo de Nova Iorque faz eco desta preocupação, estabelecendo a necessidade de promoção de investigação científica marinha e de desenvolvimento de tecnologias de conservação e gestão. Esta disposição é complementada com as referências dos artigos 10 e 14 do mesmo Acordo aos imperativos de tratamento e actualização de dados, tanto das espécies directamente visadas no seu objecto, quanto das espécies que entram em interacção com as transzonais e altamente migratórias. Acresce ainda a exortação, no Anexo I ao Acordo de Nova Iorque, à colaboração entre Estados e organizações regionais e sub-regionais no que toca à partilha de informação relativa a avaliação e gestão de risco de depauperamento de stocks (cfr. o artigo 3/2).

⁽²⁴⁾ Yoshifumi TANAKA, *Obligation to co-operate...*, *cit.*, pp. 943 e 947.

Por outro lado, a CNUDM aponta também as baterias da investigação científica para o combate e controlo da poluição no meio marinho (“prevenir, reduzir e controlar”), como ficou bem expresso nos artigos 200 e 201, no âmbito da lógica de prevenção alargada que a caracteriza. O papel da ciência é aqui decisivo enquanto conformadora das regras, internacionais e nacionais, sobre prevenção da poluição marinha, quer no estabelecimento de padrões de prevenção baseados na melhor informação disponível, quer na especialização e actualização destes.

Vale a pena iluminar o disposto no artigo 211/6/a), que admite que o Estado costeiro imponha limites mais apertados à navegação do que aqueles que constam das normas internacionais em vigor, caso particulares circunstâncias (oceanográficas ou ecológicas) o imponham e desde que apoiado em provas científicas e técnicas bastantes. Ilustrativo da estreita ligação entre a ciência e a CNUDM é também o artigo 234, relativo a áreas cobertas de gelo, especialmente perigosas para a navegação, que remete os Estados costeiros para a melhor informação científica disponível no tocante à preservação do ambiente marinho nos limites da sua zona económica exclusiva.

Estes exemplos de metodologia de gestão antecipativa e cooperativa de riscos identificam aquilo a que poderíamos chamar obrigações principais. No entanto, no elenco da Parte XII encontram-se também deveres acessórios, como o dever de publicitação dos dados obtidos através da monitorização, plasmado do artigo 205. Se é verdade que a actividade de gestão do risco se pauta pela tentativa de redução da incerteza, certo é também que a investigação científica, alimentada pela observação constante da dinâmica dos fenómenos naturais, lhe vai servir de apoio decisivo, tanto no plano da criação de condições de inteligibilidade na avaliação de riscos como no plano de criação de condições de operacionalidade na gestão/minimização do risco.

Temos, portanto, uma associação necessária entre as obrigações de meios que compõem a metodologia de avaliação e gestão de risco

— *obrigações principais*: de elaboração de estudos de impacto, de troca de informação e consulta entre o Estado responsável pelo incremento do risco e outros sujeitos potencialmente afectados, promoção da participação pública, elaboração de planos de emergência; e incorporação desses resultados nas regras e princípios convencional e legislativamente aplicáveis —, e as *obrigações acessórias* de monitorização de dados, publicação dos mesmos e tratamento científico com vista à melhoria contínua das técnicas de minimização de danos.

Constituindo o mar uma grandeza universal e cujas fragilidades não são estanques, a avaliação científica de riscos deve ser uma tarefa partilhada — o que implica custos consideráveis. Ineliminável é, pois, a assistência de Estados desenvolvidos a Estados menos desenvolvidos no financiamento de programas de investigação, na transferência de tecnologia, na formação de peritos. O artigo 202 da CNUDM é particularmente ilustrativo dos desdobramentos desta concretização, *avant* Rio, do princípio das responsabilidades comuns mas diferenciadas — do qual, afinal, a Declaração de 1992 não é pioneira, uma vez que este imperativo já está presente na Declaração de Estocolmo (princípios 12, 5 e 9). O apoio à investigação científica nos Estados menos desenvolvidos não só assenta numa lógica de solidariedade intrageracional ⁽²⁵⁾ como decorre identicamente da constatação de que os problemas ambientais não reconhecem as fronteiras políticas, devendo ser atacados em todas as frentes. A CNUDM dedica a Parte XIV à indicação de formas de concretização deste objectivo.

A promoção de condições de igualdade de investigação científica marinha entre Estados é tão sensível que o Acto final da CNUDM afirma, no seu Anexo VI (consid. 4.º), que “*unless urgent measures are taken, the marine scientific and technological gap between the developed and the developing countries will hidden further and thus endanger the very*

⁽²⁵⁾ Cfr. também o artigo 8 da *Carta dos Direitos e Deveres Económicos dos Estados*, de 1974 (Resolução da AG 3281, XXIX).

foundations of the new régime". É, afinal, o eco (utópico? ⁽²⁶⁾) das palavras do Preâmbulo da Convenção de Montego Bay, quando convoca a cooperação internacional no âmbito do Direito do Mar com vista à consecução de uma "uma ordem económica internacional justa e equitativa que tenha em conta os interesses e as necessidades da humanidade, em geral, e, em particular, os interesses e as necessidades especiais dos países em desenvolvimento, quer costeiros quer sem litoral."

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⁽²⁶⁾ Para Marko PAVLIHA e Norman MARTÍNEZ GUTIÉRREZ (Marine scientific research..., *cit.*, p. 129), as normas do Cap. XIV mais não são do que um *pacto de contrahendo*, que a vaguidade condena à ineficácia.

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SESSÃO IV

MODELOS DE 'GOVERNAÇÃO'

SESSION IV

MODELS OF 'GOVERNANCE'

CLIMATE CHANGE AND OCEAN GOVERNANCE

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Abstract: *The Law of the Sea Convention was negotiated at a time when climate change was not yet part of the international environmental agenda. Nevertheless, it is not a static or immutable legal regime and it is not difficult to apply Part XII to greenhouse gas emissions and climate change insofar as they affect the marine environment. For that reason the UNFCCC institutions and the international standards they adopt are, in effect, part of the architecture of ocean governance. However, it is doubtful whether viewing climate change from the perspective of the law of the marine environment greatly alters the overall picture. At best it provides a vehicle for compulsory dispute settlement notably lacking in the UNFCCC regime. Realistically, while the 1982 Convention may import any newly agreed standards for the control of GHGs, it is not a substitute for further agreement within the UNFCCC framework. In this context there really is no useful alternative to negotiation, except at the margins. But those negotiations do not have to take place only in the UNFCCC process. Rather, the important lesson is that climate change should be on the negotiating agenda of all international institutions whose mandate is affected by it. It is a human rights issue. It is a trade issue. It is also an issue for IMO and those convention secretariats responsible for protecting the marine environment pursuant to Part XII of the 1982 Convention.*

The Law of the Sea Convention was negotiated at a time when climate change was not yet part of the international environmental

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agenda. Nevertheless, it is not a static or immutable legal regime and it is not difficult to apply Part XII to greenhouse gas emissions and climate change insofar as they affect the marine environment. For that reason the UNFCCC institutions and the international standards they adopt are, in effect, part of the architecture of ocean governance. However, it is doubtful whether viewing climate change from the perspective of the law of the marine environment greatly alters the overall picture. At best it provides a vehicle for compulsory dispute settlement notably lacking in the UNFCCC regime. Realistically, while the 1982 Convention may import any newly agreed standards for the control of GHGs, it is not a substitute for further agreement within the UNFCCC framework. In this context there really is no useful alternative to negotiation, except at the margins. But those negotiations do not have to take place only in the UNFCCC process. Rather, the important lesson is that climate change should be on the negotiating agenda of all international institutions whose mandate is affected by it. It is a human rights issue. It is a trade issue. It is also an issue for IMO and those convention secretariats responsible for protecting the marine environment pursuant to Part XII of the 1982 Convention.

1. INTRODUCTION

In his book, *On Global Order*, Andrew Hurrell refers without enthusiasm to the “technocratic and interest-driven literature on global governance”⁽²⁾. He prefers to emphasise “the need to capture shared and common interests, to manage unequal power, and to mediate cultural diversity and value conflict”⁽³⁾. Climate change represents one illustration of that challenge. Hurrell is right to be sceptical, for in this context governance is part of the problem, even if it may eventually be part of the answer. Global governance has been defined as ‘a continuing process through which conflicting or diverse interests may be accommodated

⁽²⁾ A. Hurrell, *On Global Order* (Oxford, 2007), 2.

⁽³⁾ *Ibid.*

and co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements... There is no single model or form of global governance, nor is there a single structure or set of structures. It is a broad, dynamic, complex, process of interactive decision-making' ⁽⁴⁾. At the very least it captures the idea of a community of states with responsibility for addressing common problems through a variety of international institutions which are inclusive in character, and which to some degree 'embody a limited sense of a collective interest, distinct in specific cases from the particular interests of individual states' ⁽⁵⁾. How far this is true will have to be judged on the evidence of particular regimes, but the problems are glaringly obvious when we look at the sclerotic global response to climate change.

Climate change represents one of the greatest challenges to global governance the UN has ever faced ⁽⁶⁾. It is *par excellence* a global problem — the 'common concern' of humanity to use the language of the UN Framework Convention on Climate Change (UNFCCC) — potentially affecting all States, and for which global solutions are essential. That was the reason for negotiating the two principal multilateral environmental agreements (MEAs) on the subject — the UN Framework Convention and the Kyoto Protocol. Negotiations on climate change have always been difficult because of the complexity of the issues and

⁽⁴⁾ Commission on Global Governance, *Our Global Neighbourhood* (Oxford, 1995) 2-4. For a succinct account of 'governance' literature in international relations see Toope, in Byers (ed) *The Role of Law in International Politics* (Oxford, 2000) 94-9.

⁽⁵⁾ Roberts and Kingsbury, *United Nations, Divided World* (2nd edn, Oxford, 1993), 16-17, and see generally, *Our Global Neighbourhood*, 2-6 and Hey, in Bodansky, Brunnée and Hey (eds) *Oxford Handbook of International Environmental Law* (Oxford, 2007) 750-69.

⁽⁶⁾ See inter alia Rayfuse and Scott (eds) *International Law in the Era of Climate Change* (London, 2012); Dryzek, Norgaard and Schlosberg (eds), *Oxford Handbook of Climate Change and Society* (Oxford, 2011).

the diversity of the interests at stake ⁽⁷⁾. The participation of all the important players cannot be guaranteed, as the continuing opposition of the United States to participation in the protocol or a successor shows only too well.

The UNFCCC is only a 'framework convention', i.e., it does not itself regulate climate change but only creates a basis for negotiating multilateral regulations. The model's most evident weakness, as demonstrated by the Copenhagen negotiations in 2009 ⁽⁸⁾, is that it depends on the ability of the parties to reach consensus. This cannot be taken for granted. While the Kyoto Protocol certainly dictates reductions in greenhouse gas emissions for some developed States based on 1990 levels, even if met in full these targets fall well short of what will be needed to achieve a meaningful effect on atmospheric concentrations of GHGs. The protocol represents at best only a first step in the development of a stronger regime.

Just as importantly, the concept of common but differentiated responsibility, as conceived in the UNFCCC and replicated by Kyoto, has so far relieved developing States of any obligation to constrain greenhouse gas emissions, however significant they may become ⁽⁹⁾. The rapidly rising CO₂ emissions generated by China and India are thus currently unregulated by Kyoto. At the same time, the globalisation of industrial output brought about by the World Trade Organization (WTO) free trade regime has in effect outsourced production from developed States covered by Kyoto's emissions reduction targets to devel-

⁽⁷⁾ Mintzer and Leonard (eds) *Negotiating Climate Change: The Inside Story of the Rio Convention* (Cambridge, 1994); Luterbacher and Sprinz (eds), *International Relations and Global Climate Change* (Cambridge, Mass., 2001).

⁽⁸⁾ Rajamani, 'Addressing the Post-Kyoto Stress Disorder' (2009) 58 *ICLQ* 803; Rajamani, 'The Making and Unmaking of the Copenhagen Accord' (2010) 59 *ICLQ* 824.

⁽⁹⁾ See generally Rajamani, *Differential Treatment in International Environmental Law* (Oxford, 2006), especially Ch. 6.

oping States that have no such obligation. Changing this element of the trade bargain would also entail challenging the principle of common but differentiated responsibility, which is one of the cornerstones of the UNFCCC and Kyoto Protocol. Thus a key issue in the climate negotiations remains whether to preserve the architecture of historic responsibility agreed at Kyoto, or to rethink assumptions about who must take responsibility for reducing greenhouse gas emissions in future.

Nor is the climate regime established by the UNFCCC the whole picture. Controlling climate change requires co-ordination of policies and measures by a range of international institutions inside and outside the UN system. For example, the use of sub-seabed depositories for carbon capture and storage must be compatible with the Law of the Sea Convention and the London Dumping Convention. That requires co-operation by the parties to those treaties⁽¹⁰⁾. Controlling greenhouse gas emissions from shipping requires regulatory action by IMO if it is to be globally effective⁽¹¹⁾. Moreover, greenhouse gas emissions also cause marine pollution and affect the marine environment, marine living resources and marine ecosystems⁽¹²⁾. Pollution standards adopted within the UNFCCC regime may therefore constitute ‘internationally agreed rules and standards’ for the purposes of Part XII of the 1982 UNCLOS. There is thus a close relationship between what is negotiated within the climate regime and what is applicable law within the UNCLOS regime. For that reason the UNFCCC institutions are, in effect, part of the architecture of ocean governance, alongside IMO, FAO, and the Convention on Biological Diversity. The difficulty of ensuring coherence among these competing bureaucratic mandates should not be underestimated, however⁽¹³⁾.

⁽¹⁰⁾ See Rayfuse and Scott, *op. cit.*, 166-9; Proelss, ‘International Environmental Law and the Challenge of Climate Change’ (2010) 53 *German YbIL* 65.

⁽¹¹⁾ See fn 23 below.

⁽¹²⁾ See section 3 below.

⁽¹³⁾ See Koskenniemi, ‘International Legislation Today: Limits and Possibilities’ (2002) 23 *Wisconsin Int LJ* 64.

2. INSTITUTIONAL PROBLEMS: THE UNFCCC NEGOTIATING FRAMEWORK

The UNFCCC negotiating model involves near universal participation and negotiation by consensus, rather than voting on the text. The benefit of this model is that it allows complex, comprehensive and inclusive agreements to be negotiated, relying on the politics of interdependence that characterises regulation of world trade, the oceans, or the global environment. As with the UNCLOS III conference, the consensus negotiating procedure generates a greater need to engage in diplomacy, to listen, and to bargain than would be the case when decisions are taken by majority vote ⁽¹⁴⁾. Every group of States has to be accommodated in this process — none can be ignored. Powerful States or groups of States cannot simply dictate what should be in an agreement without risking ultimate breakdown. This explains the influence of AOSIS during the original UNFCCC negotiations, but also the need to keep the United States on board during the current negotiations. This negotiating model was successful at Rio and Kyoto, but it does not always work, and it has not worked smoothly in the current phase of negotiations on climate change.

Diversity of political interests among the participants is a prominent feature of the UNFCCC/Kyoto process. It is not a regime that can be understood in terms of a simple split between developed (Annex I) and developing States (non-Annex I). The failure of the Copenhagen negotiations in 2009 shows that securing consensus in this context requires compromises that may be unobtainable, or may result in a text that is weaker or more ambiguous than many States are prepared to accept. Negotiations can only proceed at the pace of the slowest learner. But if the compromises necessary to engineer consensus cannot be reached then nothing will be agreed, and some way must be found to overcome that outcome. For that reason the option of adopting a text by majority vote is normally retained

⁽¹⁴⁾ See Boyle and Chinkin, *The Making of International Law* (Oxford, 2007), Ch. 3.

as a fallback if all else fails. Much will then depend on how many States are in the minority and how important their participation may be.

Whether to join in a consensus is thus a potentially delicate decision. A State that refuses to do so may find itself ignored, as Bolivia was eventually ignored at Cancun, or it may simply be part of a tiny minority if it forces matters to a vote, a position in which the US regularly finds itself. But if the participation of a State is essential to the deal under discussion then other States may have no option but to keep negotiating if stalemate is to be avoided.

Are there alternatives to a global consensus deal? Possibly, but they all have serious drawbacks. The easiest alternative is a coalition of the willing within the OECD — in effect an agreement among the Kyoto Annex I parties. The obvious problem is that the OECD does not include China, India, or Brazil. A G20 agreement is possibly a better model because it includes these States. Nevertheless, even that would probably remain useful only in tandem with UNFCCC negotiations, but the G20 could supply the necessary political input for a broader agreement if it could agree on one.

Does the UN have the potential to influence the negotiating process effectively? If consensus cannot be achieved through the UNFCCC it seems unlikely that the UNGA will be any more successful. It would face exactly the same political obstacles. Only the UN Security Council has the necessary status and legal authority to change the mould and legislate for climate change without the consensus agreement of other States. Measures to promote environmental protection may in some circumstances be necessary for the maintenance of international peace and security, thus giving the UNSC power to take mandatory action under Chapter VII, but 'the language of the Charter, not to speak of the clear record of the original meaning, does not easily lend itself to such an interpretation' ⁽¹⁵⁾.

⁽¹⁵⁾ Szasz, in Brown Weiss, *Environmental Change and International Law* (Tokyo, 1992), 359.

However, although the UNSC is not formally a law-making body, since 9/11 it has started to use its mandatory powers to adopt a small number of binding resolutions on anti-terrorism measures laying down general rules for all States ⁽¹⁶⁾. There are some obvious advantages to UNSC law-making rather than the more formal processes of negotiation through the UNGA or a treaty conference. First, all UN Member States are bound to comply with Chapter VII resolutions — there is no room for opt-outs or reservations. Secondly, such resolutions prevail over other international agreements and they do not have to conform to existing general international law ⁽¹⁷⁾. UNSC law-making could thus enhance the coherence of international law if used appropriately. To that extent the UNSC could become an instrument of law reform, overcoming the problem of the ‘persistent objector’ in customary law and the ‘free-rider’ in multilateral treaties.

Nevertheless, to give the UNSC an enhanced role as an international legislator in areas such as climate change would be a tenable option only if the process can be legitimised and made generally acceptable to States ⁽¹⁸⁾. The problems are obvious if we consider current UNSC membership from the perspective of major GHG emissions: the US, China, Russia are already on the UNSC, but India and Brazil are not permanent members. The EU is fully represented only if Britain, France and the one other EU Member State on the UNSC can present a co-ordinated European position. Most of the other GHG emitters and oil-producing States are only represented in the UNGA: a UNSC

⁽¹⁶⁾ Two striking and unprecedented examples are SC resolutions 1373 (2001) and 1540 (2005) both Chapter VII resolutions passed in the aftermath of the 11 September 2001 attacks in New York and Washington and later atrocities.

⁽¹⁷⁾ ‘The Charter does not provide that decisions...in order to be enforceable must be in conformity with the law which exists at the time they are adopted.’ Kelsen, *The Law of the United Nations* (New York, United Nations University Press, 1950), 294-5.

⁽¹⁸⁾ Caron, *The Legitimacy of the Security Council*, 87 *AJIL* (1993) 552 and Szasz, *The Security Council Starts Legislating*, 96 *AJIL* (2002) 901, but contrast T. Sato, in J-M. Coicaud and V. Heiskanen, *The Legitimacy of International Organisations* (Tokyo, 2001), 327-9.

law-making process would have to involve UNGA participation to be inclusive. Law-making by 15 States for the rest of the world is not attractive or likely to work without broader support. In any event, it would be no use unless the US, Russia, China and Europe could agree on what to do, since they all have a veto over the UNSC. But if they can agree then it is probably unnecessary to resort to the UNSC in the first place. Thus there seems little practical alternative to the present UN negotiating framework, however slow it may be. Cancun and Durban thus offer at least the illusion of progress while holding open the possibility of a future pregnant with possibility.

3. UNCLOS AND CLIMATE CHANGE

For low-lying States and small islands sea-level rise and changes in the marine ecosystem are the most immediate threats posed by climate change. The 1982 UNCLOS provides a fairly comprehensive regime for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution damage to other States. Its provisions are increasingly relevant to climate change insofar as GHG emissions cause marine pollution and harm the marine environment. In particular, Article 192 provides that ‘States have the obligation to protect and preserve the marine environment.’ The ‘marine environment’ for this purpose includes ‘rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life’⁽¹⁹⁾. In addition, States parties to UNCLOS also have an obligation under Article 117 to conserve ‘the living resources of the high seas’. The latter phrase certainly covers fish and marine mammals⁽²⁰⁾. Later treaties, such as the 1992 Convention on Biological Diversity, suggest that, consistently with the objects and purposes of UNCLOS⁽²¹⁾,

⁽¹⁹⁾ Article 194(5).

⁽²⁰⁾ See references to fisheries organizations, fishing patterns, and marine mammals in Articles 118-120.

⁽²¹⁾ See in particular the preambular paragraphs: ‘*Recognizing* the desirability of establishing through this Convention, with due regard for the sovereignty of all

Part XII can readily be interpreted to cover protection of marine biodiversity in general, and conservation of coral reefs in particular.

Atmospheric deposition of CO₂ into the marine environment arguably falls within the terms of Article 192 and the subsequent provisions of Part XII. It may be that other greenhouse gases are also relevant, but CO₂ appears to be the most important and to have the greatest impact on the health of the oceans. Article 194 requires States to take measures necessary to prevent marine pollution 'from any source'. There is an indicative list of sources in Article 194(3) which covers, *inter alia*, 'the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, *from or through the atmosphere* or by dumping.' While anthropogenic greenhouse gas emissions are not specifically listed here, it is entirely plausible to read Article 194(3) as covering atmospheric depositions of CO₂ resulting in marine pollution. A significant proportion of marine pollution already comes from airborne depositions, and it has never been suggested that this is excluded from UNCLOS. If there were any doubt about this, reference could also be made to Article 207 on land-based sources of marine pollution. Article 212 would cover CO₂ emissions from ships or aircraft, although it might be argued that it goes no further than that. A resolution on reduction of aviation emissions of CO₂ was adopted by the International Civil Aviation Organization (ICAO) in 2010⁽²²⁾. Regulations on CO₂ emissions from ships were adopted by the IMO in 2011⁽²³⁾. Taken together,

States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment...'

⁽²²⁾ ICAO resolution A37-19 (2010). The EU has extended its emissions trading scheme to aviation.

⁽²³⁾ The Marine Environment Protection Committee of the IMO adopted amendments to MARPOL Annex VI, with entry into force on 1 January 2013, making the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP) mandatory subject to certain conditions.

Articles 194, 207 and 212 appear to cover all airborne sources of marine pollution comprehensively, including CO₂ emissions and other GHGs.

These CO₂ emissions have caused marine pollution. Article 1(1)(4) of UNCLOS defines 'pollution of the marine environment' to include the introduction of *substances* or *energy* resulting in harm to the marine environment. CO₂ emissions appear to have resulted in the deposition of excess anthropogenic carbon into the oceans, altering their chemistry, and making them more acidic ⁽²⁴⁾. They also appear to have added 'energy' to the oceans, either directly by causing ocean temperatures to rise, or indirectly by melting ice caps and glaciers, resulting in sea level rise. Evidence evaluated in reports from various UN specialised agencies has shown that these depositions have caused or are likely to cause the kind of harmful effects listed in Article 1(1)(4) ⁽²⁵⁾. Typical damage that has been identified includes sea-water intrusion affecting freshwater aquifers and inundating coastal areas, causing disruption of family life for those who live on affected coastlines. There is also economic loss to coastal communities resulting from depleted fish stocks, coral bleaching and loss of marine biodiversity resulting from higher temperatures and acidification. Sea level rise may in extreme cases result in internal displacement of populations or even wholesale abandonment of islands or territory. Low-lying countries such as Bangladesh are particularly vulnerable.

⁽²⁴⁾ The surface ocean is thought to absorb around one quarter of the carbon dioxide emitted to the atmosphere. See CBD, *Scientific Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity* (CBD Technical Series no. 46), p. 9; IOC/UNESCO, *Building Stewardship for the Ocean: The Contribution of UNESCO to Responsible Ocean Governance, Our Changing Oceans: Conclusions of the First International Symposium on the Effects of Climate Change on the World's Oceans (Gijon, 2008)*, ICES Journal of Marine Science Advance Access (4 June 2009), 1, and generally, Allsopp *et al.*, *State of the World's Oceans* (Dordrecht, Springer, 2009), Ch.5.

⁽²⁵⁾ CBD, *Scientific Synthesis etc, loc. cit.*, previous note; FAO, *Fisheries Report No. 870: Report of the FAO Expert Workshop on Climate Change Implications for Fisheries and Aquaculture* (Rome, FAO, 2008); IPCC, *Climate Change 2007: Synthesis Report* (Geneva, IPCC, 2008).

4. CLIMATE CHANGE OBLIGATIONS UNDER UNCLOS

Article 194 of UNCLOS is directed at protecting the marine environment and other States from marine pollution damage. It is particularly pertinent to climate change insofar as States are required to take measures to control and regulate polluting ‘activities’ within their jurisdiction. Examples of such activities would include industrial installations which generate CO₂, power generators that use oil or coal, oil extraction industries, coal-mining, or possibly deforestation. This does not mean that corporate polluters would be responsible under the Convention, or that the contribution of each plant would have to be quantified. The Convention does not address private parties directly. But it does make State parties responsible under Article 194 for regulating and controlling the risk of marine pollution damage to other States resulting from the activities of the private sector. Fundamentally this is an obligation of due diligence — States must take the measures necessary to prevent or minimise harmful pollution, including environmental impact assessment, regulation and use of best available technology, application of the precautionary principle, and enforcement⁽²⁶⁾. On that basis States have an obligation to control and reduce CO₂ emissions from any source likely to pollute the marine environment and cause harm to other States.

The standard of conduct set by Article 194 is very general — ‘prevent, reduce and control’ — and it does not imply that all pollution must be prevented⁽²⁷⁾, nor that anthropogenic CO₂ emissions must cease immediately, or even eventually. Measures that gradually reduce pollution and that result in meaningful lowering of carbon emissions

⁽²⁶⁾ ILC, 2001 Articles on Prevention of Transboundary Harm, Article 3 and commentary, *ILC Report* (2001) GAOR A/56/10, 391-5, paras. (7) — (17); *Pulp Mills on the River Uruguay*, 2010 ICJ Reports, paras. 197 and 223; *Advisory Opinion on Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, 2011 ITLOS Seabed Disputes Chamber, paras. 115-120.

⁽²⁷⁾ See *Pulp Mills Case*, 2010 ICJ Reports, para. 187; *Advisory Opinion etc.*, 2011 ITLOS, paras. 110-111.

over a period of time would be sufficient. The UNFCCC would be relevant when interpreting and applying UNCLOS⁽²⁸⁾. In particular, Article 2 talks about *stabilising* greenhouse gas concentrations at a level that would prevent ‘dangerous anthropogenic interference with the climate system’. It does not talk about eliminating GHG emissions altogether. It envisages a timescale ‘sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.’ It does not talk about immediate results. At the same time, given the scientific uncertainty and the risk of serious and irreversible harm to the marine environment posed by climate change, the measures taken must be adequately precautionary. Article 3(3) of the UNFCCC says that parties ‘should’ take precautionary measures to anticipate, prevent or minimize climate change and mitigate its effects. Plainly, if there is evidence of a risk of serious or irreversible harm to the marine environment, interpreting UNCLOS by reference to the precautionary principle would strengthen the argument for saying that something must be done to reduce CO₂ emissions. The question is: what?

4.1. The Kyoto Protocol and UNCLOS

The most obvious way of showing a failure to take the measures required by Articles 192 and 194 is to argue that the Kyoto Protocol sets a standard for giving effect to these provisions — that, in other words, UNCLOS developed State parties must comply with their emissions reduction targets under the Kyoto Protocol. This argument thus presents a very clear pathway through which compliance with Kyoto’s CO₂ emissions reduction standards could be litigated in UNCLOS proceedings. Of course it would have to be shown that Kyoto parties have not complied with their emissions reduction commitments and that any alleged failure to comply with UNCLOS has been the subject

(28) In accordance with Article 31(3)(c) of the 1969 Vienna Convention on the Law of Treaties.

of an exchange of views between the parties indicating the scope of the dispute ⁽²⁹⁾. It is quite likely that most of the Annex I States will meet their Kyoto emissions targets by 2012: only Canada currently stands out as likely to be in breach, and only if it remains a party.

The argument that Kyoto sets a standard for giving effect to UNCLOS Part XII is even less useful against developing States, or against developed States that are not parties to Kyoto. Developing States parties to Kyoto have no obligation to reduce GHG emissions, even if like India and China they are large emitters of CO₂. They will still be in compliance with Kyoto even if their CO₂ emissions have greatly increased since 1997. They would not be in breach of UNCLOS Articles 192 and 194 if Kyoto defines the content of those articles. With regard to the US, which is not a party to Kyoto or UNCLOS, it might be argued that it is bound by customary law to apply internationally agreed standards on CO₂ reductions in order to give effect to the obligation to protect the marine environment and other States from pollution ⁽³⁰⁾. But the obvious difficulty is that there are no such internationally agreed standards for the US. Developed State parties to Kyoto have different percentage reductions targets, and in some cases they are permitted to increase emissions, so taking Kyoto as a standard of diligence for non-parties simply begs the question — what standard and for whom?

We might argue that compliance with Kyoto is not enough to satisfy the requirements of UNCLOS Part XII — that the two agreements are wholly unrelated, and that UNCLOS is the more demand-

⁽²⁹⁾ 1982 UNCLOS, Article 286; *Barbados v Trinidad & Tobago* (2006) XXVII RIAA 149, para 198. See also *Case Concerning Application of the International Convention on the Elimination of All Forms of Racial Discrimination (Georgia v Russian Federation), Preliminary Objections*, 2011 ICJ Reports, paras. 157-9; *Questions relating to the obligation to prosecute or extradite (Belgium v Senegal)*, 2012 ICJ Reports, paras. 54-8.

⁽³⁰⁾ In other contexts the US has accepted that UNCLOS reflects the customary international law of the sea, by which it is bound: see e.g. the US Presidential Proclamation of 1983 dealing with the EEZ.

ing, especially if interpreted by reference to the precautionary approach and the duty of due diligence referred to earlier. This is an attractive argument precisely because it would set a common higher standard for CO₂ emissions reductions by all parties and would address the obvious inadequacy of the Kyoto emissions reduction commitments. Marine pollution will worsen even if every party complies with Kyoto in full, since GHG emissions overall will still continue to rise — they will simply do so less quickly. If the evidence of serious or irreversible harm to the marine environment is good enough then surely we could say that stronger precautionary measures must not be postponed?

Attractive though this may sound, the counter-arguments are considerably easier to make. There is firstly the *lex specialis* problem. Can it plausibly be claimed that UNCLOS regulates climate change impacts on the oceans in splendid isolation from Kyoto? Other marine pollution agreements are directly relevant to the interpretation and application of Part XII obligations, including the 1973/78 MARPOL Convention and the London Dumping Convention. Why should Kyoto be different? The argument that compliance with agreed standards of pollution control (such as Kyoto) is not enough to satisfy the more general duty of due diligence has been tried and, so far, it has not been successful. Ireland made precisely that argument, based on UNCLOS, in the *Mox Plant Case* ⁽³¹⁾. The point was never decided for jurisdictional reasons, but Ireland's case received no support from the European Commission whose job it is to enforce European treaties against Member States ⁽³²⁾. More recently, Argentina made a similar argument unsuccessfully before

⁽³¹⁾ *Mox Plant Arbitration* (2003) PCA.

⁽³²⁾ As the ECJ subsequently made clear, that court had exclusive jurisdiction over a dispute involving two EC member states and a treaty to which the EC is a party and in respect of which it has competence: Ireland had thus violated the duty of co-operation under EC law by bringing Annex VII proceedings. See *Commission of the European Communities v. Ireland*, Case-459/03, 30 May 2006.

the ICJ in the *Pulp Mills Case* ⁽³³⁾. Both developed and developing State parties would undoubtedly point to Article 193 of UNCLOS, which refers to their 'sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.' This would be interpreted as a reference to the right to sustainable development, in accordance with the case law of the ICJ ⁽³⁴⁾. Fundamental to the ICJ's case law is the balancing of interests that must take place when environmental matters are involved.

Taking these decisions into account, and the two previous points, it seems very likely that any tribunal would view reduction of GHG emissions as an exercise in balancing continued economic development against environmental protection, and that it would be reluctant to require more of States than they have agreed to under Kyoto, or under Article 2 of the UNFCCC, which refers to enabling 'economic development to proceed in a sustainable manner.' This approach would not be helpful to States trying to argue that compliance with Kyoto is insufficient to fulfil UNCLOS obligations.

4.2. Copenhagen, Cancun and Durban negotiations

The Copenhagen Accord adopted as a COP decision at Cancun make important changes to the UNFCCC/Kyoto regime. First there is now a clear target: 'reducing global greenhouse gas emissions so as to hold the increase in global average temperature below 2.°C above pre-industrial levels'. Second, while the principle of common but differentiated responsibility has not been repudiated, the terms of the

⁽³³⁾ (2010) ICJ Reports. Argentina's argument applied to obligations under the 1975 Statute of the River Uruguay.

⁽³⁴⁾ *Gabčíkovo-Nagymaros Dam Case* (1997) ICJ Reports 7, para. 140; *Iron Rhine Railway Arbitration* (2005) PCA, paras. 58-9; *Pulp Mills Case (Provisional Measures)(Argentina v Uruguay)* (2006) ICJ Reports, para. 80; *Pulp Mills Case (Merits)* (2010) ICJ Reports, para. 177.

engagement between developed and developing economies have been subtly and significantly changed. Developed States have undertaken to make additional reductions in GHG emissions by the amount indicated by them as part of the Copenhagen Accord ⁽³⁵⁾. But the more important departure from Kyoto is that developing State parties, including China, have for the first time accepted a commitment to reduce their own emissions by taking ‘nationally appropriate mitigation actions.’ This is less precise than the commitments made by Annex I parties, but it is more than non-Annex I parties are required to do by Kyoto. To that extent common but differentiated responsibility no longer means no emissions reductions by developing States: it means a commitment to different levels of reduction at different speeds ⁽³⁶⁾. As Rajamani explains, ‘symmetry rather than differentiation is intended to be the central organizing principle of the future climate regime’ ⁽³⁷⁾.

Thirdly, and equally importantly, the parties agreed ‘to establish a process for international assessment of emissions and removals related to quantified, economy-wide emissions reductions targets in the Sub-

⁽³⁵⁾ Among the more important but heavily conditional GHG emissions reduction ‘commitments’ are the following: Australia: 5 per cent unconditionally or 25 per cent by 2020 if further agreement; Belarus: 5-10 per cent if access to technology etc; Canada: 17 per cent aligned with US if legislation enacted; EU: 20 per cent unconditionally or 30 per cent conditionally; Japan: 25 per cent if comprehensive agreement; Russia: No specific target — range of reductions ‘will depend on’ various conditions; Ukraine: 20 per cent, if agreement among Annex I parties; USA: ‘In the range of’ 17 per cent against a base year of 2005, subject to legislation (which has not been passed).

⁽³⁶⁾ Commitments include: China: 40-50 per cent per unit of GDP by 2020, and an increase in forests and non-fossil fuels; Brazil: 36-38 per cent by 2020 through reduced deforestation, new farming practices, energy efficiency and alternative fuels; India: 20-25 per cent voluntary reduction by 2020 (base year 2005); South Africa: 34 per cent reduction by 2020 and 42 per cent by 2025, depending on financial support/technology transfer etc and the conclusion of a binding agreement.

⁽³⁷⁾ Rajamani, ‘The Durban Platform for Enhanced Action and the Future of the Climate Regime,’ (2012) 61 *ICLQ* 501, at 502. See also Morgan, ‘The emerging post-Cancun climate regime’, in Brunnée, Doelle and Rajamani (eds), *Promoting Compliance in an Evolving Climate Regime* (Cambridge, 2012), 17.

sidiary Body for Implementation, taking into account national circumstances, in a rigorous, robust and transparent manner, with a view to promoting comparability and building confidence.’ Put simply, there will now be international monitoring and verification of national commitments to reduce GHG emissions. This could be the most important achievement at Cancun since it should provide some mechanism for ensuring that all parties comply with what has been agreed. At the same time, however, others have noted that while “A relatively strong compliance system is a central element of the current climate regime,...it may not remain so in the future”⁽³⁸⁾.

The Durban conference has finally moved the negotiating process back to the question what happens after the current Kyoto Protocol emissions reduction period expires later this year. There are three important decisions. First, the parties agreed to a second Kyoto commitment period, but without Japan, Russia and Canada. Secondly, they initiated the negotiation of a “protocol, another legal instrument or an agreed outcome with legal force” applicable to all Parties to the Convention. Thirdly, the gap between commitments made and commitments needed to meet the 2°C target would be addressed by further negotiations in the years before the new agreement comes into force. The key question continues to be whether China and the US will do more to drive down domestic emissions much faster than at present.

Do the decisions reached at Copenhagen, Cancun and Durban change the position under UNCLOS? It seems unlikely that they do so at present. None of the ‘commitments’ made in any of these venues is binding on States, and they are lacking in the kind of precision that would normally be necessary in order to show that new international standards for preventing marine pollution have been agreed. The most that might be said is that there is now consensus on holding the global

⁽³⁸⁾ See generally Brunnée, Doelle and Rajamani (eds), *Promoting Compliance in an Evolving Climate Regime* (Cambridge, 2012), 9.

temperature increase to 2.°C as the agreed long-term target, and that measures must be taken under UNCLOS to meet that target in respect of the marine environment. Much will depend at this point on how far — and whether — States set about implementing the Copenhagen/Cancun/Durban Accords. Could UNCLOS Article 192 then be interpreted by reference to the precautionary approach and these new commitments in order to require parties to take measures to prevent a temperature rise of more than 2.°c? Possibly.

5. ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND CLIMATE CHANGE

An EIA is fundamental to any regulatory system which seeks to identify environmental risk, integrate environmental concerns into development projects and promote sustainable development. It has the potential to place some restraints on policies that may exacerbate climate change. Should the potential greenhouse gas emissions of large industrial or energy projects be the subject of an EIA if they are likely to contribute to global warming and cause damage to the marine environment? In principle there seems no reason why not and some states include climate change impacts in their EIA process where appropriate⁽³⁹⁾. EIA in international law is normally required for planned ‘activities’ or ‘projects’ that are likely to cause significant transboundary harm⁽⁴⁰⁾. Article 206 of the 1982 UNCLOS specifically requires parties to assess the potential for ‘significant and harmful changes to the marine environment’ of activities under their jurisdiction or control. Article 206 has been construed broadly, including “activities with an impact on the

⁽³⁹⁾ E.g. Canada, on which see Craik, *The International Law of EIA* (Cambridge, 2008), 212-216.

⁽⁴⁰⁾ 1991 Convention on EIA in a Transboundary Context, Art. 2(3); 1987 UNEP Goals and Principles of Environmental Impact Assessment, Principle 1; ILC, 2001 Articles on Transboundary Harm, Arts. 1, 2(a), 7; *Pulp Mills on the River Uruguay Case* (2010) ICJ Reports, paras. 204-5.

environment in an area beyond the limits of national jurisdiction”; the ICJ’s references to “shared resources”, it has been suggested, may also apply to resources that are the common heritage of mankind ⁽⁴¹⁾.

However, the 1991 Convention on EIA in a Transboundary Context defines transboundary impact as ‘any impact, *not exclusively of a global nature*, within an area under the jurisdiction of a party...’⁽⁴²⁾. Does this exclude GHG emissions which contribute to global warming? Possibly, but in addition to their impact on global temperatures, GHG emissions are especially likely to cause transboundary harm in states that are low-lying and vulnerable to sea-level rise, acidification of the oceans, and loss of marine productivity. Here the impact is arguably not ‘exclusively of a global nature’ but specific to those particular states ⁽⁴³⁾. In any event, whatever the 1991 EIA Convention may say, there seems no reason to read Article 206 of the 1982 UNCLOS as excluding GHG emitting activities from the obligation to carry out an EIA for potential impacts on the marine environment ⁽⁴⁴⁾.

EIA of this kind embraces the licensing or approval of industrial, energy and transport undertakings, *inter alia* ⁽⁴⁵⁾, but would not cover plans or policies of a more general kind — whether to use coal or oil for power generation, for example. However, Article 4(1)(f) of the UNFCCC adopts a rather broader perspective, requiring parties to take

⁽⁴¹⁾ See *Advisory Opinion on Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, 2011 ITLOS Seabed Disputes Chamber, paras. 145-50.

⁽⁴²⁾ 1991 Convention on EIA, Article 1(viii). The 2003 Protocol on Strategic Environmental Assessment contains no comparable limitation: see Article 10.

⁽⁴³⁾ In 2010 Micronesia made representations to the Czech Republic concerning an EIA for a lignite power station: see Rayfuse and Scott (eds), *op.cit.*, 336-7.

⁽⁴⁴⁾ For a review of other precedents see CBD, Background on the Development of Voluntary Guidelines for the Consideration of Biodiversity in Environmental Impact Assessments and Strategic Environmental Assessments in Marine and Coastal Areas, UNEP/CBD/SBSTTA/16/INF/16, 11 April 2012.

⁽⁴⁵⁾ See the activities listed in the 1991 Convention on EIA, Annex 1.

climate change into account when formulating ‘social, economic and environmental policies and actions’. It envisages, inter alia, impact assessments ‘determined nationally.’ In effect this is a reference to ‘strategic environmental assessment’ (SEA). SEA applicable to policies and plans has been developed in some of the more advanced jurisdictions, including the EU ⁽⁴⁶⁾. The US has, for example, subjected free trade agreements to an EIA ⁽⁴⁷⁾. Article 2(7) of the 1991 Convention on EIA in a Transboundary Context provides for parties to ‘endeavour’ to apply EIA to ‘policies, plans and programmes’, but more importantly a 2003 Protocol on Strategic Environmental Assessment has significantly broadened the obligations of states parties in this respect ⁽⁴⁸⁾. Unlike the 1991 Convention, the protocol is not limited to transboundary effects, and it also requires parties to promote SEA in international organisations and ‘decision-making processes’ (presumably treaty conferences) ⁽⁴⁹⁾. It applies in full only to ‘plans and programmes,’ but ‘policies and legislation’ are covered to a more limited extent ⁽⁵⁰⁾. Article 4 requires an SEA for plans and programmes relating inter alia to energy, forestry, and industry, so its potential relevance to climate change is obvious. Article 206 of UNCLOS makes no reference to SEA, but taken together with the UNFCCC Article 4(1)(f) there is a good case for saying that any

⁽⁴⁶⁾ Directive 2001/42/EC, OJ L197/30, on which see Marsden, ‘The Espoo Convention and SEA in the EU’ (2011) 20 *RECIEL* 267. In *R. (ex parte Greenpeace Ltd) v Secretary of State for Trade and Industry* [2007] EWHC 311 the UK’s plans for nuclear power were successfully challenged. See generally Sadler and Veerheem, *Strategic Environmental Assessment: Status, Challenges and Future Directions* (Netherlands Ministry of Housing and Environment, 1996); Therivel and Partidario, *The Practice of Strategic Environmental Assessment* (London, 1996); Therivel, Wilson et al, *Strategic Environmental Assessment* (London, 1992).

⁽⁴⁷⁾ US Executive Order 13141 (1999) 39 *ILM* (2000) 766. Canada also conducted an EIA of the North American Free Trade Agreement.

⁽⁴⁸⁾ See De Mulder, ‘The Protocol on SEA: A Matter of Good Governance’ (2011) 20 *RECIEL* 232.

⁽⁴⁹⁾ Articles 3(5) and 4.

⁽⁵⁰⁾ Article 13. See UNECE, *Resource Manual to Support Application of the Protocol on SEA* (Geneva, 2012).

SEA which is undertaken should include assessment of potential impacts on the marine environment where relevant.

6. CLIMATE CHANGE LITIGATION UNDER UNCLOS

Assuming there has been a preliminary exchange of views ⁽⁵¹⁾, can we then bring a climate change case within the dispute settlement procedures of Part XV of UNCLOS? There are several problems, including the difficulty of suing multiple respondents within the constraints of Annex VII ⁽⁵²⁾. However, jurisdiction is the most significant obstacle. Compulsory jurisdiction under UNCLOS Part XV is residual, in the sense that it defers to other options the parties have chosen. A multi-lateral or bilateral agreement which provides for unilateral resort to a procedure with a binding outcome will exclude Part XV (Art. 282). The parties to a dispute may also agree ad hoc on some other peaceful means of settlement (Art. 281), and Part XV will then apply only if no settlement is reached and the parties have not agreed to exclude recourse to Part XV. The Convention further provides (Art. 284) that one party to a dispute may invite the other to agree to conciliation instead of any other Part XV procedures. These articles of the convention have so far proved to be the main obstacles to jurisdiction under Part XV. They pose the obvious question how UNCLOS dispute settlement interacts with the dispute settlement provisions of the UNFCCC and the Kyoto Protocol.

Negotiation and non-binding conciliation are the only compulsory procedures envisaged by Article 14 of the UNFCCC and Article 19 of the Kyoto Protocol, unless both parties to a dispute have declared their acceptance of ICJ jurisdiction or arbitration. However, the non-com-

⁽⁵¹⁾ 1982 UNCLOS, Article 286, on which see n. 28 above.

⁽⁵²⁾ Annex VII makes no provision for joining several parties: unless the respondents agreed otherwise, each would have to sued separately.

pliance procedure adopted under Article 18 of the Kyoto Protocol involves unilateral resort to a procedure with an outcome that appears at present to be binding. It is designed to ‘facilitate, promote and enforce compliance’ with commitments under the Protocol⁽⁵³⁾. An obvious question is whether the existence of these procedures for dispute settlement under the UNFCCC and Kyoto may bring one or more of the above UNCLOS provisions into play and deprive an UNCLOS tribunal of jurisdiction. This is not an easy question to answer, because the UNCLOS case law is confused. In summary, the problems are as follows:

- a. Article 282: It could be argued that the existence of an enforcement procedure under Article 18 of the Kyoto Protocol amounts to “a procedure that entails a binding decision.”
- b. Article 281: It could be argued, following the *Bluefin Tuna Arbitration*, that the parties to Kyoto have agreed to an alternative non-binding procedure under Article 19 of Kyoto without further recourse to Part XV of UNCLOS.
- c. Article 284: It could be argued that the parties have agreed to and must use the conciliation procedure provided for in the UNFCCC and Kyoto.

The argument against these conclusions is that Articles 281-2 and 284 apply only to UNCLOS disputes, not to Kyoto disputes, and that whatever Kyoto and the UNFCCC have to say about disputes is irrelevant. That begs the question whether a case remains an UNCLOS case even when it alleges non-compliance with Kyoto or later accords. A tribunal that wants to hear the case will doubtless say that it is a dispute concerning interpretation or application of the 1982 Convention. That would be in accordance with dicta in the *Mox Plant (Provisional Measures)*

⁽⁵³⁾ Kyoto Protocol, Decision 27/CMP.1: Procedures and Mechanisms Relating to Compliance, *1st MoP*, FCCC/KP/CMP/2005/8/Add.3 (2006).

Case⁽⁵⁴⁾. A tribunal that wants to dismiss the case will follow the *Bluefin Tuna Arbitration*⁽⁵⁵⁾ and say that it involves non-UNCLOS elements and must be dismissed because the parties have agreed to use UNFCCC and Kyoto procedures.

Most commentators regard *Bluefin Tuna* as wrongly decided, and that seems to be the view of the ITLOS, but it is impossible to say with certainty how the question would play out in this context. At worst, a tribunal could rule that it lacks jurisdiction entirely. At best, it will disregard the existence of UNFCCC and Kyoto procedures and hear the case on the basis that it has been brought under UNCLOS and involves only the application of UNCLOS, broadly interpreted. Much will depend on the strength of the case. Courts do not usually throw out good cases on jurisdictional grounds. They are very likely to throw out a bad one.

7. CONCLUSIONS

The relationship between UNCLOS and climate change is not clear-cut, despite its obvious importance. Nevertheless, it is doubtful whether viewing climate change through the law of the marine environment greatly alters the overall picture. At best it provides a vehicle for compulsory dispute settlement notably lacking in the UNFCCC regime. This is not to argue that the UNFCCC is a self-contained regime separate from UNCLOS. On the contrary, the problem is precisely the inter-relationship between the two. It is characteristic of most environmental regulatory treaties that they build upon the due diligence obliga-

⁽⁵⁴⁾ *Mox Plant (Provisional Measures)* (2001) ITLOS No.10, para 48; *Mox Plant Arbitration* (2003) PCA, para. 18.

⁽⁵⁵⁾ *Southern Bluefin Tuna Arbitration* (2000) 39 ILM 1359. See D.A. Colson and P. Hoyle, Satisfying the Procedural Prerequisites to the Compulsory Dispute Settlement Mechanisms of the 1982 LOSC (2003) 34 *Ocean Dev & IL* 59; C. Romano, The Southern Bluefin Tuna Dispute (2001) 32 *Ocean Dev & IL* 313; B.H. Oxman, Complementary Agreements and Compulsory Jurisdiction (2001) 95 *AJIL* 277.

tion and require parties to take internationally agreed measures or apply international rules and standards ⁽⁵⁶⁾. Once those measures, rules or standards are agreed it is very difficult to sustain the argument that the due diligence obligation has some separate and if necessary stronger character. Due diligence inevitably represents a compromise between what is possible and what is economically acceptable — a compromise fatally reflected in the UNFCCC and Kyoto. Reformulating that problem in terms of the precautionary principle or approach does not change things. The UNFCCC already acknowledges the applicability of the precautionary approach ⁽⁵⁷⁾, but that has not resulted in States going any faster or any further. They can legitimately say that what has been agreed represents their adoption of a precautionary approach. Is any international court likely to disagree?

In this context there really is no useful alternative to negotiation, except at the margins. But those negotiations do not have to take place only in the UNFCCC process. Rather, the important lesson is that climate change should be on the negotiating agenda of all international institutions whose mandate is affected by it. It is a human rights issue. It is also a trade issue. It is an issue for IMO, FAO, and convention secretariats responsible for protecting the marine environment, and so on. These institutions and their various intergovernmental and civil society processes can and should be mobilised to pressure the key states into taking more effective action to deliver on the promises they made at Cancun and Durban. In particular, the UN Covenant on Economic, Social and Cultural Rights has obvious relevance to climate change. More needs to be heard from that perspective. The same can be said about the UN Convention on Biological Diversity.

Koskenniemi has drawn attention to the potential for fragmentation in international law and policy arising from the competing mandates of

⁽⁵⁶⁾ See for example 1982 UNCLOS, Articles 194, 207-212; 1994 Convention on Nuclear Safety.

⁽⁵⁷⁾ UNFCCC, Art. 3(3).

international institutions ⁽⁵⁸⁾. But when an issue such as climate change has over-arching implications for a range of different mandates, it seems wiser to emphasise instead the potential for coordination and more effective action so that the international system as a whole is more comprehensively engaged. Put another way, climate change is too serious a problem to leave to the UNFCCC process.

⁽⁵⁸⁾ International Legislation Today: Limits and Possibilities, 23 *Wisconsin ILJ* (2002) 61.

CAN WE PROTECT HIGH SEAS ECOSYSTEMS UNDER CURRENT INTERNATIONAL LAW? LESSONS FROM THE SARGASSO SEA PROJECT

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Content: 1. *Introduction.* 2. *The ABNJ Regime envisaged by Part XII of the 1982 Convention.* 3. *Governance in ABNJ: the Debate with the UN General Assembly.* 4. *The Sargasso Sea.* 5. *The Sargasso Sea Alliance.* 6. *Relevant International Organizations;* 6.1. *United Nations;* 6.2. *Convention on Biological Diversity;* 6.3. *North West Atlantic Fisheries Organisation;* 6.4. *International Commission for the Conservation of Atlantic Tunas;* 6.5. *International Maritime Organisation;* 6.6. *International Seabed Authority.* 7. *Other Conventional regimes;* 7.1. *Western Central Atlantic Fishery Commission;* 7.2. *Convention on the Conservation of Migratory Species;* 7.3. *The World Heritage Con-*

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vention; 7.4. *Inter-American Convention for the Protection and Conservation of Sea Turtles*; 7.5. *Related Regional Sea Treaties*. 8. *The Hamilton Declaration on Collaboration for the Conservation of the Sargasso Sea*. 9. *Conclusions*

1. INTRODUCTION

Nearly 50% of the earth surface is covered by marine areas beyond national jurisdiction. That is, areas that are beyond the limits of the Exclusive Economic Zones recognized by the 1982 LOSC, and of the continental shelf which the Convention recognizes may extend beyond 200 nautical miles to its outer geomorphological limits ⁽¹⁾. Since the finalization of the 1982 Convention, human activities in the ocean and in ABNJ have burgeoned, as have their impacts ⁽²⁾. These impacts are not simply the result of new activities but also of the unprecedented increase of existing activities such as maritime transport, the laying of submarine cables (for internet connections), interest in seabed exploration and mining, and, of course, fishing.

In the thirty years since the conclusion of the 1982 UN Law of the Sea Convention it has become clear that the cooperative regime for high seas and international seabed area (combined referred to as Areas beyond National Jurisdiction (ABNJ) which the 1982 Convention seems to have envisaged has not materialised. This paper looks at the limitations of the current ocean governance regime, identifies important issues that need to be addressed more specifically in ABNJ — such as basic principles of ocean governance, the conservation and sustainable use of marine biological diversity, environmental impact assessment for new activities and the establishment of marine protected areas. It looks at developments within the UN system, such as the establishment of the

⁽¹⁾ Art. 76, LOSC.

⁽²⁾ B. Halpern *et al.*, “A Global Map of Human Impact on Marine Ecosystems” (2008) Vol. 319, no. 5865, *Science*, pp. 948-952 (15 February 2008). E. Ramirez-Llodra *et al.*, “Man and the Last Great Wilderness: Human Impacts on the Deep Sea” (2011) 6(7) *PLoS one* e22588.

Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (known as the UN Working Group on BBNJ) and proposals for a new Implementation Agreement to the 1982 Convention which were discussed also at the UN Conference on Sustainable Development (UNCSD or Rio +20) in Rio de Janeiro in June 2012. It then looks in detail at the Sargasso Sea project — which is designed to see what protection measures can be put in place for a unique ecosystem in ABNJ using existing international institutions without waiting for the UN to take more comprehensive action.

2. THE ABNJ REGIME ENVISAGED BY PART XII OF THE 1982 CONVENTION

Part VII of the 1982 Convention covers the rights and duties of states on the high seas. Article 87 of the 1982 Convention provides for “Freedom of the high seas” making it clear that the high seas are open to all states, whether coastal or landlocked. It then itemises six specific freedoms, namely: freedom of navigation; freedom of overflight; freedom to lay submarine cables and pipelines, subject to Part VI ⁽³⁾; freedom to construct artificial islands and other installations permitted under international law, subject to Part VI; freedom of fishing subject to the considerations laid down in section 2 ⁽⁴⁾; and freedom of scientific research, subject to Parts VI and XIII ⁽⁵⁾.

Article 87(1) also makes the point reiterated in detail in other provisions that these freedoms are not unconditional freedoms. They may only be exercised “under the conditions laid down by this Convention and by other rules of international law.” Article 87(2) reinforces the point that these freedoms “shall be exercised by all States with due regard

(3) On the Continental Shelf.

(4) Articles 116-120.

(5) On Marine Scientific Research.

for the interests of other States in their exercise of the freedom of the seas, and also with due regard for the rights under the Convention with respect to the Area.”

Having said that, the only specific additional restrictions that can be made to the exercise of these rights are by international agreement that would be binding only on the states which are party to them. Of course, by Part XII the Convention does impose general obligations in relation to the Protection and Preservation of the Marine Environment, which of course extend to the high seas and international seabed area also. Article 192 obliges all states to “protect and preserve the marine environment” ⁽⁶⁾, and Article 194.5 specifies that measures under Part XII are to include “those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life” ⁽⁷⁾. It also obliges states by Article 197 to “cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.”

The Convention also of course in Part XI establishes an international regime for exploration and exploitation of seabed mineral resources in “the Area” overseen by the International Seabed Authority (ISA) ⁽⁸⁾. It designates the Area and its mineral resources as the Common Heritage of Mankind, and charges the ISA to administer these resources for the benefit of mankind. In addition to provisions for the sharing of financial and other economic benefits from mining activities, it also envisages the

⁽⁶⁾ Article 192 LOSC.

⁽⁷⁾ Article 194(5) LOSC.

⁽⁸⁾ Under Art. 133, “resources” means “all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed including polymetallic nodules.”

development of detailed rules and regulations for the prevention of damage from mineral activities and for the conservation of flora and fauna of the seabed ⁽⁹⁾. However these rules do not apply to activities such as deep sea bottom fishing, marine scientific research, cable-laying or potential new activities such as ocean fertilization and other forms of marine geo-engineering.

A range of other global and regional treaties do regulate specific activities which take place in ABNJ, such as fishing, dumping and navigation. But of course these detailed sectoral treaties are only binding on their parties. So, the problem of proper governance in ABNJ is exacerbated by the patchwork of treaties that exists. A detailed review of existing organizations with jurisdiction over activities in ABNJ shows that there are serious gaps in coverage ⁽¹⁰⁾. In relation to sectoral activities these gaps are both functional as well as geographic. This is not necessarily a defect in the basic Convention regime itself, but it is a serious defect in the implementation of the Convention.

In fact the *lacunae* in implementation are vividly shown by the provisions relating to the monitoring and reporting of potentially polluting activities. These provisions, which are quite rigorous, are based entirely on good faith implementation by state parties; there is no inter-

⁽⁹⁾ Article 145.

⁽¹⁰⁾ K. Gjerde, H. Dotinga, S. Hart, E.J. Molenaar, R. Rayfuse, R. Warner, *Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction* (IUCN, Gland, Switzerland, (2008) (available at http://cmsdata.iucn.org/downloads/iucn_marine_paper_1_2.pdf). See also, David Freestone, "Problems of High Seas Governance", in D. Vidas and P.J. Schei (eds.) *The World Ocean in Globalisation: Challenges and Responses* (Martinus Nijhoff Publishers, Leiden, 2011) pp. 99-130 and in the same volume K. Gjerde, "High Seas Fisheries Governance: Prospects and Challenges in the 21st Century," pp. 221-232. For an excellent wider discussion of the ABNJ legal regime see Robin Warner, *Protecting the Oceans beyond National Jurisdiction: Strengthening the International Law Framework* (Martinus Nijhoff Publishers, 2009).

national process for receiving or reviewing these reports or even for publicizing them. The Convention provides as follows:

Art. 204. States shall keep under surveillance the effects of any activities which they permit or in which they engage in order to determine whether these activities are likely to pollute the marine environment.

Art. 205. States shall publish reports ...or provide such reports to the competent international organizations, [to be] available to all States.

Art. 206. When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments...

Although international permitting of activities does take place on the basis of prior environmental impact assessment in some areas of the ocean — such as the Southern Ocean under the Madrid Protocol, or for some activities such as ocean dumping, this is very much the exception rather than the rule ⁽¹¹⁾. The recent decisions of the London Convention and Protocol establishing an assessment framework in relation to ocean fertilization also represent an important step forward on this front ⁽¹²⁾. Verlaan ⁽¹³⁾ reports that “in 2008 the London Convention

⁽¹¹⁾ See Robin Warner and Simon Marsden, *Transboundary Environmental Governance: Inland, Coastal and Marine Perspectives* (Ashgate, 2012).

⁽¹²⁾ See Philomène Verlaan, “Marine Scientific Research: its Potential Contribution to Achieving Responsible High Seas Governance”, in David Freestone (ed.) *The 1982 Law of the Sea Convention at 30: Successes, Challenges and New Agendas* (Nijhoff, 2013) 131-138, and in (2012) 27 *IJMCL* 805-812.

⁽¹³⁾ In (2012) 27 *IJMCL* 805-812, pp. 807-808 — reproduced with footnotes slightly abridged.

and London Protocol parties defined⁽¹⁴⁾ and essentially prohibited Ocean Fertilization (OF)⁽¹⁵⁾, except for ... ‘legitimate scientific research’⁽¹⁶⁾. ‘Legitimate scientific research’ (LSR) is defined as ‘those [scientific research] proposals [for OF] that have been assessed and found acceptable under the Assessment Framework’⁽¹⁷⁾. The Assessment Framework, developed by the LC/LP joint Scientific Groups and adopted by the parties in 2010⁽¹⁸⁾, is a ‘tool... to determine if the proposed [OF] activity constitutes [LSR]...’⁽¹⁹⁾. To constitute LSR, the proposed OF activity must first demonstrate “proper scientific attributes”⁽²⁰⁾. Discussions are now underway to amend the Annex to the London Protocol to include mandatory provisions for assessment of marine geo-engineering research proposals, and to set up a process to add other forms of marine geoengineering to the Annex, but this is far from certain to be approved⁽²¹⁾.

These regulatory defects are similarly important in relation to emerging new concerns. Recent research by the Census of Marine Life and other projects has highlighted the huge impact that human activities have already had on marine biodiversity and the importance which biodiversity at all trophic levels plays in maintaining ocean ecosystem health and functions⁽²²⁾.

⁽¹⁴⁾ Defined as “... any activity undertaken by humans with the principal intention of stimulating primary productivity in the ocean....” Res. LC-LP.1(2008) para. 2. Available at: <http://www.londonprotocol.imo.org>.

⁽¹⁵⁾ Res. LC-LP.1 (2008).

⁽¹⁶⁾ 12 *Ibid.*, Preamble, last chapeau, and para. 8.

⁽¹⁷⁾ *Ibid.*, para. 7.

⁽¹⁸⁾ Res. LC-LP.2(2010), to which the Assessment Framework (AF) is annexed.

⁽¹⁹⁾ AF Part 1, section 1.2.

⁽²⁰⁾ AF Part 1, section 1.3.1.

⁽²¹⁾ C.M.G. Vivian, *Brief Summary of Marine Geoengineering Techniques*, CEFAS, February 2013.

⁽²²⁾ Roberto Danovaro, *et al.*, “Exponential Decline of Deep-Sea Ecosystem Functioning Linked to Benthic Biodiversity Loss” (2008) 18 *Current Biology*, 1-8, (January 8, 2008) and sources at note 2, above.

This research also made it clear that despite the strong and unequivocal obligations to protect the marine environment in the Convention discussed above, there is insufficient attention directed at conservation of marine ecosystems outside areas of national jurisdiction. For example, experience at national level has demonstrated beyond doubt the beneficial effects that the establishment of protected areas has on the consideration of biomass, even though these are often established in the face of strident opposition from user groups — particularly fishermen. General international law, and indeed the Convention itself does not provide a mechanism for the establishment of conservation or other areas on the high seas that would have objective status — so that they would be binding on all states.

An important result of this sectoral approach in treaty regimes applicable to ABNJ is that although the parties to all these treaties must have regard to the sweeping obligation of Art 192 to protect and preserve the marine environment, the modalities by which this is done vary widely from regime to regime. Each sectoral regime has its own distinctive protection mechanisms and assesses differently the factors that need to be taken into account; the result is a plethora of distinct sectoral regimes designed to protect specific areas of the ocean from individual sectoral specific risks. Examples abound, with a corresponding welter of acronyms: the IMO MARPOL 1973/78 Convention envisages the establishment of “Special Areas” of the ocean, in which more rigorous regimes apply for the discharge of various substances from vessels; IMO also envisages the designation of Particularly Sensitive Sea Areas (PSSAs) to denote areas of particular vulnerability to shipping activities ⁽²³⁾, although none have to date been established in the high seas. Regional Fishery Management Bodies envisage protection measures, including closing areas, for fishery management reasons. As a result of pressure

⁽²³⁾ IMO Assembly Resolution A.982(24) *Revised guidelines for the identification and designation of Particularly Sensitive Sea Areas (PSSAs)*. Further details at: <http://www.imo.org/OurWork/Environment/PollutionPrevention/PSSAs/Pages/Default.aspx>.

from the UN General Assembly, States and RFMOs were called upon to protect marine biodiversity, including “vulnerable marine ecosystems” from significant adverse impacts of seabed mining. In August 2008, FAO’s Committee on Fisheries (COFI) adopted International Guidelines for the Management of Deep-Sea Fisheries in the High Seas which provide criteria for identifying “Vulnerable Marine Ecosystems (VMEs)” and outline procedures for preventing significant adverse impacts from the impacts of bottom trawling including closure of areas and prior environmental impact assessments. However UNGA reviews recognize that despite some progress, much work remains to be done to effectively implement these procedures. RFMOs have yet to adopt similar provisions with respect to vulnerable marine species in the water column above.

Various Protocols to the Regional Seas treaties envisage the establishment of Specially Protected Areas (SPAs) ⁽²⁴⁾, and in the Mediterranean, SPAMIs. The International Seabed Authority (ISA) has also recently recognised Areas of Particular Environmental Interest (APEIs) in relation to work in the Clarion-Clipperton Zone in the Pacific ⁽²⁵⁾. In addition, over the past few years, the Parties to the Convention on Biological

⁽²⁴⁾ The first such Protocol was the 1982 Protocol on Specially Protected Areas to the 1976 Barcelona Convention for the Protection of the Mediterranean Sea against Pollution (see below n. 31). This was revised in 1995 to reflect the 1992 Biodiversity Convention and the more cutting edge approach of the 1990 Kingston Protocol on Specially Protected Areas and Wildlife (SPAW) to the Cartagena Convention, for text see David Freestone, “Specially Protected Areas and Wildlife in the Caribbean” (1990) 5 *International Journal of Estuarine and Coastal Law* 362-382. East Africa (1985) and the South East Pacific (1989) also have such Protocols.

⁽²⁵⁾ When ISA Council approved the environmental management plan for the Clarion-Clipperton Zone, it decided that “... for a period of five years from the date of the present decision or until further review by the Legal and Technical Commission or the Council, no application for approval of a plan of work for exploration or exploitation should be granted in areas of particular environmental interest referred to in the annex;” (26 July 2012, Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone. Doc ISBA/18/C/22).

Diversity have developed a process to describe Ecologically or Biologically Significant Areas (EBSAs) to inform and advise sectoral managers. This process is discussed in more detail below ⁽²⁶⁾.

While all these initiatives are to be welcomed, existing measures are still essentially mono-sectoral designed to protect from specific sectoral threats. There is still no mechanism to designate an area of the high seas as a marine protected area, allowing management planning for such areas and protections from a suite of threats or from cumulative threats. Or even to preserve important marine ecosystems in a precautionary way for future generations — in the way that we take for granted on land. Given that the states participating in these sectoral processes are usually the same, the “silo” or “stovepipe” approach of national governments, where different ministries often have difficulty liaising with each other, permeates also the international arena. Meetings of fisheries management bodies attract a different epistemic community from that attending IMO meetings, or meetings of the ISA bodies. They each prefer their own brand of protection measures, regulating a single issue such as fishing, marine discharges or seabed prospecting, and exercising firm, but different, controls on the way that these restrictions are applied. This is not the sort situation which Art 197 of the Convention with its general instruction to co-operate seems to have envisaged.

Having said that, some progress has been made at a regional level in the establishment of marine protected areas in areas beyond national jurisdiction that come within the jurisdictional areas of regional environment agreements. In 2002, the Johannesburg Plan of Implementation, agreed at the World Summit on Sustainable Development (WSSD), set out the goal of establishing a network of representative marine protected areas by 2012 ⁽²⁷⁾. Furthermore, as Scott reminds us, “States party to the

⁽²⁶⁾ Text at note 50 below.

⁽²⁷⁾ WSSD, Plan of Implementation (2002) at para. 31(c). www.un.org/esa/sustdev/documents/WSSD_POI_PD/.../POIToc.htm.

1992 Convention on Biological Diversity (CBD) endorsed this strategy in 2004 and, furthermore, included the goal of protecting ten per cent of the world's ecological regions by 2012 within their Strategic Plan”⁽²⁸⁾. In 2010 this was further elaborated in the CBD Aichi Target 11: “By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape”⁽²⁹⁾.

Where regional conventional regimes do envisage the establishment of marine protected areas in high seas areas then there has been some progress — as in the OSPAR region⁽³⁰⁾, the Mediterranean⁽³¹⁾ and the Southern Ocean — where the South Orkney Islands Southern Shelf MPA⁽³²⁾ covers just under 94,000 km² of high seas within which fishing, scientific research related to fishing, and discharges and dumping from

⁽²⁸⁾ CBD COP 7 Decision VII/30 Strategic Plan: future evaluation of progress, Annex II, Goal 1.1, cited Karen Scott, “Conservation on the High Seas: Developing the Concept of the High Seas Marine Protected Areas” (2012) 27 *IJMCL* pp. 849-857, 850.

⁽²⁹⁾ For text see <http://www.cbd.int/sp/targets/rationale/target-11/>

⁽³⁰⁾ The 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) was formed from the merger of the Commissions of the 1972 Oslo Convention and the 1974 Bonn Convention. It entered in force in March 1998 Text at (1993) 32 *ILM* 1072 and at http://www.ospar.org/html_documents/ospar/html/ospar_convention_e_updated_text_2007.pdf.

⁽³¹⁾ Convention for the Protection of the Mediterranean Sea against Pollution, 16 February 1976, 1102 United Nations Treaty Series 27, amended in 1995 and renamed the Convention for the Protection of the Marine Environment and Coastal Region of the Mediterranean (hereinafter Barcelona Convention); Protocol concerning Mediterranean Specially Protected Areas and Biodiversity, 10 June 1995, 2102 United Nations Treaty Series 203, 161.

⁽³²⁾ CM 91-03 (2009) Protection of the South Orkney Islands southern shelf; CCAMLR documents, available from www.ccamlr.org (cited Scott, *ibid.*, 850).

fishing vessels are regulated”⁽³³⁾. In the overwhelming majority of ocean areas beyond national jurisdiction, however there is no such regional framework.

These developments have led to discussions of this issue within the UN General Assembly, where mechanisms to improve the conservation and management of marine biodiversity in ABNJ have been “studied” for nearly ten years.

3. GOVERNANCE IN ABNJ: THE DEBATE WITH THE UN GENERAL ASSEMBLY

In 2004, in order to address the full range of issues particularly related to the conservation of biodiversity in areas beyond national jurisdiction, the UN General Assembly agreed on the recommendation of the UN Informal Consultative Process on the Oceans and the Law of the Sea (UNICPOLOS) to establish an *Ad Hoc* Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (known as the UN or BBNJ Working Group)⁽³⁴⁾. This Working Group held its first meeting in 2006; a second ran from 28 April to 2 May 2008, a third meeting was held in January 2010, a fourth in May 2011, and a fifth in May 2012. Several important proposals have been discussed at these meetings including a European Union proposal for a new implementing agreement to develop a more

⁽³³⁾ 2011 Report of the Workshop on Marine Protected Areas (Brest, France, 29 August-September 2011) at para. 2.2; www.ccamlr.org/pu/e/e_pubs/sr/11/a06.pdf. Cited Scott above, at p. 852, who also cites the Report of the 2007 Workshop on Bioregionalisation of the Southern Ocean reproduced in Annex 9 of the Report of the Twenty-Sixth Meeting of the Scientific Committee for the Conservation of Antarctic Marine Living Resources (SC-CAMLR XXVI) (Hobart, Australia, 22-26 October 2007).

⁽³⁴⁾ For details of the meeting to date see <http://www.un.org/Depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm>.

specific framework to address conservation and sustainable use of marine biodiversity beyond national jurisdiction. Issues highlighted in the discussions have included the absence of a global instrument regulating the establishment and monitoring of marine protected areas in ABNJ (even though protected areas have proven to be extremely effective in maintaining biodiversity in coastal contexts), the absence of comprehensive EIA for new activities in ABNJ, as well as the lack of co-ordination between those international organizations that are charged with regulating specific sectoral activities ⁽³⁵⁾.

Other states have indicated that improved implementation should be the first priority, but have not all provided their views on what might be done to enhance implementation with respect to biodiversity conservation in general. Unfortunately the lively debates on improved governance have been overshadowed by controversy over the future regime for exploitation of marine genetic resources beyond national jurisdiction ⁽³⁶⁾. The G77 and China have argued that the “common heritage of mankind” concept that the LOSC applies to deep seabed minerals ⁽³⁷⁾,

⁽³⁵⁾ It has also been suggested that the international community should reaffirm some of the basic principles that have been agreed in a wide range of existing instruments, including the 1982 Convention, in relation to national activities in ABNJ. At the IUCN 4th World Conservation Congress, in Barcelona on 7 October 2008, IUCN President Valli Moosa of South Africa chaired a plenary session presenting the IUCN “Ten Principles of High Seas Governance.” For a more detailed exposition of these principles and their legal basis see David Freestone, “Principles Applicable to Modern Oceans Governance,” (2008) 23 *IJMCL* pp. 385-391 and David Freestone, “Modern Principles of High Seas Governance: The Legal Underpinnings,” (2009) 39 *International Environmental Policy and Law*, pp. 44-49.

⁽³⁶⁾ For an excellent assessment of the issues and potential of bio-prospecting see D. Leary, M. Vierros, G. Hamon, S. Arico and C. Monagle, “Marine Genetic Resources: A Review of the Scientific and Commercial Interest” (2009) 33 *Marine Policy*, pp. 183-194. A comprehensive analysis of various legal issues involved is found in Part IV, “Marine Genetic Resources and Bio-prospecting”, in D. Vidas (ed.), *Law, Technology and Science for Oceans in Globalisation*, pp. 309-419.

⁽³⁷⁾ See Article 138 LOSC: “The Area and its resources are the common heritage of mankind.” Article 133 LOSC further provides that “resources” means “all solid

should also apply to the living resources of the deep ocean floor, many of which may have important industrial and pharmaceutical potential. They argue that if the drafters of the 1982 Convention had been aware of these resources — rather than simply being aware of the famous “manganese nodules” — then they would doubtless have specifically included these living resources within the deep seabed regime.

The result had been a stalemate in the discussions at the BBNJ Working Group, but at the May 2011 Meeting there was something of a breakthrough. It was agreed that the issues of protection of biodiversity through conservation and management tools such as EIAs and marine protected areas should be linked with issues relating to access and benefit sharing of marine genetic resources, and that:

A process be initiated, by the UNGA, with a view to ensure that the legal framework for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction effectively addresses those issues by identifying gaps and ways forward, including through the implementation of existing instruments and the possible development of a multilateral agreement under UNCLOS; This process would address the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction, in particular, together and as a whole, marine genetic resources, including questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, and environmental impact assessments, capacity-building and the transfer of marine technology ⁽³⁸⁾.

liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules.”

⁽³⁸⁾ Recommendations of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction and Co-Chairs’ summary of discussions UN Doc A/66/119 (30 June 2011). Available on line at <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N11/397/64/PDF/N1139764.pdf?OpenElement>.

This was discussed further at the 2012 BBNJ Working Group meeting ⁽³⁹⁾, and as expected was also discussed at the UN Conference on Sustainable Development (Rio plus 20) in June 2012. The Outcome Document of the Rio Conference, entitled “The Future We Want” ⁽⁴⁰⁾, contained the following commitment:

162. We recognize the importance of the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. We note the ongoing work under the General Assembly of an ad hoc open-ended informal working group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. Building on the work of the ad hoc working group and before the end of the sixty-ninth session of the General Assembly we commit to address, on an urgent basis, the issue of the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, including by taking a decision on the development of an international instrument under the United Nations Convention on the Law of the Sea.

At the time of writing, the future of these discussions is unsure. However, in 2010 the Government of Bermuda took the leadership of an initiative, now called the Sargasso Sea Alliance, to seek protection measures for this iconic open-ocean ecosystem, the majority of which is in ABNJ around the small mid-ocean archipelago of Bermuda. The initiative is designed to use the existing international organisations with sectoral responsibilities for human activities in ABNJ as a demonstration of what can be achieved using existing instruments; it also of course highlights the intrinsic limitations of such an approach. The Sargasso

⁽³⁹⁾ New York, 7-11 May 2012. For Agenda see UN Doc A/AC.276/L.8. (3 April 2012). On line at: <http://daccess-dds-ny.un.org/doc/UNDOC/LTD/N12/282/68/PDF/N1228268.pdf?OpenElement>.

⁽⁴⁰⁾ UN Doc A/RES/66/288.

Sea initiative therefore is an important case study of the strengths and limitations of the existing system of high seas governance.

4. THE SARGASSO SEA

The Sargasso Sea is a 2 million square nautical mile ecosystem in the North Atlantic. The Sea is named for the two species of holopelagic algae which reproduce solely by fragmentation without contact with land (*Sargassum natans* and *Sargassum fluitans*) that accumulate in the North Atlantic Subtropical Gyre where they form into large mats or windrows. The Sargasso Sea is thus the world's only sea without coasts; only the tiny islands of Bermuda have direct coastal frontage. The Sargasso Sea is bounded on all sides by the clockwise flow of major ocean currents: The Gulf Stream and North Atlantic Drift form the western and northern boundaries, the Canary Current forms a more diffuse eastern boundary, and the North Equatorial Current and Antilles Current form the southern boundary. Just as the currents vary, the boundaries of the Sargasso Sea also vary.

The Sargasso Sea was first written about by Christopher Columbus. In September 1492 on his first voyage he recorded "much weed ...in some places so thick that it actually held back the ships" ⁽⁴¹⁾. Nowadays mats as big as those Columbus saw are rare, probably as a

⁽⁴¹⁾ Thursday, 20 September 1492 he recorded in his log that: "Today I changed course for the first time since departing Gomera because the wind was variable and sometimes calm. I first sailed west by north and then WNW, making 21 or 24 miles... The sailors caught a little fish, and we saw much weed of the kind I have already mentioned, even more than before, stretching to the north as far as you can see. In a way this weed comforted the men, since they have concluded that it must come from some nearby land. But at the same time, it caused some of them great apprehension because in some places it was so thick that it actually held back the ships." The following day, Friday, 21 September 1492 he reported "At sunrise we saw so much weed that the sea seemed to be a solid mat, coming from the west." My thanks to Dr William Curry and Professor Brian Lapointe for this reference.

result of increased maritime traffic through the area once the change from sail to motorised propulsion of vessels overcame mariners' fear of their vessels becoming becalmed in the gyre. It seems that this increase in the passage of large vessels does break up the very big mats, which are increasingly rare. Nevertheless, the Sargasso Sea is still a unique ecosystem. The *Sargassum* is home to a range of endemic species and the Sargasso Sea is a major feeding and migration route for a number of threatened and endangered species including sea turtles, humpback and sperm whales, as well as for commercially important tunas and billfish. It is the only place in the world where the catadromous American eel (*Anguilla rostrata*), and European eel (*Anguilla anguilla*) spawn ⁽⁴²⁾.

Bermuda, at the centre of the Sargasso Sea, is an overseas territory of the United Kingdom. It claims a 200-nautical-mile EEZ of some 464,940 sq. km or 179,514 sq. miles ⁽⁴³⁾. Beyond the Bermudian EEZ, however, the remainder of the Sargasso Sea is largely an Area beyond National Jurisdiction (ABNJ) ⁽⁴⁴⁾. There is no regional marine environmental treaty framework (like OSPAR), or regional fisheries agreement (like NEAFC) in place for this part of the Atlantic. There are however a number of wider sectoral treaty regimes governing a wide range of activities in ABNJ which are discussed in detail below.

⁽⁴²⁾ The European eel is protected by EC Regulations. Council Regulation (EC) No. 1100/2007 of 18 September 2007 establishes measures for the recovery of the stock of European eel. OJ 2007 L248/17.

⁽⁴³⁾ UK Hydrographic Office calculation. Dr Tammy Trott, Bermuda Min of Environment and Planning, pers. comm. (on file).

⁽⁴⁴⁾ Depending on what is defined to be the geographical extent of the Sargasso Sea, it can be taken to extend into the EEZs of the United States to the East and the Northern Antillean islands to the south. The Alliance commissioned a new map based on criteria such as ocean current and eddy occurrence, remote sensing of *Sargassum* weed, and historical mapping, which excludes national EEZs. It calls this area the Sargasso Sea Study Area. The map can be viewed at <http://www.sargassoalliance.org/where-is-the-sargasso-sea>.

5. THE SARGASSO SEA ALLIANCE

The Sargasso Sea Alliance was formed in 2010 under the leadership of the Government of Bermuda. Other members of the Alliance are the International Union for Conservation of Nature (IUCN), Woods Hole Oceanographic Institution and WWF International, Marine Conservation Institute, Mission Blue/Sylvia Earl Foundation, together with the Bermuda Underwater Exploration Institute (BUEI), the Bermuda-based Atlantic Conservation Partnership and the famous Bermuda Institute for Ocean Sciences (BIOS). The small secretariat, headed by an Executive Director, is based in the IUCN office in Washington DC. The Bermuda Ministry of Environment and Planning has the Bermuda Government lead on the project.

The Alliance has three key objectives: to build an international partnership that will secure recognition of the ecological significance of the Sargasso Sea and the threats that it faces; to use existing regional, sectoral and international organizations to secure a range of protective measures for all or parts of the Sargasso Sea to address key threats; and to use the process as an example of what can and cannot be delivered through existing institutions in areas beyond national jurisdiction.

The general strategy of the Alliance is therefore to identify the most important threats to the Sargasso Sea ecosystem and to address these by seeking appropriate protection measures within the relevant existing international or regional sectoral organization. Possible threats from shipping or vessel source pollution would be addressed through the International Maritime Organisation (IMO); threats from fishing through the only two relevant fishing organisations — the International Commission for the Conservation of Atlantic Tunas (ICCAT) and (for the small area of the Sargasso sea above 35.°N) the North-west Atlantic Fisheries Organisation (NAFO); seabed mining issues through the International Seabed Authority (ISA). No-one appears to have attempted to put a range of sectoral measures in place before for an important area

beyond national jurisdiction. Hence, the project has attracted a lot of international attention and support.

The leadership of Bermuda is consequentially crucial to this project. Bermuda is an overseas territory of the UK. It is self-governing, but its head of state is Queen Elizabeth II, whose representative is the Governor. Under a General Entrustment Agreement signed between Bermuda and the UK, Bermuda has limited rights to enter into external relations arrangements with certain countries, e.g. the US and with Commonwealth countries, in relation to specific subject areas. International treaties to which the UK is party can be extended to Bermuda at its request. This can raise some interesting situations. For example, in relation to ICCAT: the UK is no longer a separate party to ICCAT; the EU has exclusive fishery competence for its Member States and has been a member of ICCAT since 1997⁽⁴⁵⁾. The UK retains membership only in relation to its overseas territories, including Bermuda, which has separate quota allocations from ICCAT. The UK is a party to the Convention on Biological Diversity, but it has not been extended to Bermuda. Bermuda is not a separate member of the International Maritime Organisation. Since 2003, Bermuda has however been an Associate Member of CARICOM — the Caribbean Economic Community⁽⁴⁶⁾.

Support from the UK was therefore also crucial to Bermuda being able to make representations to international organisations with competence to regulate sectoral activities. The UK Foreign and Commonwealth Office requested a high quality peer-reviewed science case justifying the importance of the Sargasso Sea before lending its support. This report was published in early 2012, after review by the Bermudian Cabinet and the UK government⁽⁴⁷⁾. In July 2012 in response to a Parliamentary

⁽⁴⁵⁾ Since 14 November 1997. See <http://www.iccat.int/en/contracting.htm>.

⁽⁴⁶⁾ Since 2 July, 2003.

⁽⁴⁷⁾ Published as Laffoley, D.d'A, Roe, H.S.J., *et al.*, *The Protection and Management of the Sargasso Sea: The Golden Floating Rainforest of the Atlantic Ocean. Summary*

Question from Mr Zac Goldsmith MP, the UK Minister for Overseas Territories, Mr Henry Bellingham stated “The Government of Bermuda supports the proposal to provide appropriate protection for the Sargasso Sea. The British Government, the Sargasso Sea Alliance and the Government of Bermuda are working together to this end through the appropriate forums”⁽⁴⁸⁾. So what are those “appropriate forums”? The following section looks at the progress which has been made to date using existing international legal frameworks.

6. RELEVANT INTERNATIONAL ORGANIZATIONS

6.1. United Nations

The SSA has given a number of side events at UN Law of the Sea meetings, including the meetings of the BBNJ Ad Hoc Working Group discussed above, and the Informal Consultative Process (UNICPOLOS)⁽⁴⁹⁾. It has also been able to secure recognition of its work in the 2012 UN General Assembly Annual Omnibus Resolution on Oceans and Law of the Sea, which in paragraph 199, noted the efforts of the Sargasso Sea Alliance — led by the Government of Bermuda — to raise awareness of the ecological significance of the Sargasso Sea⁽⁵⁰⁾. This language was the result of a joint proposal from South Africa, UK and the USA.

6.2. Convention on Biological Diversity

At the tenth session of the Conference of Parties (COP) to the Convention on Biological Diversity (CBD) in Nagoya, Japan, the parties

Science and Supporting Evidence Case, Sargasso Sea Alliance, 2011. Available at <http://www.sargassoalliance.org/storage/documents/Sargasso.Report.9.12.pdf>.

⁽⁴⁸⁾ *Bermuda Royal Gazette*, “UK supporting efforts to create marine reserve”, 13 July 2013, <http://www.royalgazette.com/article/20120713/NEWS07/707139917>.

⁽⁴⁹⁾ E.g., 1 June, 2011 as part of an IUCN side event at BBNJ; 19 June, 2011 at UNICPOLOS. Since then presentations have been part of IUCN side events.

⁽⁵⁰⁾ UN Doc A/67/L.21, para 199.

decided to initiate a science-driven process to describe ecologically and biologically significant areas (EBSAs)⁽⁵¹⁾. To that end a series of workshops have been organised by the CBD Secretariat in association with other organisations to identify such areas⁽⁵²⁾. At the Wider Caribbean and Western Mid-Atlantic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas, 28 February-2 March 2012, held in Recife, Brazil, the Government of Bermuda put forward a proposal for the “description” of the Sargasso Sea as an EBSA. This proposal was recommended by the Scientific Workshop and the Workshop Report was further recommended by the 16th Meeting of the CBD Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) in April/May 2012 and passed on for action to the COP.

In October 2012 at the 11th CBD COP in Hyderabad, the Parties to the Convention by Decision XI/17 noted that, in accordance with

⁽⁵¹⁾ “[The] primary objective of this process is to facilitate the description of ecologically or biologically significant marine areas through application of scientific criteria in annex I of decision IX/20 as well as other relevant compatible and complementary nationally and inter governmentally agreed scientific criteria, as well as the scientific guidance on the identification of marine areas beyond national jurisdiction, which meet the scientific criteria in annex I to CBD Decision IX/20.” CBD Decision X/29, Paragraph 36.

⁽⁵²⁾ The Workshops held to date include: Joint CBD/NEAFC/OSPAR Scientific Workshop on the Identification of Ecologically or Biologically Significant Marine Areas, (EBSAs) in the North-East Atlantic, Hyères, France, 8–9 September 2011; Western South Pacific Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas (22–25 November 2011, Nadi, Fiji); Wider Caribbean and Western Mid-Atlantic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas (28 February-2 March 2012, Recife, Brazil). North Pacific Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas Moscow, Russian Federation, (25 February to 1 March 2013). At time of writing a further workshop has been confirmed — South-Eastern Atlantic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas (EBSAs) (8 — 12 April 2013, Swakopmund, Namibia). For further details see <http://www.cbd.int/meetings/>.

decision X/29, the application of the scientific criteria for ecologically or biologically significant marine areas is a scientific and technical exercise and emphasized that the identification of ecologically or biologically significant marine areas and the selection of conservation and management measures is a matter for States and competent intergovernmental organizations, in accordance with international law, including the United Nations Convention on the Law of the Sea, as stated in paragraph 26 of decision X/29. It then requested the Executive Secretary to include the summary reports on the description of areas that meet the criteria for ecologically or biologically significant marine areas, prepared by the Subsidiary Body on Scientific, Technical and Technological Advice at its sixteenth meeting and contained in the annex to its current decision, in the Repository maintained by the CBD Secretariat, as referred to in decision X/29 and its decision, and, for the purpose set out in decision X/29, to submit them to the United Nations General Assembly and particularly its Ad Hoc Open-ended Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity Beyond Areas of National Jurisdiction, as well as to submit them to Parties, other Governments and relevant international organizations. It further requested the Executive Secretary to submit them to the Ad Hoc Working Group of the Whole on the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects, as well as to provide them as a source of information to United Nations specialized agencies ⁽⁵³⁾.

It is clear from this that a “description” of an area as an EBSA has no legal significance, but it is intended that the CBD process will be taken into account by other international processes charged with managing and conserving ocean resources. For example, while the CBD does not have competence to designate marine protected areas, information

⁽⁵³⁾ The above is a summary of Decision UNEP/CBD/COP/DEC/XI/17 of 5 December 2012, see <http://www.cbd.int/doc/decisions/cop-11/cop-11-dec-17-en.pdf>.

shared through the EBSA identification process may help strengthen the scientific basis for protective measures at other sectorial entities. The SSA has therefore taken this as a significant success in its aim of achieving international recognition of the ecological significance of the Sargasso Sea. It has used this EBSA description in making approaches to other international organizations — as the CBD process envisages.

6.3. North West Atlantic Fisheries Organisation

The first opportunity to utilise the CBD description of the Sargasso Sea as an EBSA by the CBD Recife Workshop — as endorsed by the CBD SBSTTA — arose in the context of the 34th Annual Meeting of the Fisheries Commission of the North West Atlantic Fisheries Organisation, meeting in St Petersburg, Russian Federation, 17-21 September 2012. The northern edges of the Sargasso Sea proposed EBSA and of the Bermudian EEZ do extend beyond 35.°N into the Convention area of the North West Atlantic Fisheries Organisation (NAFO)⁽⁵⁴⁾. In that small area two seamount areas are already temporarily closed to bottom trawling.

On the basis of an SSA proposal, the EU brought forward a proposal for a Resolution on the Sargasso Sea. It resolved to take into account the available information about the Sargasso Sea and consider management measures to protect the ecosystem. However some Contracting Parties indicated they regarded it as premature to reflect on and adopt the resolution considering that the Convention of Biological Diversity (CBD) had not at that point yet approved the proposal from its Sub-

⁽⁵⁴⁾ The NAFO Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries applies to most fishery resources of the Northwest Atlantic except salmon, tunas/marlins, whales, and sedentary species (e.g. shellfish). In 2009, NAFO has 12 Members from North America, Europe, Asia and the Caribbean. Among them are four coastal members bordering the Convention Area: USA, Canada, France (in respect of St. Pierre et Miquelon), and Denmark (in respect of Faroe Islands and Greenland).

sidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of considering Sargasso Sea as an Ecologically or Biologically Significant Marine Area (EBSA). The proposed resolution was therefore not adopted at that meeting.

However, the issue was referred to the Scientific Council. The Fisheries Commission did request its Scientific Council “to comment and advise on whether the Sargasso Sea provides forage area or habitat for living marine resources that could be impacted by different types of fishing; and on whether there is a need for any management measure including a closure to protect this ecosystem”⁽⁵⁵⁾. The Science Council is due to meet from 7-20 June, 2013 in Dartmouth, Nova Scotia, Canada and then report to the Fisheries Commission meeting in July, 2013. That is where the issue currently stands.

6.4. International Commission for the Conservation of Atlantic Tunas

The International Commission for the Conservation of Atlantic Tunas (ICCAT) is responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas⁽⁵⁶⁾. *Sargassum* had already been the subject of an ICCAT Resolution 05-11 on Pelagic *Sargassum* in 2005 initiated by the US. The origin of this resolution appears to be a decision of the US South Atlantic Fishery Management Council, the federal body responsible for protecting ocean fish and their habitat from North Carolina to part of Florida, declared *Sargassum* as

⁽⁵⁵⁾ Fisheries Commission's Request for Scientific Advice on Management in 2014, and Beyond of Certain Stocks in Subareas 2, 3 and 4 and Other Matters (FC Working Paper 12/21, Revision 2 now FC Doc. 12/24). Item 15.

⁽⁵⁶⁾ The International Convention for the Conservation of Atlantic Tunas was signed in Rio de Janeiro, Brazil, in 1966. It entered into force in 1969 and currently has 48 parties. Further details at: <http://www.iccat.int/en/contracting.htm>. For geographical scope see Article 1, ICCAT Convention — text at <http://www.iccat.int/Documents/Commission/BasicTexts.pdf>.

“essential fish habitat” under the U.S. Magnuson-Stevens Fishery Conservation and Management Act ⁽⁵⁷⁾. The law charges the Council with minimizing the “adverse effects on such habitat caused by fishing.”

The South Atlantic Fishery Management Council then prepared a Fishery Management Plan that limits commercial harvest of *Sargassum* in US waters to 5,000 lbs per year. The long-term objective is to give *Sargassum* full protection and ensure that there is no net loss of this important fish habitat off US shores. Based on this initiative, a US NGO — the National Coalition for Marine Conservation (NCMC) — is reported to have drafted a resolution for the US to take to the November 2005 ICCAT meeting and participated as a member of the US delegation ⁽⁵⁸⁾. This Resolution (05-11) on Pelagic *Sargassum* requested Contracting Parties and others to provide to the Standing Committee on Research and Statistics (SCRS — the ICCAT Science body) information and data on activities that impact pelagic *Sargassum* in the convention area on the high seas, directly or indirectly, with particular emphasis on the Sargasso Sea. As a result, the SCRS was asked to examine available and accessible information and data on the status of pelagic *Sargassum* and its ecological importance to tuna and tuna-like species.

The following year, in 2006, the SCRS Sub-Committee on Ecosystems noted in this regard that there was no information on the matter. It therefore recommended that scientists from the Contracting Parties

⁽⁵⁷⁾ Current version is 109th Congress Public Law 479; An Act To amend the Magnuson-Stevens Fishery Conservation and Management Act to authorize activities to promote improved monitoring and compliance for high seas fisheries, or fisheries governed by international fishery management agreements, and for other purposes. Jan. 12, 2007 — [H.R. 5946] Text at: <http://www.gpo.gov/fdsys/pkg/PLAW-109publ479/html/PLAW-109publ479.htm>.

⁽⁵⁸⁾ The NCMC is the oldest public advocacy group in the US dedicated exclusively to conserving ocean fish and their environment. The NCMC mission is to build awareness of the threats to US marine fisheries and convince policy-makers to restore and protect publicly owned fishery resources.

provide available information to the Sub-Committee, which would facilitate giving a response to the Commission ⁽⁵⁹⁾. It appears however that no further information was forthcoming.

Nevertheless building on these previous actions, Bermuda attended the 2011 Meeting of the ICCAT Sub-Committee on Ecosystems, held in Miami and on behalf of the Sargasso Sea Alliance made a presentation on the importance of the Sargasso Sea ecosystem ⁽⁶⁰⁾. In the light of the 2005 ICCAT Resolution, the 2006 recommendation from the Sub-Committee on Ecosystems, and the current information provided by the Sargasso Sea Alliance, the Sub-Committee encouraged scientists from Contracting Parties to examine the available data to better assess the importance of pelagic Sargassum to tuna and tuna-like species ⁽⁶¹⁾. In 2011, the Government of Bermuda formally introduced the Alliance objectives to the full ICCAT Commission through an intervention at the Commission meeting.

The following year, in November 12-19, 2012, in Agadir at the Annual ICCAT Commission meeting, Bermuda, as UK OT, proposed a Recommendation that the SCRS examine the data compiled on the Sargasso Sea and the impacts of fishing activity on tuna and tuna like species and on the ecosystem in the area, and that it consider the viability of establishing special conservation and management measures within the Sargasso Sea ⁽⁶²⁾. The proposed Recommendation noted that the

⁽⁵⁹⁾ ICCAT Report 2006-2007, Appendix 10, item 6.

⁽⁶⁰⁾ The presentation is summarized in Appendix 8 of the 2011 Report. 2011 Inter-Sessional Meeting of the SCRS Sub-Committee on Ecosystems (*Miami, F, United States — May 9 to May 13, 2011*).

⁽⁶¹⁾ Section 5.4 of 2011 Report.

⁽⁶²⁾ Which was narrowly defined to include those ICCAT squares outside the EEZs of coastal states (except Bermuda) and west of the mid-Atlantic and delineated by a polygon with the following co-ordinates: (-65.0 25.0, -70.0 25.0, -70.0 30.0, -70.0 35.0, -65.0 35.0, -65.0 40.0, -60.0 40.0, -55 40, -50.0 40.0, -50.0 35.0, -50.0 30.0, -50.0 25.0, -55.0 25.0, -60.0 25.0, -65.0 25.0).

Law of the Sea Convention requires Parties to protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species; that the UN Fish Stocks Agreement calls for the protection of biodiversity in the marine environment, and refers to the need to take ecosystem considerations into account, as well as to ensure compatibility between conservation and management measures adopted on the high seas and those adopted in areas under national jurisdiction; and noted also that many countries, including Contracting Parties, are moving to incorporate ecosystem considerations into their fisheries management measures.

The proposed Recommendation was strongly supported by the EU, the US and a number of other delegations, but encountered opposition from countries that appeared not to accept the significance of the 2012 CBD COP decision on EBSAs discussed above. Nevertheless the Commission did resolve to request the SCRS to examine the available data and information concerning the Sargasso Sea and its ecological importance to tuna and tuna-like species and ecologically associated species; and to provide an update on the progress of this work in 2014 and report back to the Commission with its findings in 2015. The long time frame is the result of the fact that the main brunt of the work will, it seems, be undertaken by the Sub-Committee on Ecosystems, which is currently involved in a major assessment of turtle by-catch but which has not to date had to make an assessment of a complete ecosystem like the Sargasso Sea.

6.5. International Maritime Organisation

The International Maritime Organisation ⁽⁶³⁾ has sponsored a complex web of international conventions regulating international maritime

⁽⁶³⁾ In 1948 an international conference in Geneva adopted a convention formally establishing IMO (the original name was the Inter-Governmental Maritime Consultative Organization, or IMCO, but the name was changed in 1982 to IMO).

shipping and vessel-source pollution issues. Its Marine Environmental Protection Committee meets every 8 months or so; its primary environmental instrument is the 1973/1978 MARPOL Convention. It has guidelines on a range of issue including the establishment of Particularly Sensitive Sea Areas (PSSAs). To date however PSSAs, which need be linked with an Associated Protection Measure (APM), such as ship routing requirements, discharge restrictions etc., have not been declared in the high seas ⁽⁶⁴⁾. In 2011, the SSA commissioned a major study on maritime traffic through the Sargasso Sea ⁽⁶⁵⁾, which demonstrates the heavy traffic which not surprisingly passes regularly through this part of the North Atlantic; it has also given a series of side events at MEPC, and received a lot of interest. Bermuda is flag state, with a registry of some 200 vessels, but it is not a separate member of the IMO. Any proposal for shipping measures in the Sargasso Sea through IMO would therefore need to be presented through the UK. The SSA is still in discussions with the UK as to what might be appropriate protection measures.

6.6. International Seabed Authority

The International Seabed Authority (ISA) has jurisdiction over seabed mineral resource exploration and exploitation in the Area including beneath the sargassum habitat of the Sargasso Sea ⁽⁶⁶⁾. Because Bermuda is itself located on an isolated seamount, interest in seabed

It currently has 170 Member States and three Associate Members. See <http://www.imo.org/About/HistoryOfIMO/Pages/Default.aspx>.

⁽⁶⁴⁾ See Julian Roberts, Aldo Chircop, Siân Prior, “Area-based Management on the High Seas: Possible Application of the IMO’s Particularly Sensitive Sea Area Concept” (2010) 25 *IJMCL* pp. 483-522.

⁽⁶⁵⁾ Julian Roberts, *Maritime Traffic in the Sargasso Sea: an Analysis of International Shipping Activities and their potential Environmental Impacts*. 2011. Sargasso Sea Alliance Science Report Series, No 10. Available only on line at www.sargassoalliance.org.

⁽⁶⁶⁾ Created by Part XI, Section 4 of the 1982 LOSC, Articles 156-158.

mining in the relevant area of the North Atlantic seems to be limited, and restricted to the Mid-Atlantic ridge (which is outside the SSA Study Area) and the North Corner Seamount. No action has yet seemed appropriate in relation to seabed mining in Sargasso Sea, which is currently a remote threat. The ISA Secretariat has been invited to, and has participated in SSA Scientific meetings.

7. OTHER CONVENTIONAL REGIMES

7.1. Western Central Atlantic Fishery Commission

Although there is no regional fisheries management regime governing the Sargasso Sea, there is an FAO fisheries advisory body that includes the Sargasso Sea by geography, this is the Western Central Atlantic Fishery Commission (WECAFC)⁽⁶⁷⁾ to which the UK is a party. WECAFC has recently shown potential for conservation-minded recommendations in their February 2012 meeting, which included a resolution on strengthening the implementation of international fisheries instruments. WECAFC noted the “need to preserve biodiversity, minimize the risks of long-term or irreversible effects of fishing operations, avoid adverse impacts on the marine environment, maintain the integrity of marine ecosystems including deep-sea vulnerable marine ecosystems and effectively apply the precautionary and ecosystem approaches to fisheries

⁽⁶⁷⁾ The general objective of the Commission is to promote the effective conservation, management and development of the living marine resources of the area of competence of the Commission, in accordance with the FAO Code of Conduct for Responsible Fisheries, and address common problems of fisheries management and development faced by members of the Commission. The work of the Commission is guided by the following three principles: promote the application of the provisions of the FAO Code of Conduct on Responsible Fisheries and its related instruments, including the precautionary approach and the ecosystem approach to fisheries management; ensure adequate attention to small-scale, artisanal and subsistence fisheries; and coordinate and cooperate closely with other relevant international organizations on matters of common interest.

management.” Furthermore, they “agree(d) to take actions and measures to strengthen implementation of existing international fisheries instruments and those that may be developed in the future...”⁽⁶⁸⁾ WECAFC is also participating in an initiative financed by the Global Environment Facility to prepare a billfish management and conservation plan for the western Central Atlantic⁽⁶⁹⁾.

7.2. Convention on the Conservation of Migratory Species

The 1979 Bonn Convention on the Conservation of Migratory Species (CMS) may also be of relevance⁽⁷⁰⁾. A number of migratory species travel through the Sargasso Sea, some of which — like the American and European eel — are not protected in international waters. Under the CMS, States can enter into Range State Agreements and/or Memoranda of Understanding to protect species, which are listed on the Appendices, within their full habitat range and can serve as a strong example of how international collaboration can improve marine protection for a shared species across jurisdictions, and even in ABNJ.

7.3. The World Heritage Convention

The 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage World Heritage Convention envisages

⁽⁶⁸⁾ Resolution on Strengthening the Implementation of International Fisheries Instruments — WECAFC 14 Session, Panama City, 6-9 February 2012 (WECAFC/XIV/2012/7). Available at: <http://www.fao.org/docrep/meeting/024/am121e.pdf>.

⁽⁶⁹⁾ A meeting, attended by Bermuda and SSA, was held in Fort Lauderdale, Florida 20-21, March 2013.

⁽⁷⁰⁾ The Convention on Migratory Species was concluded in Bonn on 23 June 1979, and came into force in 1983. For text see (1980) 19 ILM 15 and at http://www.cms.int/documents/convtxt/cms_convtxt.htm.

Migratory species may be listed under Appendix I and/or II. Appendix II species may be the subject of Range State AGREEMENTS (sic, per text of Article 5) between Parties. Parties and Non-Parties, such as the US, may participate in non-binding MOU arrangements, for example, the 2010 MOU on the Conservation of Migratory Sharks, text at: http://www.cms.int/species/sharks/sharks_bkrd.htm.

the inscription in the World Heritage List, of sites of “outstanding universal value” that are part of the world’s “natural” and “cultural” heritage, defined in Article 1 and 2 respectively. Nothing in the texts of Article 1 and 2 suggests that they could not be in areas beyond national jurisdiction, however the procedure for nomination seems to restrict it to sites which are “situated on the territory” of any of its Parties (Articles 3 and 4) or “in its territory” (Article 11). It has consequently been remarked that a World Heritage List — which seems to exclude sites in ABNJ (which covers nearly half the globe) — should perhaps be called “Half the World Heritage.” The issue was raised in 2011 after an audit of the “Global Strategy for a credible, balanced and representative World Heritage List.” Consequent to this, the Convention Secretariat began, in collaboration with IUCN, to look at a scientifically sound method through which the concept of “Outstanding Universal Value” in the Convention might be applied to the high seas. The Sargasso Sea would clearly be a prime candidate for such a possibility.

7.4. Inter-American Convention for the Protection and Conservation of Sea Turtles

The 1996 Inter-American Convention for the Protection and Conservation of Sea Turtles ⁽⁷¹⁾ came into force in 2001 and now has fifteen parties ⁽⁷²⁾. The Convention promotes the protection, conservation and recovery of the populations of sea turtles and those habitats on which they depend, on the basis of the best available data and taking into consideration the environmental, socioeconomic and cultural characteristics of the Parties ⁽⁷³⁾. The Sargasso Sea is major habitat for at least four species of sea turtles, which spend their adolescent years sheltering in the mats and feeding on *Sargassum*. The UK (and hence Bermuda)

⁽⁷¹⁾ For text see: <http://www.iacseaturtle.org/eng-docs/Texto-CIT-ENG.pdf>.

⁽⁷²⁾ Argentina, Belize, Brazil, Chile, Costa Rica, Ecuador, Guatemala, Honduras, Panama, Mexico, Peru, the Netherlands, United States of America, Uruguay and Venezuela. Nicaragua is about to ratify also.

⁽⁷³⁾ Article II, Text of the Convention.

is not a party to the Convention, but the SSA is considering collaboration activities with the Secretariat, to promote recognition by the parties of the importance of the Sargasso Sea.

7.5. Related Regional Sea Treaties

Although there is no regional sea agreement covering the waters of the Sargasso Sea, there are a number of regional seas agreements which cover adjacent regional sea areas. The OSPAR Convention, discussed above, whose geographical area of application includes the ABNJ areas of the North East Atlantic, has already developed a network of marine protected areas in ABNJ. In 2012 SSA and the OSPAR Secretariat signed a Collaboration Arrangement ⁽⁷⁴⁾. Two UNEP Regional Seas Agreements cover adjacent areas to the east and south respectively: the Abidjan Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region ⁽⁷⁵⁾ and the 1983 Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (the Cartagena Convention) ⁽⁷⁶⁾. Both Secretariats attended the Pocantico meeting discussed below and are interested in on-going collaboration.

8. THE HAMILTON DECLARATION ON COLLABORATION FOR THE CONSERVATION OF THE SARGASSO SEA

In addition to sectoral actions, the Alliance plans to convene an inter-ministerial meeting in Hamilton, Bermuda — currently planned

⁽⁷⁴⁾ Text is at <http://www.sargassoalliance.org/management-and-enforcement/competent-authorities-and-collaborating-institutions/ospar>.

⁽⁷⁵⁾ The Abidjan Convention has 16 African States Parties who cooperate to protect and develop the marine and coastal environment of the West and Central African Region (within their 200 nm EEZs). <http://abidjanconvention.org/>.

⁽⁷⁶⁾ The Cartagena Convention has some 28 countries that border the Gulf of Mexico, the Straits of Florida and the Caribbean Sea, the Convention applies out to a distance of 200 nautical miles. See <http://www.cep.unep.org/cartagena-convention>.

for March 2014 — to adopt a *Hamilton Declaration on Collaboration for the Conservation of the Sargasso Sea*. The Government of Bermuda plans to send invitations to the Atlantic rim states around the Sargasso Sea, to a number of countries in Europe (primarily the North Sea states that are the range states of endangered species, such as the European eel that only spawns in the Sargasso Sea) and to a range of relevant international and regional organisations.

In early December 2012, at Pocantico, New York, a preliminary meeting was held to discuss the first draft of the Declaration. Invitations were issued to a large number of countries in Europe, primarily the North Sea states, and the Atlantic rim and a range of relevant international organisations. Representatives attended from the UK, the US, Dominican Republic, Portugal (and the Azores), Belgium, Sweden, South Africa and Trinidad and Tobago, together with representatives from the European Union, CARICOM, the Convention on Biological Diversity, the Cartagena Convention (for the Caribbean) and the Abidjan Convention (from West Africa). The resulting draft is still subject to discussions and the negotiating text has not yet been formally reviewed by any of the possible participating governments. A second preparatory meeting is planned for November 2013 in order to advance the discussions and also to secure an even wider range of participants.

The Declaration would be a non-legally binding political statement which sets up a light intergovernmental process (loosely modelled on the Arctic Council). It envisages an Inter-Ministerial Conference on Collaboration for the Conservation of the Sargasso Sea to start the process, which will meet for the first time to adopt the Declaration. This might then meet again at future intervals.

The Declaration would also envisage the establishment of a Sargasso Sea Commission. The design and composition of this Commission is still subject to discussion, but it is intended that in the longer term the Commission would be based in Bermuda and would take over the role of the Alliance and be mandated to develop further proposals for con-

ervation measures for consideration by existing sectoral organisations (IMO, ICCAT etc.), that Participating Governments would consider supporting through those organisations. Through the Secretariat, the Commission would also have usual liaison, cooperation, monitoring, outreach and information clearing house roles.

9. CONCLUSIONS

The Sargasso Sea project provides an interesting insight into the way in which the current system of high seas governance operates. As discussed above, Art 197 can be taken perhaps as a benchmark for what the participants in UNCLOS III had in mind for the way that the international community would co-operate to achieve the strong requirements of marine environment protection set out by Part XII, and particularly Article 192.

Article 197 requires States Parties to “cooperate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.”

There is obviously a great deal of evidence of state co-operation through some existing organisations. The IMO has a network of nearly 100 treaties and other instruments covering a wide spectrum of navigation and vessel source pollution rules and standards. A similarly sophisticated regime is developing through the work of the ISA in developing the “Mining Code” for seabed exploration and mining. The performance of RFMOs in “formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention” is unfortunately not so impressive; even the criteria and require-

ments developed by the 1995 UN Fish Stocks Agreement⁽⁷⁷⁾ have been poorly implemented⁽⁷⁸⁾. However the real weakness is in the lack of any co-ordination between these separate sectors.

As indicated earlier, each sectoral regime has its own distinctive protection mechanisms and assesses differently the factors that need to be taken into account, resulting in a plethora of distinct sectoral regimes designed to protect specific areas of the ocean from individual sectoral specific risks. IMO uses MARPOL Special Areas and PSSAs, RFMOs use VMEs and “closed areas,” and the ISA is talking of “reference areas” and “Areas of Particular Environmental Interest.” Each of these is valuable but each is developed and assessed by its own epistemic community; it is not developed with any reference to the work of other sectoral bodies. Hence the only relevant threats are from their own sector — it is rare to see consideration of cumulative impacts from different sectors.

The concept, developed by the Convention on Biological Diversity, of the science-driven description of certain marine areas as “ecologically or biologically significant” does in theory have the potential to act as a unifying concept, which each sector could recognise and utilise in its own way. Unfortunately, for a number of reasons, the EBSAs have not as yet garnered credibility with the sectoral organisations. This may change, but at least this has been the early experience of the Sargasso Sea.

⁽⁷⁷⁾ 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks 2167 UNTS 3 (UN Fish Stocks Agreement). Most notably the requirements for the ecosystem approach and the precautionary approach, see David Freestone, “Implementing Precaution Cautiously: The Precautionary Approach in the 1995 Agreement,” in Hey (ed.), *International Fisheries Law* (The Hague, 1999); David Freestone and Zen Makuch, “The New International Environmental Law of Fisheries: The 1995 UN Straddling Stocks Agreement,” (1996) 7 *YbIEL* 3.

⁽⁷⁸⁾ This is borne out by the series of Performance Reviews conducted on RFMOs, conveniently collected for the Tuna Conventions at <http://www.tuna-org.org/>.

So in conclusion, the Sargasso Sea project has to date shown some signs, discussed above, that its sector by sector approach to high seas protection may indeed be possible. However, it has already shown that the necessary linkages between sectors are difficult to make and that multi-sectoral protection is likely to involve a long drawn out process. The international governance arena is, in this respect, similar to national governments, where different ministries with different personnel have different perspectives on similar issues and do not always liaise effectively — the so called “silo effect.” Some national governments have worked out ways to address this, possibly endemic, problem but at the international level the only body with overarching responsibility is the UN General Assembly. The General Assembly has taken an active and informed interest in ocean affairs, but it has a busy agenda and experience suggests that in the long term it is probably not the most effective forum for overseeing ocean governance issues.

**REGIONAL CO-OPERATION IN ENCLOSED AND
SEMI-ENCLOSED SEAS FOR PROTECTION OF THE
MARINE ENVIRONMENT UNDER ARTICLE 123 OF THE
1982 UN LAW OF THE SEA CONVENTION:
AN ASSESSMENT**

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Abstract: *The 1982 United Nations Convention on the Law of the Sea (LOSC), recognized as the Constitution for the oceans, codified the responsibility of coastal States to co-operate with one another in the protection and preservation of the marine environment, as well as in other activities related to the preservation of the marine living resources. The duty for States to co-operate for the protection and preservation of the environment is one of the important developments of international environmental law and the law of the sea. Part IX of the 1982 LOSC, on enclosed and semi-enclosed seas, expressly defined the general contours of co-operation for coastal States bordering enclosed and semi-enclosed sea, such as the Black Sea. The importance of collective State action to protect and preserve the environment was highlighted in the historic Stockholm Declaration, adopted during the 1972 United Nations Conference on the Human Environment (UNCHE). The 1972 Stockholm Conference laid the foundation for the establishment of the United Nations Environmental Programme (UNEP), whose purpose is to promote international co-operation in the field of environmental protection. The cooperative foundation for addressing the environmental threat to the marine environment of the UNEP Regional Seas Programme was based directly on principle Article 24 of the Stockholm Declaration, which calls for multilateral co-operation to “control, prevent, reduce and eliminate adverse environmental effects.”*

The UNEP Regional Seas Programmes, with eighteen regional seas programmes under its auspices, remains the principal regional mechanism for implementing co-operation among States sharing a common marine space. The UNEP Regional Seas Programme has created institutional and governance frameworks in different regional seas. It does not, however, provide a uniform legal framework, nor does it have the centralized regulatory role of

international organizations such as the IMO. Consequently, there is no overarching governance system that establishes a common framework of principles, obligations, aspirations or methods of compliance and enforcement. Nonetheless, the UNEP Regional Seas Programme remains a key mechanism to promote co-operation through coordinated action and implementation of global responsibilities at the regional level, and fulfilling specific localized needs that cannot be addressed through global instruments. For this reason, it is important to assess the strengths and gaps in the existing structure of regional cooperation in enclosed and semi-enclosed seas.

This paper will critically examine regional co-operation in enclosed and semi-enclosed seas for protection of the marine environment under the 1982 LOSC with a focus on implementation through the UNEP Regional Seas Programme.

1. INTRODUCTION

The obligation of States to co-operate for the protection and preservation of the environment is a fundamental principle of international environmental law and the law of the sea ⁽¹⁾. The 1982 United Nations Convention on the Law of the Sea (LOSC) ⁽²⁾, recognized as the Constitution for the oceans, codified the responsibility of coastal States to co-operate with one another in the protection and preservation of the marine environment, as well as in other activities related to the preservation of the marine living resources. In addition Part IX of the 1982 LOSC, on enclosed and semi-enclosed seas, provides for cooperation in the management and conservation of living marine resources of the sea by coastal States bordering enclosed and semi-enclosed seas in article 123.

The importance of collective State action to protect and preserve the environment was highlighted in the historic Stockholm Declaration, adopted during the 1972 United Nations Conference on the Human Environment (UNCHE) ⁽³⁾. The 1972 Stockholm Conference laid the

⁽¹⁾ *Mox Plant (Ireland v United Kingdom)*(provisional measures)(2002) 41 ILM 405, 82. See also David Freestone, *Principles of Modern Oceans Governance*, 28 INT'L J. MAR. & COASTAL L. 385 (2008).

⁽²⁾ United Nations Law of the Sea Treaty, *supra* note 64.

⁽³⁾ UN Doc. 48/14, 16 June 1972, *reprinted in* 11 ILM 1416 (1972). U.N. General Assembly Resolution 2997 (XXVII) of December 15, 1972, on the institutional

foundation for the establishment of the United Nations Environmental Programme (UNEP), whose purpose is to promote international co-operation in the field of environmental protection ⁽⁴⁾. Based directly on principle Article 24 of the Stockholm Declaration, which calls for multilateral co-operation to “control, prevent, reduce and eliminate adverse environmental effects,” ⁽⁵⁾ the mechanism for implementing cooperation to address environmental threats to the marine environment was established in 1974 with the UNEP Regional Seas Programme ⁽⁶⁾.

This paper will critically examine regional co-operation in enclosed and semi-enclosed seas for protection of the marine environment as implemented through the UNEP Regional Seas Programme.

2. THE DUTY TO CO-OPERATE

One of the key principles in international law is the duty of States to co-operate. It can be traced to the duty of good neighborliness, or the familiar adage of Roman law, *sic utere iure tuo ut alterum no laedus*. This principle was the basis of the decision in the *Trail Smelter Case*, which has since been cited as the principal precedent for the international law principle that no state may allow its territory to be used to cause

and financial arrangements for international environmental co operation, 12 ILM 433 (1973). See, Patricia Birnie, *The Development of International Environmental Law*, 3 BRIT. J. INT’L STUD. 169-190 (1977).

⁽⁴⁾ UNEP’s mandate also includes the progressive development of environmental law. See Alexander Timochenko, *UNEP Initiatives to Promote Compliance with Multilateral Environment Agreements*, in Economic Globalization and Compliance with International Environmental Agreements 125-137, 126 (Alexandre Kiss, Dinah Shelton & Kanami Ishibashi, eds., 2003).

⁽⁵⁾ G.A. Res. 2997, 27 U.N. GAOR Supp. (No. 30) at 30, U.N. Doc. A/8730 (1972); Peter C. Schroder, *UNEP’s Regional Seas Programme and the UNCED Future: Apres Rio*, 18 OCEAN & COASTAL MGMT. 101-111 (1992); Mark Allen Gray, *The United Nations Environmental Programme: An Assessment*, 20 Env’tl. L. 291 (1990).

⁽⁶⁾ Detailed information on the UNEP Regional Seas Programme *available at* <http://www.unep.org/regionalseas/>.

harm to another State's territory ⁽⁷⁾. This principle was later confirmed in the *Corfu Channel* case ⁽⁸⁾. The duty of international co-operation includes at the minimum the duty of consultation ⁽⁹⁾, prior notification ⁽¹⁰⁾ and exchange of information ⁽¹¹⁾.

The central role of co-operation for the protection of the environment was recognized by the 1972 Stockholm Declaration which in its preamble underlined that the "growing class of environmental problems, because they are regional or global in extent or because they affect the common international realm, will require extensive co-operation among nations and action by international organizations in the common interest" ⁽¹²⁾. Principle 24 of the Stockholm Declaration recognized that "[i]nternational matters concerning the protection and improvement of the environment should be handled in a cooperative spirit by all countries,

⁽⁷⁾ Philippe Sands, *Principles of International Environmental Law* 249 (2nd ed., 2004). The principle of *sic utere tuo et alienum non laedus* was the basis of the decision in the *Trail Smelter Case*, which has served as the principal precedent for the international law principle that no state may allow its territory to be used to cause harm to another State's territory. (U.S./Can.), 3 R.I.A.A. 1905 (1941), reprinted in 35 AM. J. INT'L L. 684 (1941). See *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (Rebecca M. Bratspies & Russell A. Miller eds., 2006).

⁽⁸⁾ *Corfu Channel Case (U.K. v. Albania)* 1949 ICJ Reports 4 (Judgment of 9 April).

⁽⁹⁾ *Lac Lanoux Arbitration (Fr. V. Sp.)* 24 ILR 101 (1957); *Gabčykovo-Nagymoros (Hung. V. Slov.)* 7 I.C.J. Rep. (1997); *Case concerning Land Reclamation by Singapore in and around the Straits of Johor (Malay. v. Sing.)*, XXVIII REP. INT'L ARB. AWARDS 133-145 (2005).

⁽¹⁰⁾ *Corfu Channel case*, *supra* note 8, at 146.

⁽¹¹⁾ *Case concerning Land Reclamation by Singapore in and around the Straits of Johor*, *supra* note 9.

⁽¹²⁾ Declaration of the United Nations Conference on the Human Environment, adopted in Stockholm during the United Nations Conference on the Human Environment, 5 to 16 June 1972. The Report of the UN Conference on the Human Environment, Stockholm, 5-16 June 1972, UN Doc.A/CONF.48/14/Rev.1; UNGA Res. 2994 (XXVIII), noting with satisfaction the report of the Conference. U.N.Y.B. 330 (1972). On the history of the 1972 Stockholm Conference see Sands, *supra* note 203, at 35-40.

big and small, on an equal footing “and that [c]ooperation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States. Ten years later, Principle 27 of the Rio Declaration ventured further in proclaiming, “States and people *shall* co-operate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development” (emphasis added) ⁽¹³⁾.

3. DEVELOPMENT OF A REGIONAL APPROACH IN THE LAW OF THE SEA

Lewis Alexander was one of the first international legal scholars to undertake defining the role of marine regionalism and particularly its application to semi-enclosed seas ⁽¹⁴⁾. Professor Alexander identi-

⁽¹³⁾ The Rio Declaration on Environment and Development; The Report of the UN Conference on Environment and Development, Rio de Janeiro 3-14 June 1992, UN Doc. A/CONF.151/26/Rev.1 (vols I-III).

⁽¹⁴⁾ Lewis M. Alexander, *Regionalism and the Law of the Sea: the Case of Semi-enclosed Seas*, 2 OCEAN DEV. & INT’L L.J.151 (1974). Professor Alexander defined a semi-enclosed seas as one that had an area of at least 50,000 nautical miles, and be a ‘primary’ sea, rather than an arm if a larger semi-enclosed water of body; at least fifty percent of its circumference had to be occupied by land, and the width of the connector between the sea and the open ocean could not represent more than twenty percent of the sea’s total circumference. According to his definition there were twenty-five semi-enclosed seas of the world. *See also*, Lewis M. Alexander, *Special Circumstances-Semi-enclosed Seas*, in Law of the Sea Institute Eighth Annual Conference, 201-216 (J.K. Gamble and G. Pontecorvo, eds., 1973); Lewis M. Alexander, *Regional Arrangements in the Oceans*, 71 AM. J. INT’L L. 84 (1977); Adelberto Vallega, *The Regional Scale of Ocean Management and Marine Region Building*, 24 OCEAN & COASTAL MGM’T 17-37 (1994); Adelberto Vallega, *The regional approach to the ocean, the ocean regions, and ocean regionalisation — a post-modern dilemma*, 45 OCEAN & COASTAL MGM’T 721-760 (2002).

fied three categories of marine regions: (1) physical regions; (2) management regions; and (3) operational regions. The first of these categories, physical regions were identified by geographic location and proximity. The second type of region was a function of identifiable problems or group problems requiring administrative action. Such a region might or might not have any relation to marine geographic criteria. The third category of region would be based upon formal agreements, such as fisheries agreements. Other scholars subsequently adopted Professor Alexander's definition and categorization⁽¹⁵⁾. However, although the LOSC did not provide a definition of a *marine region*, the Convention did include a separate section for *global and regional co-operation*⁽¹⁶⁾.

The duty of co-operation for protection of the marine environment under the four 1958 Geneva Law of the Sea Conventions⁽¹⁷⁾ was very narrowly drawn to only conservation of marine living resources in the high seas. Article 1, sub-paragraph 2 of the 1958 Geneva Convention on Fishing and Conservation provided that "All States have the duty to adopt, or co-operate with other States in adopting, such measures for

⁽¹⁵⁾ Boleslaw Adam Boczek, *Global and Regional Approaches to the Protection and Preservation of the Marine Environment*, 16 CASE W. RES. J. INT'L L. 39 (1984); Boleslaw Adam Boczek, *The Baltic Sea: A Study in Marine Regionalism*, 23 GERMAN Y.B. INT'L L. 196-230 (1980); Malgosia Fitzmaurice, *International Legal Problems of the Environmental Protection of the Baltic Sea*, (1992); M. Eduarda Gonçalves, *Concepts of marine region and the new law of the sea*, 3 MARINE POLY 255-63 (1979).

⁽¹⁶⁾ Part XII, Section 2. For an in-depth analysis of the development of regionalism in the law of the sea, see: 13 INT'L J. COASTAL & MARINE L. 299-486 (Erik Franckx & Marc Pallemmaerts, eds., 1998); *The Regional Approach to the Oceans: Concepts and Policy*, 24 OCEANS & COASTAL MGMT 1-84 (1994).

⁽¹⁷⁾ The 1958 Geneva Conventions on the Territorial Sea and the Contiguous Zone, 29 Apr. 1958, 516 UNTS. 205; Convention on the High Seas, 29 Apr. 1958, 450 UNTS. 11; Convention on the Continental Shelf, 29 Apr. 1958, 499 UNTS. 311; Convention on Fishing and Conservation of the Living Resources of the High Seas, 29 Apr. 1958, 559 UNTS 285.

their respective nationals as maybe necessary for the conservation of the living resources of the high seas. Furthermore, the duty to protect the marine environment was narrowed to the duty for individual States to prevent certain types of pollution of the sea. For example, Article 24 of the 1958 Convention on the High Seas required that “Each State shall draw up regulations to prevent pollution of the seas by the discharge of oil from ships or pipelines or resulting from the exploitation and exploration of the seabed and its soils...”; or Article 25 that required “Each State shall take measures to prevent pollution of the seas from the dumping of radioactive wastes, taking into account any standards and regulations which may be formulated by the competent international organizations.”; and that “all States shall co-operate with the competent international organizations in taking measures for the prevention of pollution of the sea or air space above, resulting from any activities with radioactive material or other harmful agents.”

The question of whether regional seas should have a special regime issue was debated during the Second Committee meeting of UNCLOS III, where several States promoted the need for a special regime for enclosed and semi-enclosed seas ⁽¹⁸⁾. Initially, the subject matter of a separate category of enclosed and semi-enclosed seas was introduced as a problem of territorial delimitation ⁽¹⁹⁾. Several states raised the special concerns of enclosed and semi-enclosed seas in relation to protection of the marine environment and management of resources ⁽²⁰⁾. While there

⁽¹⁸⁾ Second Committee, 38th Meeting (1974) II *Off. Rec.* 273.

⁽¹⁹⁾ Doc. A/Conf.62/C.2/L.8, Second Committee (1974) I *Off. Rec.* At the second session of the Conference in 1974, Turkey submitted a draft provision that provided for the equitable application in enclosed or semi-enclosed seas of the general rules set out in the chapters relating to the territorial sea and EEZ. This, together with the proposal of Uruguay was reflected in Formula A of provision 223 of the Main Trends Working Paper. III *Off. Rec.* 111.

⁽²⁰⁾ For example, Iraq proposed to include the management, preservation, exploration and exploitation of marine living resources in semi-enclosed and enclosed seas beyond the territorial sea as issues which were to be agreed upon by the coastal States by regional arrangements *taking into account the activities of international*

was objection by some States to creating a separate category of seas under the new Convention being negotiated ⁽²¹⁾, ultimately Part IX on enclosed and semi-enclosed seas became part of the 1982 LOSC. The ultimate creation of this new category of “regional” seas was a result of the recognition by the international community that certain seas, because they occupy a smaller marine space or because of their limited access to the world’s oceans, when bordered by multiple coastal States faced special concerns.

4. REGIONAL CO-OPERATION IN PART IX OF THE 1982 LOSC

Part IX is made up of Articles 122 and 123. The former defines an enclosed or semi-enclosed sea as “...a gulf, basin or sea surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal States.” Accordingly, there are two broad categories of semi-enclosed or enclosed seas: those that have geographically restricted access to other seas and those that have been jurisdictionally apportioned among two or more coastal States.

According to Article 123 States bordering an enclosed or semi-enclosed sea “should cooperate with each other in the exercise of their rights and in the performance of their duties under this Conven-

organizations[sic] concerned in these fields. The Iraqi proposal provided for the *joint management* among riparian States and that rules and regulations were to be based upon internationally agreed standards U.N.Doc.A/Conf.62/C.2/L.71 and Add.1 and Add.2 (1974), III *Off. Rec.* 236.

⁽²¹⁾ France objected to the concept of enclosed and semi-enclosed seas stating that these were not part of a “*traditional concept of international law*” being of a purely geographical notion. The French delegate argued that creating special rules for these seas would risk establishing a *mare clausum*. Second Committee, 38th Meeting (1974) II *Off. Rec.* 276.

tion ⁽²²⁾. To this end they shall endeavour, directly or through an appropriate regional organization:

- (a) to coordinate the management, conservation, exploration and exploitation of the living resources of the sea;
- (b) to coordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment;
- (c) to coordinate their scientific research policies and undertake where appropriate joint programmes of scientific research in the area;
- (d) to invite, as appropriate, other interested States or international organizations to cooperate with them in furtherance of the provisions of this article.”

The duty of co-operation is peppered throughout the 1982 LOSC. A complete list of each reference to co-operation would exceed the scope of this paper. However, certain provisions have direct bearing on Article 123, notably Article 197, which mandates that all States cooperate “...on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.” Accordingly, States bordering a common sea that would meet the definition under Article 122 are mandated to co-operate either through competent international organizations or directly in developing both hard and soft instruments for the protection and preservation of the marine environment.

The reference to “competent international organizations” is in the plural and would encompass a wide range of international organizations

⁽²²⁾ Emphasis added.

with interests in marine activities, such as the International Maritime Organization (IMO) for international shipping, UNEP for environmental protection, the Food and Agricultural Organization (FAO) for fisheries, the United Nations Educational, Scientific and Cultural Organization (UNESCO) for the protection of world heritage sites and others. Since 1982 many instruments have been negotiated and adopted that would meet the co-operation requirement in Article 122 in relation to rule-making, standard setting and recommended practices. For example, the IMO has adopted several new conventions in addition to protocols and annexes to existing conventions for protection of the marine environment from international shipping.

Importantly, co-operation under Article 123 goes further than the minimum duty of consultation, prior notification and exchange of information ⁽²³⁾. In sub-paragraphs (a) and (b) respectively of Article 123, in addition to co-operation, States are exhorted to *coordinate the management, conservation, exploration and exploitation of the living resources of the sea; and the implementation of their rights and duties with respect to the protection and preservation of the marine environment*. The act of coordination entails active harmonization of complex actions ⁽²⁴⁾. Thus the objective in Article 123 (a) and (b) is for States to harmonize their actions in relation to *inter alia* the management, conservation, protection and preservation of the marine environment. This would go beyond the customary international duty of co-operation requiring at the minimum consultation, prior notification and exchange of information. Shy of creating a clear legal duty nevertheless the use of the exhortative “should” could be seen as creating some level of “good faith” obligation upon States to

⁽²³⁾ Supra notes 9-11.

⁽²⁴⁾ The Oxford English Language Dictionary defines coordination as “to bring the different elements of (a complex activity or organization) into a harmonious or efficient relationship: See <http://oxforddictionaries.com/definition/english/coordinate?q=co-ordinate>.”

extend or supplement co-operation with collective and harmonious action ⁽²⁵⁾.

The relationship, however, between Article 123 and other provisions of the 1982 LOSC, which expressly require States to co-operate is not entirely clear. For example, Article 61, sub-paragraph 2 of the 1982 LOSC expressly requires States and competent international organizations to co-operate, including at the regional level in the conservation of marine living resources in the exclusive economic zone ⁽²⁶⁾. Whereas, Article 123 sub-paragraph (a) exhorts coastal States to *coordinate the management, conservation, exploration and exploitation of the living resources of the sea*, which would presumably include the exclusive economic zone. Clearly, Article 123 did not intend to dilute the duty of co-operation as provided for in Article 61, sub-paragraph (2). The 1995 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995 FSA) supports this view ⁽²⁷⁾.

⁽²⁵⁾ During the negotiations at the Sea-Bed Committee several texts introduced by States used the imperative “shall” language mandating States bordering enclosed or semi-enclosed seas to cooperate. However, the final text adopted chose the exhortative “should.” See United Nations Convention on the Law of the Sea 1982 — A COMMENTARY, vol. III, 356-367 (Myron H. Nordquist, Neal R. Grandy, Satya A. Nandan & Shabtai Rosenne, eds., 1995).

⁽²⁶⁾ Specifically “The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation. As appropriate, the coastal State and competent international organizations, whether subregional, regional or global, shall cooperate to this end.”

⁽²⁷⁾ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, August 4, 1995, Dec. 11, 2001, 2167 UNTS 3. See Gordon Munro, “The United Nations Fish Stocks Agreement of 1995: History and Problems of Implementation,” 15 MAR.

The 1995 FSA created the detailed framework for regional co-operation for fulfilling the mandate under Article 61 sub-paragraph (2). One of its principle mechanisms for promoting regional co-operation is through the establishment of regional fisheries management organization (RFMO) ⁽²⁸⁾. Moreover, Article 15 of the 1995 FSA specifically addresses implementation of the Agreement in enclosed and semi-enclosed sea, and in fact transforms the hortatory status of Part IX of the 1982 LOSC into a hard obligation. Specifically, Article 15 stipulates that:

“In implementing this Agreement in an enclosed or semi-enclosed sea, States *shall* take into account the natural characteristics of that sea and shall also act in a manner consistent with Part IX of the Convention and other relevant provisions thereof” ⁽²⁹⁾.

The question of the legal status of Part IX and specifically Article 123 was raised in two cases brought for international adjudication: the *Mox Plant Case* (Ireland v. the United Kingdom) ⁽³⁰⁾ and the *Case concerning Land Reclamation by Singapore in and around the Straits of Johor* (*Malaysia v. Singapore*) *Request for Provisional Measures* ⁽³¹⁾.

In the *Mox Plant Case* Ireland instituted proceedings before the International Tribunal for the Law of the Sea (ITLOS) for provisional measures pending constitution of the Arbitral Tribunal on the merits of

RESOURCES ECON. 265-280 (2001). In general *see*, Moritaka Hayashi, *The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention*, 29 OCEAN COASTAL MGM'T 51 (1996); David A. Balton, *Strengthening the Law of the Sea: the New Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks*, 27 OCEAN DEV. & INT'L L. 125 (1996).

⁽²⁸⁾ Article 8 (1)-(6).

⁽²⁹⁾ Emphasis added.

⁽³⁰⁾ *Supra* note 1.

⁽³¹⁾ *Supra* note 9. Available at www.itlos.org.

the case against the United Kingdom⁽³²⁾. According to Ireland, the decision by the United Kingdom to construct a MOX (mixed-oxide) nuclear fuel plant along the coast of the Irish Sea, which meets the definition of a semi-enclosed sea under Article 122, amounted to a violation *inter alia* of its duty to co-operate under both Articles 197 and 123 of the Convention. Ireland had argued that co-operation between coastal States under Article 123 was *in addition* to the general obligation of co-operation at the global and regional levels under Article 197 of the 1982 LOSC, claiming that this was necessitated by the inability of semi-enclosed seas to disperse pollution effectively⁽³³⁾. Ireland argued that there was a linkage between Article 123 and Article 197, the language of which employs the mandatory “shall” and that of the exhortative “should” in Article 123.

However, as ITLOS did not find there to be the requisite urgency to grant Ireland’s request for provisional orders, without addressing Ireland’s arguments concerning Articles 123 and 197, the Tribunal simply ordered the Parties to co-operate⁽³⁴⁾.

In the land reclamation case brought by Malaysia against Singapore the Tribunal reaffirmed its view that the duty to co-operate was a “fun-

⁽³²⁾ *The MOX Plant Case* (Ireland v. United Kingdom 41 ILM 405 (2002)). The case on the merits of the *Mox Plant Case* dispute was submitted to the Permanent Court of Arbitration in The Hague. However, in face of the potential exclusive competence of the European Community and the pre-emptory jurisdiction of the European Court of Justice the Tribunal decided to suspend proceedings on the case. *Ireland v. United Kingdom* (“MOX Plant Case”), Permanent Court of Arbitration, The Hague (2003). Furthermore, following a complaint filed by the European Commission against Ireland the European Court of Justice Ireland ruled that by bringing the case before the International Tribunal for the Law of the Sea and the Permanent Court of Arbitration in the Hague Ireland had violated the provisions for the exclusive jurisdiction of the European Community. *Commission of the European Communities v. Ireland*, 30 May 2006, Case C-459/03.

⁽³³⁾ Request for provisional measures and statement of the case submitted on behalf of Ireland (Ireland v. United Kingdom), 9 November 2001.

⁽³⁴⁾ Para. 89(1).

damental principle in the prevention of pollution of the marine environment under Part XII of the Convention ⁽³⁵⁾. In its claim against Singapore for provisional measures, Malaysia included the allegation that Singapore had breached its obligation under Article 123 of the 1982 LOSC by failing to co-operate. The Tribunal, while denying Malaysia's request for provisional measures found that Singapore had failed to adequately co-operate with Malaysia. In a unanimous decision the Tribunal ordered the Parties to co-operate ⁽³⁶⁾.

In both cases ITLOS did not find the requisite urgency to grant the provision measures. Furthermore, as neither of these two cases was decided on the merits the question of the legal relationship between Articles 123 and 197 in enclosed and semi-enclosed seas was not addressed.

However, the 1995 FSA provides one important model demonstrating the linkage between Part IX and other provisions in the 1982 LOSC requiring co-operation by States that includes the regional level. While not a direct result of the 1982 LOSC as is the 1995 FSA, the principle mechanism for implementing the mandate under sub-paragraph (b) that coastal States co-ordinate *the implementation of their rights and duties with respect to the protection and preservation of the marine environment* has been the UNEP Regional Seas Programme, which will be discussed further on.

⁽³⁵⁾ *Supra* notes 9-11.

⁽³⁶⁾ The Tribunal specifically ordered the Parties to co-operate by “promptly” establishing a group of experts to conduct a study on the effects of the land reclamation undertaken by Singapore, engage in a regular exchange of information, and consult with each other to reach an agreement on temporary measures. *Id.*, para. 106. The case on the merits had been submitted to the Permanent Court of Arbitration under Article 290, Annex VII of the LOSC. The Parties ultimately concluded a settlement agreement that included the terms of co-operation as ordered by the ITLOS in the provisional measures case. *Malaysia v. Singapore Award*, (Settlement Agreement of 26 April 2005), available at www.pca-cpa.org.

5. Implementing regional cooperation: the UNEP Regional Seas Programme

The 1972 Stockholm Conference laid the foundation for the establishment of UNEP, a subsidiary organ of the United Nations⁽³⁷⁾, whose purpose is to promote international co-operation in the field of environmental protection⁽³⁸⁾. The co-operative foundation for addressing the environmental threat to the marine environment of the UNEP Regional Seas Programme was based directly on principle Article 24 of the Stockholm Declaration, which calls for multilateral co-operation to “control, prevent, reduce and eliminate adverse environmental effects”⁽³⁹⁾. The UNEP Regional Seas Programmes, with eighteen regional seas programmes under its auspices, remains the principal regional mechanism for co-operation, creating an institutional and governance framework for the protection and preservation of the marine environment based on state co-operation at the regional level⁽⁴⁰⁾. It does not, however, provide a uniform legal framework, nor does it have the centralized regulatory role of international organizations such as the IMO for international

⁽³⁷⁾ UNEP was established under Article 22 of the United Charter. It is not a specialized agency of the United Nations as provided under Article 57 of the United Nations Charter. As a subsidiary organ of the United Nations UNEP lacks the autonomous status of UN specialized agencies, which limits its funding options to voluntary contributions, whereas a specialized agency has its own separate budget. See Said Mahmoudi, *The United Nations Environment Programme (UNEP) — An assessment*, 5 ASIAN Y.B.INT’L L. 175-198 (1995).

⁽³⁸⁾ UNEP’s mandate also includes the progressive development of environmental law. See Alexander Timochenko, *UNEP Initiatives to Promote Compliance with Multilateral Environment Agreements*, in *Economic Globalization and Compliance with International Environmental Agreements* 125-137, 126 (Alexandre Kiss, Dinah Shelton & Kanami Ishibashi, eds., 2003).

⁽³⁹⁾ G.A. Res. 2997, 27 U.N. GAOR Supp. (No. 30) at 30, U.N. Doc. A/8730 (1972); Peter C. Schroder, *UNEP’s Regional Seas Programme and the UNCED Future: Apres Rio*, 18 OCEAN & COASTAL MGMT. 101-111 (1992); Mark Allen Gray, *The United Nations Environmental Programme: An Assessment*, 20 Env’tl. L. 291 (1990).

⁽⁴⁰⁾ Detailed information on the UNEP Regional Seas Programme available at <http://www.unep.org/regionalseas/>.

shipping⁽⁴¹⁾. Consequently, there is no overarching governance system that establishes a common framework of principles, obligations, aspirations or methods of compliance and enforcement⁽⁴²⁾. The UNEP Regional Seas Programme (RSP) in some cases, such as the Mediterranean Sea Programme, provides administrative functions whereas in others, such as the Black Sea, does not. Each regional sea programme has adopted different instruments at differing levels of application of existing norms, principles and approaches. Nonetheless, the UNEP Regional Seas Programme remains a key mechanism to promote co-operation through coordinated action and implementation of global responsibilities at the regional level, and fulfilling specific localized needs that cannot be addressed through global instruments⁽⁴³⁾.

A comparative analysis of the eighteen RSP shows stark differences in the level of co-operation and co-ordination among the coastal States. There are three different classes of UNEP RSPs: (1) the partner programmes [Antarctic, Arctic, Baltic Sea, Caspian Sea and North-East Atlantic]; (2) UNEP administered programmes [Caribbean Region, East Asian Seas, Eastern Africa Region, Mediterranean Region, North-West Pacific Region, Western Africa Region; and (3) Non-UNEP administered programmes [Black Sea Region, North-East Pacific Region, Red Sea and Gulf of Aden, ROPME Sea Area, South Asian Seas, South-East Pacific Region, Pacific Region].

⁽⁴¹⁾ In general *see*, José E. Alvarez, *International Organizations as Law-makers* (2005). *See also*, Geoffrey Palmer, *New Ways to Make International Environmental Law*, 86 AMER. J INT'L L 259-283, 260-64 (1992).

⁽⁴²⁾ For a view against centralization of UNEP and transforming it into an international organization *see*, Adil Najam, *The Case Against a New International Organization*, 9 GLOBAL GOVERNANCE, 367-384 (2003).

⁽⁴³⁾ The regional approach also provides a legal mechanism to impose obligations on countries that may not be party to global instruments, such as the 1982 LOSC. *See* Tullio Treves, *Regional Approaches to the Protection of the Marine Environment*, in *The Stockholm Declaration and the Protection of the Marine Environment* 137-154 (Myron H. Nordquist, John Norton Moore & Said Mahmoudi eds., 2003). Treves also points out the potential problem of conflicting obligations between the regional and global legal instruments. *Id.* at 146-47.

There are significant differences among these eighteen programmes both in terms of the different activities they cover and how each is regulated at the regional level. Table 1 below shows the differences in how those regional seas with instruments for regulating land-based sources of pollution regionally differ. For example, there is a notable difference among these RSPs in their adoption of public participation, which is only expressly provided for in the revised Black Sea Protocol on Land based sources of pollution. Yet the importance of public participation has been recognized by States in a number of key instruments such as Principle 10 of the Rio Declaration ⁽⁴⁴⁾, and the 1995 Global Programme of Action for the Protection of the Marine Environment from Land Based Sources of Pollution ⁽⁴⁵⁾, which is the principle global instrument on land-based pollution. While these instruments are non-binding, they represent a global consensus that should be reflected in all instruments for the protection of the marine environment.

Table 1. Comparison of Regional Seas Land-Based Pollution Protocols

Regional Seas Programme for LBS	BAT	BEP	Compliance	EIA	SEA	Polluter Pays	Precaution	Public participation	ICM	Access to Information
HELCOM	x	x		x		x	x			x
OSPAR	x	x	x			x	x			x
Mediterranean	x	x	x	x		x	x			
Black Sea (Revised)	x	x	x	x	x	x	x	x	x	x

⁽⁴⁴⁾ The United Nations Conference on Environment and Development (“UNCED” or “Earth Summit”) was held in Rio de Janeiro, Brazil, on 3-14 June 1992. See Report of the UN Conference on Environment and Development, UN Doc. A/CONF.151/26/Rev.1

⁽⁴⁵⁾ UNEP(OCA)/LBA/IG.2/7, (5 December 1995), p. 17.

In examining the overall governance picture of the RSP, as shown in Table 2 below, there are several significant differences among the eighteen regional seas programmes. The Mediterranean Sea Regional programme stands out as the most developed programme with a wide range of instruments. It is also the only one that is directly under the UNEP RSP with a formal compliance mechanism ⁽⁴⁶⁾. The Northeast Atlantic (OSPAR) RSP was the first of the regional sea systems to include a mechanism to ensure that the Convention is fully implemented. In cases of non-compliance by a Party, the Commission has the competence to adopt decisions and require the non-complying Party to take steps to bring about *full compliance* ⁽⁴⁷⁾. Furthermore, there are several regional seas programmes that have no binding instruments and rely only on strategic action management plans ⁽⁴⁸⁾.

Table 2. UNEP Regional Seas Programmes

Regional Sea	Land based	Dumping	Emergency response	Biodiversity (Protected areas)	Transport of Hazardous substances	Offshore activities	ICZM	EIA	Compliance mechanism	UNEP administered
Mediterranean Sea	Y Revised	Y Revised	Y Revised	Y Revised	Y	Y	Y	N	Y	Y
Wider Caribbean	Y	N	Y	Y	N	N	N	N	N	Y
Asian Sea	N	N	N	N	N	N	N	N	N	Y
Eastern Africa	Y	N	Y	Y	N	N	N	N	N	Y
Northwest Pacific	N	N	N	N	N	N	N	N	N	Y

⁽⁴⁶⁾ The compliance mechanism under the Mediterranean Sea RSP was adopted in 2008. It includes a Compliance Committee and a formal procedure. UNEP(DEPI)/MED IG.17/1018 January 2008, 15th Meeting of the Contracting Parties 15th Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols Almeria (Spain), 15-18 January 2008, 5.

⁽⁴⁷⁾ Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention). Article 23(b). 22 Sept. 1992, 2354 U.N.T.S. 67.

⁽⁴⁸⁾ The Asian Sea and Northwest Pacific programmes only have strategic action Plans. The Northeast Pacific programme has a framework convention and an action plan. Southeast Asia programme has no instruments.

Regional Sea	Land based	Dumping	Emergency response	Biodiversity (Protected areas)	Transport of Hazardous substances	Offshore activities	ICZM	EIA	Compliance mechanism	UNEP administered
West Africa	N	N	Y	N	N	N	N	N	N	Y
Black Sea	Y Revised	Y	Y	Y	N	N	N	N	N	N
North-east Pacific	N	N	N	N	N	N	N	N	N	N
Red Sea and Gulf of Aden	Y	N	Y	Y	Y	Y	Y	Y	Y	N
ROPME	Y	N	Y	Y	Y	Y	N	N	N	N
South-east Asia	N	N	N	N	N	N	N	N	N	N
South-east Pacific	Y	N (Protocol on protection against radioactive pollution)	Y	Y	P	N	N	P	N	N
Pacific Region	Y	N	Y	N	N	N	N	N	N	N
Baltic Sea										Partner
Northeast Atlantic										Partner
Caspian										Partner
Arctic										Partner
Antarctic										Partner

Article 123 of the 1982 LOSC addresses only the relationship among the coastal States sharing a common sea as defined in Article 122. Article 197 of the Convention, however, provides the overarching general duty for States “to cooperate on a global basis, and as appropriate, on a regional basis in formulating and elaborating international rules, standards and recommended practices and procedures consistent with [the] Convention, for the protection and preservation of the marine environment.” While UNEP is not an “international organization” per se, it has the principal authority to promote protection of the environment⁽⁴⁹⁾. However, over the years UNEP has operated as the principle body through which numerous conventions, protocols, various instru-

⁽⁴⁹⁾ *Supra* note 5.

ments and activities for promoting protection of the environment. Thus it can be seen as the *de facto* “competent international organization” for purposes of Article 197 where States can elaborate and develop international rules, standards and recommended practices for protection of the marine environment at both the regional and global levels. In which case, the UNEP Regional Seas Programme provides the forum for implementing the normative functions of both Articles 197 and 123 as symbiotic obligations.

However, in practice this has not been the case. Each regional seas programme has developed autonomously resulting in an uneven level of rules, standards and recommended practices. UNEP needs to play a much more harmonizing role among the different RSPs, through which States will “formulate and elaborate international rules, standards, recommended practices and processes” in a harmonized fashion for all regional [enclosed and semi-enclosed] seas. While a number of important international environmental instruments have been negotiated and adopted under the auspices of UNEP this has not been the case for the Regional Seas Programme. Consequently, the lack of a co-ordinated approach within the UNEP Regional Seas Programme may partly explain the patchwork of instruments and different practices and processes among the eighteen regional seas programmes. The need to strengthen the role of UNEP in general was recognized in the Rio +20 outcome “The Future We Want”⁽⁵⁰⁾, which was followed upon by the adoption of the resolution by the United Nations General Assembly upgrading UNEP to universal membership⁽⁵¹⁾.

⁽⁵⁰⁾ <http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf>.

⁽⁵¹⁾ UNGA /RES/67/213 Report of the Governing Council of the United Nations Environment Programme on its twelfth special session and on the implementation of section IV.C, entitled “Environmental pillar in the context of sustainable development”, of the outcome document of the United Nations Conference on Sustainable Development, 21 December 2012.

6. CONCLUSION

Customary international law has long recognized the duty of States to co-operate. The 1982 LOSC, as the landmark international agreement for the law of the sea, advanced the duty of co-operation for the protection of the marine environment under Article 192 as well as to co-operate at the global and regional levels in formulating and elaborating international rules, standards and practices for the protection of the marine environment either directly or through the competent international organizations under Article 197. In other words, Article 192 established the legal duty to co-operate and Article 197 the implementing obligation. And both of these obligations apply to the regional level.

Part IX on enclosed or semi-enclosed seas implicitly falls within the ‘regional’ scope of application for Article 197. Article 123 exhorts States bordering a common enclosed or semi-enclosed sea to *inter alia* co-operate and to co-ordinate in the management of conservation of natural resources and in the implementation of their rights and obligations for the protection and preservation of the marine environment. Notwithstanding the employment of the hortatory “should” in Part IX there can be no question of any intent to dilute the obligation of cooperation under Article 192 and 197. Rather, Part IX, as argued by Ireland in the *Mox Plant Case*, should be viewed in tandem with these two provisions.

The question is whether the obligation to co-operate under Article 197 is being effectively implemented for regional seas, most of which would fall within the scope of Article 122. UNEP was expressly created to implement co-operation for the protection of the environment based on Principle 24 of the 1972 Stockholm Declaration. The UNEP Regional Seas Programme was developed to advance co-operation and protection of the marine environment in regional seas. While UNEP is not an international organization *per se* it has effectively acted as a “competent international organization” within the ambit of Article 197 in formulating and elaborating international agreements and standards. However, a review of the RSP shows a significant variance in both the

number and categories of instruments adopted. For example, Tables 1 and 2 show a significant lack of harmonization at the horizontal level among the UNEP Regional Seas Programmes.

While strictly speaking there is a different level of legal obligation between the languages of “shall” and “should”, nonetheless when examined within the totality of the 1982 LOSC it makes little sense to subject enclosed or semi-enclosed seas to a lower standard of protection than other areas of the marine environment. The RSP, which has been in existence for nearly forty years, has served as the competent international body for fulfilling the duty of co-operation under Article 197 at the regional level, a necessary component of the duty to protect the marine environment under Article 192.

ENHANCING INTEGRATED MANAGEMENT BEYOND NATIONAL JURISDICTION UNDER THE ENVIRONMENTAL PROVISIONS OF THE UN CONVENTION ON THE LAW OF THE SEA

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Abstract: *In the past thirty years since the signing of the UN Convention on the Law of the Sea (LOSC), the ocean has changed more than in all of human history before. It is now facing a multitude of interconnected threats that require comprehensive, precautionary and integrated management. This review of the environmental provisions in Part XII of the LOSC with respect to the high seas and seabed Area beyond national jurisdiction (ABNJ) reveals significant strengths as well as substantial weaknesses and gaps. Governments are now grappling with how to address problems related to the conservation and sustainable use of marine biodiversity in ABNJ. This commentary concludes that Part XII will need strengthening, including through an implementing agreement, to enable the global community to cope with the escalating challenges of a changing ocean.*

1. INTRODUCTION TO A CHANGING OCEAN

On this 30th anniversary of UN Convention on the Law of the Sea, it is time to confront the fact that the ocean has changed from what

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it was just a few decades ago ⁽²⁾, and will continue to change significantly in the years to come. This presents many new challenges to ocean management and raises the question of whether the existing LOSC framework for environmental protection is still fit for purpose.

In the 1970s, ocean pollution was considered the greatest threat:

“Thor Heyerdahl, sailing the Atlantic in his papyrus raft, Ra, found globs of oil, tar and plastics stretching from the coast of Africa to South America. Parts of the Baltic, Mediterranean and Black Sea are already so polluted that marine life is severely threatened. And waste dumped in the Pacific and Atlantic Oceans has washed up on the shores of Antarctica.” ⁽³⁾

Hence the majority of the LOSC environmental provisions in Part XII dealt with pollution, creating a framework for future elaboration of more detailed international rules and standards and for cooperation at the regional level.

The wider problems of ocean degradation were acknowledged by world leaders at the UN Conference on Environment and Development (UNCED) in 1992. Reflecting dissatisfaction with the status quo, Chapter 17 of Agenda 21 called for new approaches to ocean management: approaches “that are integrated in content and are precautionary and anticipatory in ambit” ⁽⁴⁾. While there has been some progress in

⁽²⁾ C. Roberts, *The Ocean of Life: The Fate of Man and the Sea* (The Penguin Group, New York, 2012); K. Noone et al., *Valuing the Ocean Draft Executive Summary* (Stockholm Environment Institute, Stockholm, 2012); <http://www.sei-international.org/mediamanager/documents/Publications/SEI-Preview-ValuingTheOcean-DraftExecutiveSummary.pdf>.

⁽³⁾ DOALOS, “The United Nations Convention on the Law of the Sea (A historical perspective)” (1998); http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm.

⁽⁴⁾ Agenda 21, Chapter 17.01 in Johnson, *The Earth Summit* (Kluwer, London 1992) p. 307.

waters under national jurisdiction, management of the high seas and seabed Area beyond national jurisdiction (ABNJ) has yet to effectively incorporate these approaches.

It is now clear that the impacts of human activities are being felt in the deepest and most remote parts of the ocean ⁽⁵⁾. The ocean has absorbed 25-30 percent of all anthropogenic carbon emissions and 80 percent of the heat added to the global system ⁽⁶⁾. This has cushioned the blow of climate change on land but as a result, the global ocean is warming and becoming more acidic, sea-levels are rising, currents are shifting, and areas of low oxygen in the open ocean are expanding (both because warmer water holds less oxygen and because waters are becoming more stratified) ⁽⁷⁾.

Global warming, ocean acidification and increased low or no oxygen “dead zones” have been associated with each of the previous five mass extinction events on Earth ⁽⁸⁾. These three stressors act synergistically to change primary production patterns, alter species distribution and abundance, and impair reproduction and development. This can simplify and destabilize ecosystems, disrupt food supplies, and undermine resilience to further impacts ⁽⁹⁾.

Many marine ecosystems and species are already stressed due to overexploitation, pollution and habitat destruction ⁽¹⁰⁾. Future activities

⁽⁵⁾ E. Ramirez-Llodra *et al*, “Man and the Last Great Wilderness: Human Impacts on the Deep Sea” (2011) 6(7) *PLoS one* e22588; <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0022588>.

⁽⁶⁾ IOC/UNESCO, IMO, FAO, UNDP. A Blueprint for Ocean and Coastal Sustainability. (IOC/UNESCO, Paris 2011).

⁽⁷⁾ A.D. Rogers, D’A Laffoley, *International Earth system expert workshop on ocean stresses and impacts. Summary report* (IPSO Oxford 2011).

⁽⁸⁾ *Id.* and the citations therein.

⁽⁹⁾ *Id.* and the citations therein.

⁽¹⁰⁾ *Id.*; Roberts, *supra* note 1; Noone *et al. supra* note 1.

will intensify and further compound these problems: 30 years after the signature of the LOSC, deep seabed mining looks like it will soon become technologically and economically feasible, opening up the possibility of vast industrialization of the seabed ⁽¹¹⁾. Ocean fertilization and other forms of geo-engineering are being touted as solutions to the problem of climate change, but any large-scale use could suffocate ocean ecosystems and worsen ocean acidification ⁽¹²⁾.

There are however positive signs that the global community is acknowledging the value of the ocean (e.g., for its rich biodiversity, nourishment, oxygen production and natural carbon sequestration) and the need for action. World leaders at the 2012 UN Conference on Sustainable Development (Rio+20) committed to:

“protect, and restore, the health, productivity and resilience of oceans and marine ecosystems, and to maintain their biodiversity, enabling their conservation and sustainable use for present and future generations, and to effectively apply an ecosystem approach and the precautionary approach in the management, in accordance with international law, of activities impacting on the marine environment, to deliver on all three dimensions of sustainable development” ⁽¹³⁾.

With respect to ABNJ, world leaders committed to deciding on the development of a new legal instrument under the LOSC before the end of the 69th session of the UN General Assembly”, i.e., no later than

⁽¹¹⁾ ISA Legal and Technical Commission to Hear Presentations from Applicants for Seabed Exploration; <http://www.isa.org.jm/en/node/750>.

⁽¹²⁾ R. Rayfuse *et al.* “Ocean Fertilisation and Climate Change: The need to regulate emerging high seas uses” (2008), 23 *International Journal of Marine and Coastal Law* 297—326.

⁽¹³⁾ *The Future We Want* (June 2012), para. 158; <http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf>.

August 2015⁽¹⁴⁾. Attention is now focused on a special working group established by the UNGA in 2004, the UN ad hoc open-ended informal Working Group to study issues related to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (the “UN Working Group”), where an increasing number of governments are calling for an implementing agreement under the LOSC for the conservation and sustainable use of marine biodiversity beyond national jurisdiction. This would address a package of five issues: 1) area-based management measures, including marine protected areas (MPAs); 2) environmental impact assessments; 3) marine genetic resources including questions related to sharing of benefits; 4) capacity building and 5) technology transfer⁽¹⁵⁾.

2. STRENGTHS AND WEAKNESSES OF PART XII OF THE LAW OF THE SEA CONVENTION

Why is there increasing support for a new implementing agreement under the LOSC? Because the environmental provisions of the LOSC have many strengths that a new agreement could build on, but also many weaknesses that a new instrument could repair. Strengths include:

- An overarching obligation for marine protection and preservation: The LOSC crystallizes for the first time in legally binding form the unambiguous obligation of all States to protect and preserve the marine environment (article 192). This duty is elaborated in article 194.5 to include the duty to take the measures necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.

⁽¹⁴⁾ *Id.* Para 162.

⁽¹⁵⁾ A/67/95 Letter dated 8 June 2012 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly; <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N12/372/82/PDF/N1237282.pdf?OpenElement>.

- Comprehensive coverage of all forms of pollution: Also for the first time the LOSC encompassed all sources of pollution, calling on States to take measures necessary to prevent, reduce and control marine pollution including from land-based sources, shipping, dumping, seabed activities and the atmosphere (article 194). It also addressed future pollution sources through its duty to prevent pollution resulting from the use of technologies or the introduction of alien or new species as well as a duty not to transfer damage or hazards or to transform one type of pollution to another (articles 195, 196).
- An evolutionary approach: By recognizing the competence of international and regional organizations and diplomatic conferences to adopt rules, regulations and recommended practices and procedures for pollution prevention, reduction and control, the LOSC paved the way for the continuous upgrade of international rules and standards and for their national incorporation (articles 194, 195, 196 and 208). This has enabled, for example, the international law applicable to the dumping of wastes and other matter at sea to evolve from a permissive approach (permitted unless prohibited) to a highly precautionary approach (prohibited unless permitted) ⁽¹⁶⁾.
- A clear duty to cooperate at the global and regional level: Article 197 spells out the duty for all States to cooperate on a global and, as appropriate, regional basis, in formulating international rules and standards for the protection and preservation of the marine environment, taking into account characteristic regional features. This also includes the duty to cooperate in research on marine pollution and in establishing science-based criteria for marine pollution prevention, control and reduction (articles 200 and 201).

⁽¹⁶⁾ C. Redgewell, "The 1982 LOSC and Protection of the Marine Environment" in D. Freestone, *et al* (eds) *The Law of the Sea: Progress and Prospects* (OUP, Oxford 2006) 188.

- Strong provisions for scientific and technical assistance to developing States: Under articles 202 and 203, assistance to developing States is to be provided directly or through competent international organizations for protection and preservation of the marine environment as well as the prevention, reduction and control of marine pollution. Developing States are to be given preference in international organizations for the allocation of appropriate funds and technical assistance.
- Requirements for prior assessment of planned activities and ongoing monitoring: Under articles 204-206, States are to actively monitor the effects of any activities which they permit or plan which may cause or are likely to cause substantial pollution or significant and harmful changes. Such prior assessment and monitoring of the risks or affects of pollution are an essential component of the duty to take all measures that are necessary to prevent, reduce or control pollution under article 194.1-4 and to protect and preserve the marine environment under article 192 and 194.5.
- Detailed provisions on State duties and powers of enforcement, including port States, coastal States and flag States: Twenty-one detailed articles focus on enforcement and safeguards, in an attempt to balance the rights of coastal States to protect their environment with the interests of maritime States in unimpeded navigation (articles 213-233).

Though considered a “Constitution for the Ocean”, the LOSC was also a product of its time ⁽¹⁷⁾. This leaves some significant gaps and weaknesses that undermine not only the protection and preservation of the marine environment but also the potential role of the ocean for sustainable development for all.

⁽¹⁷⁾ D. Tladi, “Ocean Governance: A Fragmented Regulatory Regime” in P. Jacquest, R.K. Pachuari, L. Tubiana (eds), *Oceans: The New Frontier* (TERI Press, Dehli 2011) 99-110.

First, the duty to protect and preserve the marine environment has been inadequately implemented, leaving ABNJ subject to increasing degradation and biodiversity loss. Too few measures have been adopted to protect or preserve rare or fragile ecosystems or the habitat of vulnerable species. The LOSC's zonal approach based on distance from shore, while important for allocating the rights and duties of States, further fails to recognize the connectivity of ecosystems or species that straddle or migrate to ABNJ, or the vulnerability of ecosystems and species dwelling beyond national jurisdiction ⁽¹⁸⁾.

Second, the focus in the LOSC on marine pollution means that more recent concerns of biodiversity conservation (genetic resources, species and ecosystem) are left uncovered. The global agreement for biodiversity conservation, the 1992 Convention on Biological Diversity ⁽¹⁹⁾, explicitly excludes the components of marine biodiversity beyond national jurisdiction, and hence the application of its tools for *in situ* conservation such as protected areas is less straightforward.

Third, the evolutionary approach has become more of a reactionary approach, leaving many activities with a potential to cause significant adverse impacts in ABNJ unregulated or under-regulated. These include offshore oil and gas development, cable or pipeline laying, marine scientific research, bioprospecting, offshore aquaculture, deep sea tourism and geo-engineering ⁽²⁰⁾ (though rules on ocean fertilization are now being developed under the London Convention) ⁽²¹⁾.

⁽¹⁸⁾ *Id.*

⁽¹⁹⁾ Convention on Biological Diversity, 5 June 1992, 1760 United Nations Treaty Series 79, 31 International Legal Materials 818.

⁽²⁰⁾ K. M. Gjerde *et al.* "Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction" (IUCN, Gland 2008).

⁽²¹⁾ P. Verlaan, Current Legal Developments London Convention and London Protocol (2011) 26 *International Journal of Marine and Coastal Law* 185-194.

Fourth, the duty of cooperation on a global and regional basis has been unevenly implemented leaving many geographic gaps. Only four of the 18 existing regional seas programmes cover ABNJ: most stop at 200 nm from shore. As a result, most ABNJ lacks a body to facilitate cooperation and coordination for conservation and sustainable development. Moreover, there is nothing in the LOSC to integrate management across sectoral organizations, across regions, or between the high seas water column and the seabed below.

Fifth, funding for scientific and technical assistance related to ABNJ has been woefully inadequate and remains sector-specific. Even the recent funding from the Global Environment Facility for ABNJ focuses on fisheries rather than marine science, technology transfer or otherwise building capacity for integrated conservation and management. The amounts are minute (USD 45 million) compared to the challenge ⁽²²⁾.

Sixth, still lacking are common rules for environmental impact assessments for activities with a potential to cause significant adverse impacts in ABNJ. The only sectors where prior assessments are required are for dumping of waste or other matter, deep sea bottom fishing in the high seas (by virtue of a UNGA resolution) and seabed mining. No impact assessments are conducted for tuna or tuna-like fisheries — the bulk of oceanic fishing. Also lacking are cooperative mechanisms for ensuring that potential cumulative impacts are also taken into account across sectors.

Seventh, the precautionary principle and the ecosystem approach are not included in the LOSC, though they were subsequently incorpo-

⁽²²⁾ The GEF funding for ABNJ under the Fifth Replenishment allocated USD 20 million from International Waters and USD 25 million from Biodiversity, a small fraction of the USD 420 million allocated for International Waters and USD 1.2 billion for Biodiversity (out of the entire portfolio of USD 4.20 billion) GEF Secretariat, GEF/A.4/7 Summary of Negotiations Fifth Replenishment of the GEF Trust Fund May 17, 2010; <http://www.thegef.org/gef/replenishment>.

rated in the 1995 UN Fish Stocks Convention, an implementing agreement to the LOSC ⁽²³⁾.

Eighth, the principles of public participation in environmental conventions have emerged over the past few decades, and best practice is now represented in the Aarhus Convention ⁽²⁴⁾ and its Almaty Guidelines ⁽²⁵⁾.

And finally, the reliance in the LOSC on the flag state as primary enforcer of marine environmental laws in the high seas did not envisage the rise of countries that offer their flag but lack capacity or will to enforce international minimum standards. The International Maritime Organization is starting to address this through a mandatory flag state audit scheme but this scheme does not apply to high seas fishing, dumping, or other activities.

3. EMERGING CHALLENGES

To effectively manage the rapidly escalating challenges to ocean health, productivity and resilience, these weaknesses and gaps in the LOSC framework will need to be repaired. Rather than abandon the LOSC, it is possible to learn from experience elsewhere on building and modernizing the relevant framework.

⁽²³⁾ United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Adopted at New York on 4 August 1995, opened for signature on 4 December 1995, entered into force 11 December 2001, 34 ILM 1547.

⁽²⁴⁾ Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, done at Aarhus, Denmark, on 25 June 1998, and entered into force on 30 October 2001, article 3.7.

⁽²⁵⁾ Almaty Guidelines on Promoting the Application of the Principles of the Aarhus Convention in International Forums (the Almaty Guidelines), adopted at the second meeting of the Parties held in Almaty, Kazakhstan, on 25-27 May 2005 ECE/MP.PP/2005/2/Add.5, Annex.

At the regional level, article 197 sparked the expansion of regional seas programmes both under the auspices of the United Nations Environment Programme and independently, to cover 18 regions of the world ⁽²⁶⁾. Initially geared towards oil pollution preparedness and response, many evolved to address broader concerns of marine degradation and biodiversity. For example, the 1992 OSPAR Convention ⁽²⁷⁾ merged two prior agreements on dumping and land-based discharges to incorporate modern concepts such as the ecosystem approach, the precautionary approach and the polluter pays principle. It was updated again in 1998 via a new Annex to incorporate the conservation of ecosystems and biodiversity and to cover all human activities (other than fishing and shipping). The 1976 Barcelona Convention on the Protection of the Mediterranean against Pollution likewise evolved from a focus on pollution to incorporate the wider marine environment and biodiversity ⁽²⁸⁾.

These regional agreements have built on the provisions of the LOSC as well as the 1992 Rio Declaration ⁽²⁹⁾ and Agenda 21 ⁽³⁰⁾ chapter 17 calling for integrated, anticipatory and precautionary approaches; on the 1992 Convention on Biological Diversity, and have responded to the targets for ecosystem-based management and representative networks of marine protected areas in the 2002 World Summit on Sustainable Development ⁽³¹⁾.

⁽²⁶⁾ <http://www.unep.org/regionalseas/programmes/default.asp>.

⁽²⁷⁾ Convention for the Protection of the Marine Environment of the North-East Atlantic, 22 September 1992, 2354 United Nations Treaty Series 67, 32 International Legal Materials 1069.

⁽²⁸⁾ Convention for the Protection of the Mediterranean Sea against Pollution, 16 February 1976, 1102 United Nations Treaty Series 27, amended in 1995 and renamed the Convention for the Protection of the Marine Environment and Coastal Region of the Mediterranean (hereinafter Barcelona Convention); Protocol concerning Mediterranean Specially Protected Areas and Biodiversity, 10 June 1995, 2102 United Nations Treaty Series 203, 161.

⁽²⁹⁾ <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163>.

⁽³⁰⁾ <http://www.un.org/esa/dsd/agenda21/>.

⁽³¹⁾ <http://www.un.org/esa/dsd/index.shtml>.

Similarly, the general provisions of the LOSC for the conservation of highly migratory and straddling fish stocks were elaborated upon in the 1995 UN Fish Stocks Agreement. This implementing agreement embraced in legally binding form the 1992 Rio commitments to the precautionary approach, the minimization of ecosystem impacts and the protection of marine biodiversity. It set the standard for regional fisheries management, opened the doors of many RFMOs to civil society participation, and through the UN Fish Stocks Review Conference, allows some form of continuing global oversight.

A legally binding agreement under the LOSC is by far the surest and most effective path towards enhancing integrated management and sustainable development for the global ocean. It could incorporate and operationalise modern principles such as precaution, ecosystem-based management and integration. It could enable tools such as marine protected areas, cumulative impact assessments and strategic planning. It could combine these into the overarching framework provided by the LOSC, so that it is respected — and applied — by all. In short, it could enable the LOSC to continue as a flexible yet robust framework for confronting escalating challenges to global ocean management over the next 30 years.

CONCLUSÕES

CONCLUSIONS

RELATÓRIO SOBRE AS PRINCIPAIS CONCLUSÕES

REPORT ON THE MAIN CONCLUSIONS

Wladimir BRITO

Francisco NORONHA, Maria Ana MARTINS e Vasco BECKER-WEINBERG

SESSÃO I

SESSION I

Retrato Actual da Protecção do Ambiente Marinho: ambiente versus pesca, navegação, exploração e aproveitamento de recursos minerais

Current Status of the Protection of the Marine Environment: marine environment v. fisheries, navigation, exploration and exploitation of mineral resources

O equilíbrio entre a liberdade de navegação e a protecção do ambiente marinho é, muitas vezes, difícil de alcançar e fica aquém dos desafios actuais, nomeadamente no que respeita à protecção do ambiente marinho para lá do mar territorial. *Mutatis mutandis* o mesmo se poderá dizer quanto aos impactos negativos provocados pela pesca.

The balance between the freedom of navigation and the protection of the marine environment is not always easy to achieve and often does not meet current environmental challenges. This is particularly important in maritime areas beyond the territorial sea. The same reasoning applies when the negative impacts caused by fishing are considered.

Em conjunto com a Convenção das Nações Unidas sobre o Direito do Mar (CNUDM) outros instrumentos legais internacionais poderão favorecer esse equilíbrio, uma vez que a Conven-

The United Nations Convention on the Law of the Sea (UNCLOS) does not sufficiently safeguard the aforementioned balance, namely in what concerns the management and conservation of

ção não oferece a protecção adequada, designadamente no que concerne à gestão e conservação dos recursos vivos. As alternativas poderão passar pela avaliação das medidas existentes e verificação da respectiva eficácia, assim como a criação de áreas marinhas protegidas dentro e para além da jurisdição nacional.

Os esforços no quadro da União Europeia relativamente à protecção do ambiente marinho face aos impactos negativos provocados pela pesca são igualmente dignos de nota.

A CNUDM enquadra, no âmbito de mecanismos de resolução de disputas, a possibilidade de tribunais internacionais apreciarem conflitos relativamente à protecção de recursos vivos e à pesca em alto mar. A este respeito a aplicação de medidas provisórias poderá igualmente mostrar-se útil.

No que concerne às actividades na Área, é fundamental a obtenção de dados-base e a posterior monitorização do impacto ambiental. A este propósito, foi lembrado o recente parecer do Tribunal Internacional do Direito do Mar que considerou a avaliação de impacto ambiental como fazendo parte do direito costumeiro.

SESSÃO II

Novos Rumos do Direito do Mar: áreas marinhas protegidas, recursos genéticos, plataforma continental ('estendida' e Ártico)

Na sessão II foi salientada a insuficiência de densificação de alguns conceitos consagrados na CNUDM, o que dificulta

living resources. However, this Convention together with other relevant international legal instruments can contribute towards that balance, namely by examining existing measures and their efficiency, in addition to the creation of marine protected areas, both within and beyond national jurisdiction.

The efforts on the protection of the marine environment from the negative impacts of fishing within the framework of the European Union should also be highlighted.

Furthermore, the UNCLOS provides that International Courts and Tribunals may have jurisdiction regarding conflicts on the protection of living resources in the high seas. In this respect, International Courts and Tribunals may also prescribe appropriate provisional measures.

As for what activities in the Area are concerned, it is fundamental the acquisition of base data and the subsequent assessment of the respective environmental impact. On this subject, the panel recalled the recent advisory opinion issued by the International Tribunal for the Law of the Sea, which considered the environmental impact assessment as being part of customary international law.

SESSION II

Prospects of Evolution of the Law of the Sea: marine protected areas, genetic resources, continental shelf (outer continental shelf and the Arctic)

In session II the panel underlined the shortcomings of certain concepts included in UNCLOS, making their

quer a sua concreta aplicação, quer a sua compatibilização com outros instrumentos jurídicos, nomeadamente a Convenção sobre a Diversidade Biológica.

As AMP são um instrumento essencial para a preservação do ambiente marinho. Apesar de o seu processo de criação não estar expressamente previsto na CNUDM, tal resulta da interpretação das suas disposições.

O acesso aos recursos genéticos e a partilha de benefícios decorrentes da sua utilização são outro dos desafios atuais do Direito do Mar, que as Nações Unidas têm vindo a tratar, através do Grupo de trabalho informal para a conservação e utilização sustentável da diversidade biológica em áreas para além da jurisdição nacional. Este grupo de trabalho está mandatado para preparar a negociação de um acordo multilateral sob a égide da Convenção. No tópico dos recursos genéticos foi igualmente sublinhada a importância do Protocolo de Nagoya, celebrado no âmbito da Convenção sobre a Diversidade Biológica.

Entendeu-se que o processo de extensão da plataforma continental poderá constituir a última oportunidade de ampliação do território dos Estados. A este respeito foi referido que se torna necessária a clarificação dos critérios relativos à apreciação das submissões. Um exemplo dessa necessidade é visível na actual situação do Ártico.

Ainda nesta sessão foi referido que, pese embora as facilidades e os resultados positivos dos mecanismos compulsórios de resolução de conflitos, verifica-se uma certa contenção dos Estados no recurso a esses mecanismos.

accurate use and compatibility with other legal instruments very difficult, particularly with the Convention on Biological Diversity.

MPAs are an essential tool for the preservation of the marine environment. Although their creation is not expressly established in UNCLOS, certain provisions of the Convention provide the legal framework for their creation.

The access to genetic resources and the sharing of the benefits deriving from their use are amongst the current challenges facing the Law of the Sea and that the United Nations have been addressing through the informal working group for the conservation and use of the sustainable biological diversity in areas beyond national jurisdiction. This working group is mandated to prepare the negotiation of a multilateral agreement under the auspices of UNCLOS. The panel also stressed the importance of the Nagoya Protocol on ABS, adopted in the framework of the Convention on Biological Diversity.

The panel considered that the process for the extension of the continental shelf may represent the last opportunity for coastal States to increase their territory. On this subject, the panel underlined the importance of clarifying the criteria applicable when the submissions are analyzed. The panel considered the Arctic situation as a valuable example of this need for clarification.

Also in this session, mention was made that, despite of the positive outcome of the existing compulsory settlement mechanisms and facilities to promote their use, States have been reluctant to do so.

SESSÃO III

Desafios da Investigação Científica Marinha

A cooperação entre Estados é um dos pilares do regime previsto na CNUDM para a investigação científica marinha, sendo fundamental a partilha de informação científica.

A interação entre cientistas e juristas revela-se imprescindível para o aperfeiçoamento deste regime jurídico.

O conhecimento do ambiente marinho e a avaliação das actividades nele desenvolvidas é um dos aspectos fundamentais da normatividade internacional, que vai encontrando acolhimento quer em convenções quer na jurisprudência.

SESSION III

Challenges of Marine Scientific Research

Cooperation between States is one of the pillars of the MSR regime included in UNCLOS, of which the sharing of scientific information is an essential aspect.

The interaction between scientists and legal scholars is necessary for the further development of the existing legal regime.

The knowledge of the marine environment and the assessment of the activities that take place therein are fundamental aspects of the current international legal regime and which are gradually being included in different international legal instruments and jurisprudence.

SESSÃO IV

Modelos de 'Governança'

O trabalho desenvolvido no âmbito do Direito do Mar pelas organizações internacionais, com particular relevo para as Nações Unidas, tem resultado na elaboração e adopção de diferentes instrumentos internacionais.

Foram assim dados passos importantes para a regulamentação dos mares e dos oceanos, incluindo os mares fechados e semi-fechados, nomeadamente em matéria de poluição e conservação das espécies.

Pese embora não se possa ainda falar de modelos de governança regional ou

SESSION IV

Models of 'Governance'

The work undertaken in the context of the Law of the Sea by international organizations and particularly the United Nations has resulted in the adoption of several international legal instruments.

Indeed, important steps have been taken towards the regulation of the seas and oceans, including enclosed and semi-enclosed seas, namely on subjects such as pollution and species conservation.

Although it is not possible to refer to regional or global models of governance

mundial em matéria da utilização e preservação dos mares e oceanos, são de registar os esforços feitos nesse sentido.

Alterações climáticas e áreas além da jurisdição nacional trazem uma extrema dificuldade para a governação do oceano.

regarding use and preservation of the seas and oceans, many efforts have been made in that respect.

Climate change and areas beyond national jurisdiction bring an extreme complexity for the ocean governance.

DISCURSOS

SPEECHES

SESSÃO DE ABERTURA OPENING SESSION

Luís Miguel Pestana de VASCONCELOS

Vice-Director da Faculdade de Direito da Universidade do Porto
Vice-Dean of the Faculty of Law of the University of Porto

Your honor, Vice Rector of the University of Porto,
Distinguished colleagues,
Dear Professors,
Dear students
Ladies and gentlemen:

I'd like to welcome all to the Faculty of Law of the University of Porto.

We are very pleased and honored of having you here.

We hope that this conference to celebrate the 30 years after the signature of the United Nations Convention on the Law of the Sea shall be productive and bear fruits.

We are sure it will.

This is a joint initiative of the Faculty of Law of University of Porto (FDUP), UPTEC, the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR) and the Task Group for the Extension of the Continental Shelf (EMEPC).

Let me say that we are proud to be associated with you in this project. The merit where belongs to us all, and not to a singular entity.

I would also like, on behalf of the Direction of the Faculty, to thank Prof. Marta Chantal Ribeiro for her work in organizing this conference.

The organization of an international conference with so many distinguished participants surely is no easy task. It has been carried out with great care and skill. It is one more relevant service the Prof. Marta renders to this Faculty.

I would like to add a few short remarks on the importance of this event for us.

Porto is an Atlantic city. The University of Porto, and especially this Faculty, intend to develop a strong expertise in this field of study.

To this end we are working closely with CIIMAR carrying on an important interdisciplinary work which has been most fruitful.

We also working closely with different international bodies in this field, and we intend to do more so.

For us, it is a priority.

Form another standpoint, but not a less relevant one, the sea is of paramount importance for this country.

It is at the core of our history and our national identity.

One could say that, like in ancient Venice, Portugal is wedded to the sea. To the vastness of the oceans.

Part of Europe, that we proudly are, our gateway to the world has always been the sea.

Our face is turned to the Atlantic.

To study it, to protect it, to explore it in a sustainable way is vital for us.

I firmly believe that it is our path to the future.

This Faculty aims to be at the forefront of that effort.

I wish you all a very pleasant stay here at Porto, and we hope to see you again soon at this Law Faculty where you will always will be very welcome.

Thank you very much!

SESSÃO COMEMORATIVA DO DIA NACIONAL DO MAR COMMEMORATIVE SESSION: NATIONAL DAY OF THE SEA

Rui AZEVEDO

Director Executivo da Oceano XXI — Associação para o Conhecimento
e Economia do Mar
Executive Director of the Oceano XXI — Association for the
Knowledge and Economy of the Sea

Em primeiro lugar quero agradecer, em nome da Oceano XXI, o convite para participar nesta Conferência que assinala os 30 anos da assinatura da Convenção das Nações Unidas sobre o Direito do Mar e nesta sessão comemorativa do Dia Nacional do Mar. Aproveito também a oportunidade para felicitar os promotores pela iniciativa e, em particular, a Prof.^a Marta Chantal Ribeiro pelo seu contributo decisivo para a organização do evento.

Penso que estes momentos comemorativos constituem uma oportunidade para se reflectir sobre o que já se fez e sobretudo sobre o que falta fazer para a valorização do recurso Mar no sentido de reforçar o contributo que as diferentes actividades que integram a economia do Mar possam dar para o aumento da competitividade e para a criação de emprego na economia nacional.

A Oceano XXI, enquanto entidade responsável pela dinamização do Cluster do Conhecimento e da Economia do Mar, Estratégia de Eficiência Colectiva reconhecida pelo Programa Compete, tem desenvolvido ao longo dos seus 2,5 anos de existência um trabalho com os parceiros de forma a aumentar o n.º de projectos empresariais e de I&D na economia do Mar. Além dos projectos âncora em execução no

âmbito do Cluster, com destaque, pelos montantes envolvidos e pelo estado de desenvolvimento, para o Terminal de Cruzeiros de Leixões e para o Pólo do Mar do PCT da UP, que no seu conjunto representam um investimento de 54 milhões de euros, referência ainda para um conjunto de 30 projectos complementares promovidos por centros de I&D e por empresas nas áreas das TIC, das indústrias alimentares, das redes e cabos para actividades *offshore*, dos transportes, do turismo, que representam cerca de 74 milhões de euros de investimento em curso.

Apesar das dinâmicas anteriormente referidas há a clara consciência de que é possível e de que é necessário fazer muito mais. E a estratégia a prosseguir deve ser uma estratégia em duas velocidades, uma de longo prazo dirigida ao aproveitamento das oportunidades associadas ao desenvolvimento de novas actividades e usos do Mar, como são as energias *offshore*, a biotecnologia marinha e a exploração do solo e do subsolo marinhos, associadas à extensão da plataforma continental, outra de curto e médio prazo orientada para os sectores mais tradicionais da economia do mar que são aqueles que estão em condições de trazer valor e emprego para a nossa economia, nos tempos mais próximos. A investigação e o desenvolvimento tecnológico são fundamentais quer para o desenvolvimento das actividades *offshore*, quer para a modernização e a inovação das actividades ditas tradicionais de forma a dotá-las com as condições para competir no mercado global.

Para o desenvolvimento da economia do Mar é necessário capital, conhecimento, e também condições de contexto favoráveis. Destes três factores chave a criação de condições de contexto favoráveis parece-nos de elevada importância. Sem essas condições de contexto dificilmente será possível atrair investimento e sem investimento não se criam empregos nem condições para fixar competências indispensáveis ao desenvolvimento da economia do Mar. No contacto estreito que temos mantido com um conjunto de parceiros associados e com associações empresariais de diferentes sectores de actividade, são recorrentemente assinalados constrangimentos de natureza legislativa e regulamentar que importa ultrapassar, nomeadamente os relativos ao licenciamento de actividades e à simplificação da burocracia que lhe está associada e que condiciona o desenvolvimento de actividades como a aquacultura, a náutica, o turismo

marítimo, entre outros. É conhecida a intenção do Governo em intervir nestes domínios, a concretização de medidas simplificadoras é indispensável para o desenvolvimento da economia do Mar.

A dinâmica criada com o reconhecimento de estratégias de eficiência colectiva (EEC), Pólos de Competitividade e Clusters, merece ser prosseguida para consolidar as dinâmicas de cooperação, de inovação e de internacionalização que permitam aumentar as cadeias de valor das diferentes fileiras que integram a economia do Mar. O Governo tem em preparação um novo enquadramento para as EEC, a sua apresentação e operacionalização reveste, em nosso entender, elevada prioridade para estabilizar o quadro de gestação de novos projectos a enquadrar no novo período de programação de fundos estruturais, em linha com os grandes objectivos da estratégia 2020 — inovação, sustentabilidade e coesão social.

SESSÃO DE ENCERRAMENTO CLOSING SESSION

José Marques dos SANTOS
Reitor da Universidade do Porto
Rector of the University of Porto

PT

Saúdo todos os presentes e cumprimento em particular os membros da mesa, os organizadores e os oradores desta Conferência Internacional sobre “Protecção do Ambiente e o Futuro do Direito do Mar”. É com satisfação que participo na sessão de encerramento de um evento onde se analisaram e debateram questões de grande importância para o futuro da humanidade, com especial atenção aos problemas do espaço marítimo português.

Permitam-me que saúde com especial prazer e deferência a Senhora Ministra da Agricultura, do Mar, do Ambiente e do Ordenamento do Território, Professora Doutora Assunção Cristas, sublinhando o quanto nos honra a sua presença na Universidade do Porto.

Uma saudação também especial ao Senhor Director da FDUP que acolheu nas suas instalações esta conferência e participou na sua organização.

Quero felicitar a Faculdade de Direito da Universidade do Porto, o UPTEC — Parque de Ciência e Tecnologia da Universidade do Porto, o CIIMAR e a Estrutura de Missão para a Extensão da Plataforma Continental pela organização desta conferência internacional. Merece ser enaltecido o empenho de todas estas entidades num evento que muito

prestigiou a Universidade do Porto, reforçando a sua condição de fórum aberto ao debate dos principais desafios da contemporaneidade.

A Universidade do Porto tem assumido as suas responsabilidades cívicas de promoção do debate científico, de partilha do conhecimento e de divulgação de boas práticas. Somos uma instituição virada para o exterior e disponível para interagir com diferentes quadrantes da sociedade, numa lógica de enriquecimento recíproco. Há da nossa parte total disponibilidade e interesse para discutir as grandes questões do mundo actual e para empregar nessa discussão os nossos melhores recursos humanos, científicos e tecnológicos.

Lembro, a propósito, que o cruzamento interdisciplinar de conhecimento assume uma importância crucial para o avanço de qualquer área de estudo, pelo que é um dever das universidades criar uma dinâmica de debate que inclua não só a comunidade académica mas também os decisores políticos, as instituições públicas, as associações corporativas, as empresas e os cidadãos individualmente considerados. É deste debate alargado que surgem novas ideias e se lançam novos desafios, promovendo-se assim o desenvolvimento humano nos seus múltiplos cambiantes.

Este evento teve a felicidade de reunir oradores de grande idoneidade técnico-científica, tanto nacionais como estrangeiros. Foi por isso, certamente, possível realizar um debate elevado e profundo sobre matérias que assumem crucial importância num contexto de valorização do mar enquanto recurso económico, ambiental e científico.

A Universidade do Porto preza bastante o intercâmbio de conhecimento entre especialistas, objectivo que passa em boa medida pela organização de eventos que extravasem as fronteiras da instituição, que promovam a vinda de oradores com diferentes formações e que desenvolvam *network* científico à escala global. Ora tudo isto se verificou nesta conferência, com a vantagem acrescida das temáticas em reflexão implicarem directamente com a qualidade ambiental do planeta e o bem-estar da população.

Por outro lado, esta conferência revelou uma dimensão internacional bem vincada. Não só porque estiveram aqui presentes oradores e participantes de vários países, mas sobretudo porque foi adoptada uma perspectiva globalizante na análise dos temas. Ou seja, a problemática

em torno da protecção do mar foi encarada numa lógica transfronteiriça e com o propósito de dinamizar uma rede internacional de conhecimento envolvendo diferentes parceiros.

Importa referir que esta conferência se enquadra não só na estratégia de internacionalização da Universidade do Porto como também no seu desejo de contribuir, cada vez mais, para o desenvolvimento social e económico de Portugal. Como sabemos, o mar tem um potencial económico que deve ser devidamente valorizado num país de parques recursos naturais, ainda pouco competitivo internacionalmente e a debater-se com uma profunda crise. Neste sentido, a Universidade do Porto entende que o seu papel na qualificação da fileira do mar passa também pela sensibilização de políticos, gestores, empresários, empreendedores e cidadãos em geral para a importância do conhecimento na rentabilização ambientalmente sustentável dos recursos marítimos — algo que foi enfatizado nesta conferência.

Minhas Senhoras e Meus Senhores,

Portugal tem uma relação matricial com o mar. E para caracterizar essa relação, nada melhor do que recorrer às palavras buriladas na exacta medida pelos poetas. Fernando Pessoa exaltou a identidade nacional ao proclamar “ó mar salgado, quanto do teu sal são lágrimas de Portugal!”. Já Sophia de Mello Breyner Andresen deu um cunho pessoal à cumplidade portuguesa com os oceanos: “Metade da minha alma é feita de maresia”, escreveu. A mesma poetisa sentenciou ainda num poema tão curto quanto brilhante: “Quando eu morrer voltarei para buscar os instantes que não vivi junto ao mar”.

Esta mundividência marítima atravessou séculos de História e muitas gerações de portugueses, forjando um contexto social, cultural e económico que se mantém válido na actualidade. Em boa medida, a nossa identidade nacional tem no mar um dos seus esteios mais fortes e a cultura portuguesa, em sentido lato, está também ela impregnada pela ambiência marítima. Mas é também no mar que o nosso país pode encontrar ainda hoje alguns dos seus mais importantes recursos naturais, a partir dos quais se podem desenvolver actividades de grande peso económico e social.

Não me refiro apenas às actividades mais tradicionais, como a pesca, a construção naval, a indústria conserveira, o turismo, os transportes marítimos ou a gestão portuária. Refiro-me também a actividades mais recentes e que têm vindo a emergir com grande dinamismo, como a aquacultura, a biotecnologia marítima, as energias renováveis, a preservação dos recursos marinhos, o ordenamento das regiões costeiras, a química ambiental ou as tecnologias de observação submarina.

Ora esta relação histórica de Portugal com o mar e a importância da fileira para o nosso futuro conferem-nos obrigações acrescidas na protecção dos recursos marítimos, bem como na sua rentabilização económica de forma sustentável. Como sabemos, o mar enfrenta hoje grandes desafios ambientais, desde a poluição marítima à perda da biodiversidade, passando pela destruição dos recifes de corais, pela erosão costeira, pela subida do nível das águas, pelo aumento da temperatura dos mares ou pela depredação de recursos minerais. Neste cenário, Portugal tem de estar na linha da frente da protecção do ambiente marinho e na sua exploração economicamente sustentável.

Perante isto, cabe às instituições do ensino superior e seus centros de investigação ajudar Portugal a cumprir os deveres históricos que tem com o mar. A Academia não pode ignorar os riscos ecológicos, económicos e sociais da degradação do ambiente marinho. Deve, isso sim, aplicar os conhecimentos científicos que produz na redução desses mesmos riscos.

No caso da Universidade do Porto, estamos hoje como ontem empenhados na análise dos grandes desafios nacionais e disponíveis para empregar o nosso *know-how* científico com vista à sua superação. Para tanto, a nossa instituição dispõe de investigadores, unidades de I&D, recursos tecnológicos e *network* internacional para lidar com os problemas associados ao ambiente marinho.

É de facto significativa a massa crítica da Universidade do Porto nas áreas da biologia e ecologia marinhas, da ecotoxicologia, da parasitologia, do cultivo de espécies aquáticas, da química aquática, da robótica submarina, da detecção remota, da energia, dos transportes, da erosão e ordenamento das regiões costeiras, entre outras. A investigação nestes domínios tem uma forte aplicabilidade económica.

Neste como em outros casos, a Universidade do Porto está simultaneamente a expandir os limites do conhecimento e a prestar relevantes serviços à comunidade. Trata-se de uma orientação estratégica há muito assumida pela nossa Universidade, por se pensar que, deste modo, a instituição poderá mais cabalmente contribuir para o desenvolvimento social e económico do país e para o bem-estar da sua população.

Minhas Senhoras e Meus Senhores,

A preservação do ambiente marinho não pode excluir o desenvolvimento de actividades economicamente rentáveis a partir do mar. Há então que saber criar valor na fileira do mar de forma sustentável, o que significa rentabilizar os recursos marinhos sem os exaurir ou degradar irreversivelmente. Para isso, a economia marítima terá de ser cada vez mais baseada no conhecimento académico, na investigação científica e na inovação tecnológica.

Tendo em conta a validade desta premissa, é fácil aquilatar da importância que hoje assumem as actividades de ID&I na área das ciências marinhas. Em nosso entender, Portugal necessita de gerar massa crítica que promova o avanço das ciências aquáticas, que dinamize o *cluster* marítimo nacional, que fomente iniciativas de empreendedorismo tecnológico ligadas ao mar, que contribua para a preservação dos ecossistemas marinhos e que garanta apoio especializado no ordenamento da orla costeira.

Na esteira deste raciocínio, a Universidade do Porto lançou em 2011 o Pólo do Mar do UPTEC. Sediado no Porto de Leixões, o Pólo do Mar contempla múltiplas funções potenciais: a investigação científica básica e aplicada; a incubação de *start-ups* ligados à economia do mar; a oferta de serviços avançados de apoio a empresas do *cluster* marítimo; a atracção de centros de I&DI empresariais; a promoção da mobilidade de docentes, investigadores e estudantes; e a divulgação científica e tecnológica junto da comunidade.

O Pólo do Mar inclui uma incubadora para empresas de base tecnológica da economia marítima instalada no antigo Edifício da Sanidade do Porto de Leixões, após obras de remodelação. A incubadora poderá acolher 40 *start-ups* nos seus 2.000 m² de área. Também no Porto de

Leixões, mas no edifício do Terminal de Cruzeiros, vai ser instalado o Centro de Investigação Marinha e Ambiental (CIIMAR).

A Universidade do Porto demonstra hoje capacidade de atracção de centros de excelência de I&DI, pelo que é de esperar a instalação no polo de unidades nacionais e internacionais de investigação aplicada. Estamos seguros de que nesta infra-estrutura vão ser desenvolvidos produtos, serviços e tecnologias de elevado valor acrescentado. Deste modo, será possível reforçar a competitividade do nosso tecido empresarial, que tanto necessita de bens e serviços transaccionáveis, com conteúdos de inovação e potencial de internacionalização.

Por fim, merece ser sublinhado o ambiente propício ao empreendedorismo que estamos a criar no Pólo do Mar. Seis *start-ups* estão já instaladas na incubadora ainda em construção, mas existe a expectativa de promover, num prazo de 12 anos, a criação e consolidação de mais de 75 empresas de elevada intensidade tecnológica. A este número de empresas deverão corresponder quase 2.000 postos de trabalho directos, que serão preenchidos maioritariamente por quadros qualificados.

A Universidade do Porto está com este polo a reforçar uma das suas linhas estratégicas: a conversão do conhecimento científico e tecnológico em valor empresarial. Nos últimos anos, a nossa instituição aproximou-se das empresas através da prestação de serviços de ID&I. Promoveu o empreendedorismo dentro da sua comunidade académica. Dinamizou a transferência de tecnologia para o mercado. E criou condições para a incubação de *start-ups*.

Desta forma, a Universidade do Porto gerou um clima favorável à inovação e empreendedorismo empresariais. E assim ganhou uma vertente de actuação que a aproxima do tecido socioeconómico do país, ao mesmo tempo que dissipa eventuais dúvidas sobre a aplicabilidade da investigação científica portuguesa.

Há um ecossistema de conhecimento empresarial que está a ser construído diariamente na Universidade do Porto, circunstância que nos deixa bastante satisfeitos e entusiasmados. Trata-se antes de mais de um sinal de que a nossa instituição está a contribuir directamente para a criação de riqueza, para a expansão da oferta de emprego e para o incremento da competitividade do país.

O Pólo do Mar está, assim, a tirar partido da aposta feita na investigação enquanto factor distintivo da Universidade no contexto académico e enquanto base sólida para a valorização do conhecimento, para o desenvolvimento de soluções empresariais inovadoras e para a introdução de tecnologia sofisticada na economia.

Minhas Senhoras e Meus Senhores,

Termino a minha intervenção reforçando a ideia de que o mar continua a ser o nosso destino. Para Portugal, o regresso ao mar é muito mais do que o reencontro com as suas raízes identitárias mais profundas. É também, e sobretudo, uma janela que se abre para o futuro. Para tanto, importa articular esforços de modo a que o aproveitamento das imensas potencialidades económicas do mar não colida com a qualidade ambiental marítima.

Da parte da Universidade do Porto, há total disponibilidade para cooperar com outras instituições quer na promoção da economia do mar, quer na preservação dos ecossistemas marinhos, quer ainda na regulação jurídica do espaço marítimo. Sabemos bem as responsabilidades que nesta matéria impendem sobre as instituições do ensino superior. Como já aqui salientei, as instituições do ensino superior são fundamentais para garantir o respaldo científico de uma intervenção humana sobre o mar que seja economicamente estruturante, ambientalmente sustentável e juridicamente regulada.

Creio, aliás, que esta conferência internacional serviu para reiterar o compromisso da Universidade do Porto com os novos desafios do mar, bem como para reforçar a ideia de que o nosso país tem de facto de assumir como desígnio estratégico o desenvolvimento das suas potencialidades marítimas. O mar deve estar no centro das políticas públicas portuguesas e congregar atores, tanto públicos como privados, na concretização de uma estratégia para o *cluster* marítimo que passe por dinamizar a investigação científica e a inovação, por aumentar a capacidade exportadora da fileira, por reposicionar Portugal entre os países costeiros e por salvaguardar a qualidade ambiental dos nossos espaços marítimos. Assim, estaremos a construir um país mais imune a crises e onde se goste e queira viver!

Muito obrigado.

EN

Allow me to greet everyone present and, in particular, the members of the Board, organizers and speakers of this international conference on the “Protection of the Environment and the Future of the Law of the Sea”. It is with great pleasure that I take part in the closing session of an event in which crucial issues for the future of mankind were analysed and discussed, particularly the problems related to the Portuguese maritime area.

I would like to respectfully welcome the Minister of Agriculture, Sea, Environment and Spatial Planning, Professor Assunção Cristas, and emphasize how honoured we are in having her at the University of Porto.

I also address a special greeting to the Director of FDUP for hosting this conference in its premises and participating in the organization.

Allow me to congratulate the Faculty of Law of the University of Porto, the UPTEC — Science and Technology Park of the University of Porto, CIIMAR and the Task Group for the Extension of the Portuguese Continental Shelf for organising this international conference. The commitment of all these entities in this event that honours the University of Porto deserves to be commended, reinforcing its status as a forum open to the discussion of the major challenges of today.

The University of Porto has accepted its civic responsibility to promote scientific debate, the sharing of knowledge and the dissemination of good practices. Being open to the world and available to interact with the various sectors of society, in a logic of mutual enrichment, we are willing and interested in discussing the major issues of the modern world, and to use our best human, scientific and technological resources to this purpose.

In this regard, I would emphasise that the interdisciplinary knowledge is of crucial importance to the advancement of any field of study; therefore, it is the duty of universities to lay the groundwork for dynamic debates that involve not only the academic community, but also policy-makers, public institutions, corporate associations, companies and indi-

vidual citizens. This extensive debate brings new ideas and sets new challenges, thus promoting human development in its many aspects.

This event was fortunate to gather Portuguese and foreign speakers of great technical and scientific reputation. This was perhaps the reason for the high level and substantial debate on issues of critical importance to the value of the sea as an economic, environmental and scientific resource.

The University of Porto welcomes the exchange of knowledge among experts, a goal that largely depends on hosting events that go beyond the boundaries of the university, promoting the presence of speakers with different backgrounds and developing global scientific networks. We saw all of this in this conference, with the added advantage that the themes under discussion were directly involved with the environmental quality of our planet and the well-being of the population.

Moreover, this conference proved to have a well-defined international dimension, not only because we were able to count on the presence of speakers and participants from various countries, but especially because the themes were analysed in a holistic approach. In other words, the issue around the protection of the sea was addressed in trans-border logic, aiming to foster an international network of knowledge involving different partners.

It should be noted that this conference is consistent with our university's goals of internationalization and with the desire to increasingly contribute to the social and economic development of Portugal. As we know, the economic potential of the sea should be properly valued, particularly so in a country with scarce natural resources, internationally uncompetitive and struggling with a profound crisis. In this sense, the University of Porto believes that its role in the qualification of the sea segment also implies that politicians, managers, business owners, entrepreneurs and citizens in general must be made aware that the sustainable environmental profitability of marine resources is important — this was something that was emphasised in this conference.

Ladies and gentlemen,

Portugal has a natural relationship with the sea and, to characterise this relationship, nothing works better than the refined words of the

poets. Fernando Pessoa exalted national identity when he said “Oh salty sea, how much of your salt is tears from Portugal!”. Sophia de Mello Breyner Andresen, on the other hand, gave her personal touch to the Portuguese affinity with the oceans when she wrote: “Half of my soul is made of sea breeze”, and in a short, yet brilliant poem: “When I die, I will return to find those moments when I did not live by the sea”.

This sea worldview crossed centuries of history and many generations of Portuguese folk, shaping a social, cultural and economic context which is still true today. To a significant degree, the sea is one of the strongest pillars of our identity. In a broader sense, Portuguese culture is also filled with its atmosphere. But the sea is also the repository of some of the country’s most important natural resources, which can be converted into very important social and economic activities.

I am not just referring to the more traditional activities, such as fishing, shipbuilding, canning industry, tourism, sea transport and port management. I also refer to more recent and flourishing activities, such as aquaculture, marine biotechnology, renewable energies, the conservation of marine resources, planning in coastal areas, environmental chemistry or underwater observation technologies.

Because of this historical relationship between the country and the sea, and the relevance of the sector to its future, Portugal has an additional duty to protect its marine resources and to turn them into a sustainable economic activity. As we know, the sea faces many environmental challenges, including marine pollution, loss of biodiversity, the destruction of coral reefs, coastal erosion, rising sea levels, increase in water temperature and the depletion of mineral resources. Against this backdrop, Portugal must be at the forefront when it comes to protecting marine environment and ensuring its economically sustainable exploitation.

Having said this, it is up to the higher education institutions and their research centres to help Portugal fulfil its historical duties to the sea. The academia cannot ignore the ecological, economic and social risks of allowing the marine environment to deteriorate. Instead, it has to apply the scientific knowledge it produces to reduce such risks.

At the University of Porto, we are committed today, as we were in the past, to analyse the major national challenges and we are available to put our scientific know-how to use in order to overcome them. To this end, our University has researchers, R&D units, technological resources and international networks required to deal with the problems related to the marine environment.

In fact, there is a significant critical mass at the University of Porto in the fields of marine biology and ecology, ecotoxicology, parasitology, the cultivation of aquatic species, aquatic chemistry, underwater robotics, remote detection, energy, transports, erosion and planning in coastal areas, among others. Research in these areas is highly applicable to businesses.

In this as in other cases, the University of Porto is simultaneously expanding the boundaries of knowledge and rendering relevant services to the community. This is a longstanding strategy of our University, because we believe that we will more effectively contribute to the social and economic development of the country and to the well-being of its population.

Ladies and gentlemen,

The preservation of the marine environment cannot exclude the development of economically viable marine activities. We need to know how to increase the value of the sea segment in a sustainable manner, which means making the best use of marine resources without depleting them or irreversibly degrading them. Maritime economy will, therefore, have to be more and more based on academic knowledge, scientific research and technological innovation.

Taking into account the grounds of this idea, it is easy to assess the importance of R&Di in the field of marine sciences. It is our opinion that Portugal needs to generate critical mass that promotes the advancement of marine sciences, fosters the national maritime cluster and technological business initiatives linked to the sea, contributes to the preservation of marine ecosystems, and ensures expert support in the planning of coastal areas.

Following this reasoning, the University of Porto launched in 2011 the UPTEC Sea Centre. Based at the Port of Leixões, the Sea Centre has several potential purposes: basic and applied scientific research; the incubation of start-ups related to maritime economy; offer advanced support services to companies in the maritime cluster; attract corporate R&Di centres; promote the mobility of teachers, researchers and students; and disseminate science and technology to the community.

The Sea Centre includes an incubator for technology-based companies working in the field of maritime economy and is located in the former health services building of the Port of Leixões, now renovated. The incubator can accommodate 40 start-ups in an area of 2,000 sq.m. The Centre of Marine and Environmental Research will also be set up in the Port of Leixões, in the Cruise Terminal.

The University of Porto has shown that it is able to attract centres of excellence in R&Di, so we expect that national and international applied research units will soon settle in the Sea Centre. We are confident that valuable products, services and technologies will be developed in this infrastructure, thus enhancing a more competitive business fabric, which is so in need of tradable goods and services, with innovative contents and international potential.

Finally, I need to emphasise that the Sea Centre offers an environment conducive to entrepreneurship. Six start-ups have already moved to the incubator, still under construction, and we expect to promote, within a twelve year period, the creation and consolidation of more than seventy-five technology-intensive companies. These companies will provide nearly 2,000 direct jobs, to be filled mostly by skilled workers.

With this cluster, the University of Porto aims to enhance one of its strategic goals: to convert scientific and technological knowledge into business value. In recent years, contacts between our University and the companies were made through the provision of R&Di services. The university promoted entrepreneurship within the academic community, fostered the transfer of technology to the market and created the conditions for the incubation of start-ups.

By creating a climate conducive to business innovation and entrepreneurship, the University of Porto has built up a segment that draws it closer to the socio-economic fabric of the country, removing any possible doubts as to the applicability of Portuguese scientific research.

An ecosystem of business knowledge is built every day at the University of Porto, and we are very pleased and enthusiastic about it. Above all, this is a sign that our institution is directly helping to create wealth, expand the job offers and increase the competitiveness of the country.

The Sea Centre is taking advantage of the investment made in research, which has helped distinguish the University in the academic context, as a solid basis for the enhancement of knowledge, for the development of innovative business solutions and for the introduction of sophisticated technology in the economy.

Ladies and Gentlemen,

Let me conclude my comments emphasising the idea that the sea is our future. For Portugal, returning to the sea is much more than rediscovering its deepest identity. Above all, it is also a window opened to the future. It is therefore important to articulate efforts so that when we tap into the enormous economic potential the sea has to offer, we will not collide with the marine environmental quality.

The University of Porto is more than willing to cooperate with other institutions in the promotion of maritime economy, preservation of marine ecosystems and legal regulation of the maritime space. We know very well about the responsibilities of higher education institutions in this area and, as I have already pointed out, how important they are in ensuring that the scientific support given to the human intervention in the sea is economically structuring, environmentally sustainable and legally regulated.

In fact, I believe that this conference has served to confirm the commitment of the University of Porto with the new challenges of the sea, and to reinforce the notion that our country must indeed assume, as a strategic plan, the development of its maritime potential. The sea should be at the core of the Portuguese public policies, and should bring

together public and private players to implement a strategy for the maritime cluster intended to boost scientific research and innovation, to increase the exporting capacity of the segment, to reposition Portugal among the coastal countries and to preserve the environmental quality of our maritime zones. Thus, we will build a country more immune to crises, where people like and are willing to live in!

Thank you.

**CONTRIBUIÇÕES EXTERNAS
PARA A SESSÃO II**

**EXTERNAL CONTRIBUTIONS
TO SESSION II**

THE NAGOYA PROTOCOL AND THE REGIME ON ACCESS TO NATURAL RESOURCES AND THE FAIR AND EQUITABLE SHARING OF BENEFITS IN THE AZORES AUTONOMOUS REGION

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Sumário: *O Protocolo de Nagoya sobre Acesso a Recursos Genéticos e a Partilha Justa e Equitativa dos Benefícios resultantes da sua Utilização foi adoptado pelas Partes Contratantes da Convenção sobre Diversidade Biológica (CBD) durante a décima Conferência das Partes, realizada em Nagoya, Japão, de 18 a 29 de Outubro de 2010. Constitui objectivo deste Protocolo a partilha justa e equitativa dos benefícios resultantes da utilização dos recursos genéticos, incluindo o acesso adequado aos recursos genéticos e da transferência apropriada das tecnologias relevantes, tendo em conta todos os direitos sobre esses recursos e tecnologias, bem como através de financiamentos adequados. Ajudando a assegurar a partilha de benefícios, o Protocolo de Nagoya cria incentivos para a conservação e uso sustentável dos recursos genéticos, reforçando ainda a contribuição da diversidade biológica para o desenvolvimento e bem-estar humano.*

A Região Autónoma dos Açores (RAA) é uma região singular, fortemente marcada pela sua natureza insular e pelas suas características geomorfológicas particulares. Estas características criaram condições específicas para o desenvolvimento de uma biodiversidade de elevado valor, com grande potencial para a investigação e desenvolvimento, que desperta

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o interesse da comunidade científica, não só nacional como internacional. Estas características únicas do capital natural dos Açores estiveram na base da opção estratégica do Governo Regional de desenvolver um instrumento legal que, por um lado contribua para a implementação das disposições estabelecidas pelo Protocolo de Nagoya e, ao mesmo tempo, proteja todos os recursos naturais. Assim, o Decreto Legislativo Regional n.º 9/2012/A, de 20 de Março, estabelece a forma de acesso e utilização de recursos naturais da RAA para fins científicos. O regime jurídico que aplica os princípios e os mecanismos do Protocolo de Nagoya a todos os recursos naturais, e não só aos recursos biológicos e genéticos, foi posteriormente desenvolvido pelo Decreto Regulamentar Regional n.º 20/2012/A, de 5 de Novembro.

Sendo do interesse da RAA que as actividades de investigação científica que tenham por base os seus recursos naturais possam contribuir para aprofundar o conhecimento científico dos mesmos, seus componentes e potencialidades, procurou-se assim acautelar a sua protecção e conservação, assegurando igualmente a partilha justa e equitativa dos benefícios que possam resultar daquela mesma investigação.

Abstract: *The Nagoya Protocol on Access and Benefit Share of Genetic Resources resulting from their use was adopted by the Contracting Parties of the Convention on Biologic Diversity (CBD) during the Tenth Conference of the Parties, in Nagoya, Japan, from 18 to 29 October 2010. The objective of this Protocol is the fair and equal share of benefits resulting from the use of genetic resources, including adequate access to genetic resources and the appropriate transfer of relevant technologies, taking into consideration all the rights to these resources and technologies, as well as using suitable financing. By helping to ensure the share of benefits, the Nagoya Protocol creates incentives for the conservation and sustainable use of genetic resources and also reinforces the contribution to biologic diversity for development and human well-being.*

The Azores Autonomous Region (AAR) is a unique region, remarkable for its insular nature and its particular geo-morphological characteristics. These characteristics created specific conditions for the development of a valuable diversity, with great potential for research and development, which triggers the scientific interest of both national and international communities. These unique characteristics of Azores' natural capital were the basis for the strategic option for the Regional Government to develop a legal instrument, which, on one hand contributes to the implementation of the rules established by Nagoya Protocol and, at the same time, protects all natural resources. Thus, the Regional Legislative Decree n.º 9/2012/A, of 20 March, establishes the access and use of natural resources in the AAR for scientific purposes. This juridical regime, which applies the principles and mechanisms of the Nagoya Protocol to all natural resources, and not just to biological and genetic resources, was later developed by the Regional Regulatory Decree n.º 20/2012/A, of 5 November.

As it is in the interest of the AAR that scientific research based on natural resources should contribute to broaden the scientific knowledge of these resources, their components and potential, an attempt has been made to ensure their protection and conservation, and also ensure the fair and equitative share of the benefits that may result from such research.

1. INTRODUCTION

1.1. Preliminary Aspects

The Azores Autonomous Region of (AAR) is a unique region, remarkable for its insular nature and its particular geo-morphological characteristics. These characteristics created specific conditions for the development of a high level of diversity, with great potential for research and development, which triggers the scientific interest of both national and international communities.

Natural resources, as defined by Portuguese legislation, comprise natural environmental components which are of use to human beings and generate goods and services, including fauna, flora, air, water, minerals and soil⁽¹⁾.

As regards fauna and flora, the AAR presents a large number of endemisms, typical of insular ecosystems. Among the terrestrial flora, 300 species of native vascular plants can be found and 66 endemisms are known. As for fauna, there are 46 species of birds in the Azores, of which some are endemic, and 27 species of mammals, of which 25 are cetaceans. Several studies on the different species in the Azores are noteworthy, however there is still a lot to be studied, namely in the areas of systematic and taxonomy. The unique fauna of hydrothermal springs in the Azores, as well as the wealth and rareness of associated ecosystems is another particularity of this Region, which has caught the attention of the scientific community⁽²⁾.

The islands of the Archipelago also present very diverse geomorphological aspects and their volcanic nature explains the presence of a varied speleological patrimony. About 250 volcanic cavities of different

⁽¹⁾ Cfr Article 3 of Law Decree no. 142/2008, of 24 July.

⁽²⁾ Regional Office of the Environment and Ocean, *Report on the State of the Environment of the Azores*, 2005, p. 53 onwards.

types, lava tubes and volcanic pit caves, crevasses and erosion caves are known and whose formation processes have stimulated several studies and searches for speleothems.

The strategic location of the Archipelago and the records found have increased the importance of fossils' occurrences in the Region, especially of whales from the Upper Neogene in Santa Maria, thus attracting the attention of areas such as Paleontology and Biogeography.

As they are the target of several sample campaigns of both national and international scientific research, conditions for a better and more thorough knowledge of these matters seem to be in place. However, in most cases, both the regional agencies with competence in this matter and the research institutions themselves do not know about the outcomes of the undertaken research or even the on-going activities and projects. Thus, the AAR loses a potential basis for knowledge and development.

This knowledge may not be an added value in the case of research into biological and genetic resources, since it may result in the development of uses and products whose benefits should be equally shared by suppliers and end-users ⁽³⁾.

Conscious of these fragilities, the Regional Government decided to establish a legal regime to regulate access to natural resources which would allow the safeguard of freedom to carry out research but would also enhance the regional conservation and development policy followed.

Based on the analysis of the Political and Administrative Statute of the Azores Autonomous Region it is possible to see that the matter under

⁽³⁾ According to the established in the Convention on Biological Diversity (1992) and the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising from their Use (2002).

regulation is connected to several material norms that confer *proper legislative competence* to the Azores Autonomous Region. This leads us to conclude that the Region has the competence to create a juridical regime that regulates access to natural resources in the geographic space of the Autonomous Region while obviously respecting national, communitarian and international legislation.

The principle of subsidiarity, according to which the Region takes on functions to proceed in a more efficient and adequate manner than the State, is met in this situation: on one hand because there is not even a specific regulation at the national level and, on the other, due to the importance of biodiversity in the Azores Autonomous Region, whose resources are incomparable with any other region in the country and contains many unique species, which creates specific interest and need for regional regulation in this matter.

1.2. The need for an exception regime

The complexity of relationships and components of the environmental system and the fragility of scientific knowledge on some characteristics, properties and stocks of different resources translates into degrees of uncertainty regarding the impact of any action in this domain. At the same time, the dynamics of knowledge acquisition, the growing innovation in technology and the demands in the Biotechnology market condition the broadening of borders and the search for new work materials and resources. The combination of these factors shapes the need for a regime which allows the necessary flexibility to accommodate different levels of uncertainty.

It is important to highlight the innovative and even exploratory character of the regulations developed. This implies acknowledging that it will be extremely difficult to grasp the whole range of situations on which it will focus on. Because of this, exception regimes were introduced every time the matter at hand called for other mechanisms not foreseen in the regulations.

Concerning the regulations, the difference between them should be made clear:

- Firstly, the Regional Legislative Decree No 9/2012/A, of 20 March establishes the legal regime that regulates the general basis for access to natural resources for scientific research in the Azores Autonomous Region. Thus, we may mention that research related to biology and human genetics is excluded.
- Secondly, the Regional Regulatory Decree No 20/2012/A, of 5 November aims to develop the legal regime that defines access to biological and genetic resources and the fair and equal share of benefits from their use in the AAR.

1.3. Methodology

The baseline studies ⁽⁴⁾ for the aforementioned regulations provided a general framework for the issues related to natural resources, especially biological and genetic resources, to scientific research and other related aspects and preliminarily developed these concepts. Later, there was a broad international, communitarian, national and regional juridical framework, in which all legal instruments, directly or indirectly related to these matters, were identified and which must always be respected when writing a juridical regime of this nature. Finally, an analysis of comparative law was presented, namely some laws and policies from

⁽⁴⁾ SRCTE-DRCTC (2010) *Phase I and II Report — Regime on Access to Natural Resources in the Azores Autonomous Region for Scientific Research: Background and Definition of Object and Scope*. Regional Secretariat for Science, Technology and Equipment — Regional Directorate for Science, Technology and Communications (SRCTE-DRCTC), Ponta Delgada.

SRCTE-DRCTC (2011) *Phase III Report — Regime on Access to Natural Resources in the Azores Autonomous Region for Scientific Research: Rationale of Technical Support for Specific Regulations*. Regional Secretariat for Science, Technology and Equipment — Regional Directorate for Science, Technology and Communications (SRCTE-DRCTC), Ponta Delgada.

other regions and countries with the aim of taking benefit from foreign experience. There was not a thorough analysis of the various cases but simply a survey of the most pragmatic aspects.

A group of *difficulties* was also identified which, considering the general and juridical framework and the comparative law cases analysed, may hamper the drawing up of the juridical regime for access to natural resources; as well as a set of *recommendations*.

2. GENERAL FRAMEWORK

2.1. Scientific Research

Natural resources of AAR have been a privileged object of study of several areas of natural and similar sciences, both by the national and international scientific community.

Taking as an example the scientific research on the sea, it can be seen that the Region has been a geographic domain of interest since the end of the 19th century, with several expeditions and oceanographic ships heading to Azores, such as *Challenger* and Prince of Monaco's yachts. The results of these expeditions were published in many scientific journals and contributed to the knowledge of the marine resources of the region.

The creation of the University of Azores in the 80's contributed to the expansion of knowledge on many aspects of the natural history of the Archipelago and attracted scientists through scientific cooperation with other national and foreign research institutions ⁽⁵⁾.

Internationally, scientific research activities are not generally regulated by globally accepted and legally binding instruments. Some rules

⁽⁵⁾ Cfr. Ricardo Serrão Santos *et al.*, "Marine research, resources and conservation in the Azores", *Aquatic Conservation: marine and freshwater ecosystems*, Vol. 5, 311-354 (1995), p. 313.

are imposed for funds' granting from some international institutions but, in the majority of cases, they are limited to compliance with ethical principles.

The rules imposed by legally binding instruments, both at international and national level, refer mainly to the results of research projects (intellectual property law, patents, etc.) and not to the underlying activities, such as sample collection.

2.1.1. Research Ethics and Code of Conduct

Ethical or behaviour norms are common in many disciplines, professions and institutions and they are adapted to their specific objectives and aims, contributing to raising “public” confidence. In research, an activity which often entails cooperation between several scientists and institutions, rules or ethical principles provide essential values for collaborative work to the establishment, such as trust, responsibility, mutual respect and fairness. Adil E. Shamoo and David B. Resnick (2009) present a summary of ethical principles that govern the codes of conduct in the research area ⁽⁶⁾.

Some countries have national codes of conduct, like Australia (*Australian Code for the Responsible Conduct of Research*) ⁽⁷⁾ and The Netherlands (*The Netherlands Code of Conduct for Scientific Practice — Principles of good scientific teaching and research*) ⁽⁸⁾.

There are also codes of conduct for research activities in specific ecosystems which are especially vulnerable due to their particularities.

⁽⁶⁾ Cfr. Adil E. Shamoo/David B. Resnik, *Responsible Conduct of Research*, Oxford University Press, New York, 2009, p. 9 and following.

⁽⁷⁾ Available at: <http://www.nhmrc.gov.au/publications/synopses/r39syn.htm>.

⁽⁸⁾ Available at: http://media.leidenuniv.nl/legacy/netherlands_code_of_conduct_for_scientific_practice.pdf.

The Scientific Committee on Antarctic⁽⁹⁾Research — SCAR — developed the code of environmental conduct for land scientific research activities in the Antarctic field⁹. with recommendations for the scientists to perform their field activities protecting the Antarctic environment for future generations.

In the case of hydrothermal springs, a phenomenon also present in the AAR, *InterRidge* — *International Cooperation in Ridge-Crest Studies* — proposed the Declaration of Commitment for responsible research practices in deep-sea hydrothermal vents⁽¹⁰⁾. Those responsible practices should, as regards resource samples, maximise the use of geological, chemical and biological samples, collected through collaboration and cooperation of the global community of scientists and international sharing of data, ideas and samples, thus avoiding re-sampling and impact on hydrothermal springs. The OSPAR Commission developed the Code of Conduct for marine research in deep seas and high seas in the maritime zone of OSPAR, based on the *InterRidge* document. According to this code, the sampling methodologies should be designed to adjust to the specific characteristics of the place, preferably using non-invasive instruments. The collection of samples not essential for research should be avoided and the number of samples should be reduced whenever possible. Scientists should consider existing and available samples from the same location.

A working group comprised of property owners, conservation organisations, museum curators and local fossil collectors from West Dorset Coast, England, developed another example of code of conduct, this time for fossil collection. Although it was aimed at professional collectors, the Working Group intended the Code of Conduct to be also applicable to amateurs collecting samples for leisure. The Code men-

⁽⁹⁾ Available at: http://www.scar.org/researchgroups/lifescience/Code_of_Conduct_Jan09.pdf.

⁽¹⁰⁾ Available at: <http://www.interridge.org/irstatement%20>.

tions safety rules for fossils' collection but it also approaches the issue of fossils' property ⁽¹¹⁾.

Codes of Conduct, although voluntary and with no binding character, may provide a basis for what should be the general principles for regulation of access to natural resources for scientific research purposes, namely ethical principles commonly accepted by the scientific community, even if in a limited way and with due reservations.

2.2. Sampling of Natural Resources

Research in the field of sciences is guided by the *scientific method* which consists of data collection through observation and experimentation, as well as formulation and testing of hypothesis. Observation and experimentation make resource, in most cases, to samples, sets of elements extracted and representative of a larger set (population or universe), which are intended for study. The results and conclusions may then be generalised to the population (if there are any premises/conclusions).

Several areas of science use fauna, flora, soil or mineral samples to analyse their components and properties. In recent decades research on natural resources has been essential to economical and social development and to improve quality of life, with the discovery of new goods and services. Moreover, it has contributed to a better understanding of natural phenomena which directly or indirectly affect us.

Due to their importance, natural resources should be valued and used in a sustainable way, in order to guarantee not only current generation's needs but also the needs of future generations. The sustainable use of natural resources may be a series of interventions and the imposition of some limitations to their access.

⁽¹¹⁾ Available at: http://www.jurassiccoast.com/downloads/uploads/full_fossil_collecting_code.pdf.

2.2.1. Authorisations to access natural resources for scientific research purposes

In Portugal, Law Decree n.º 42/2008, of 24 July, establishes the legal regime for conservation of nature and biodiversity.

In accordance with this regulation, conservation of nature and biodiversity is *the set of physical, ecological, sociological and economical interventions oriented to the maintenance or recovery of items of natural value and for the valorisation and sustainable use of natural resources.*

With this regulation the Fundamental Network of Conservation of Nature was created, constituted by the National System of agriculture, ecological and water Classified Areas and continuity areas. The National System of Classified Areas encompasses the National Network of Protected Areas, which can have many typologies. The classification of a protected area confers a legal protection status and it may mean the interdiction or constrains for certain activities. Full protection zones may be delimited within protected areas, wherein the objective is to maintain natural processes in a dynamic and evolutionary state, without regular human activities and, for that reason, scientific research in these areas requires previous authorization from the national authority.

Land planning of protected areas, despite promoting research, may also, directly or indirectly, impose limitations to certain scientific research activities, for example, prohibiting the capture of wild species. For example, *Land Planning Regulation for the Berlengas Natural Reserve* determines that the collection of biological or geological samples for scientific purposes, the removal of substrate for scientific purposes and even execution of scientific research works must be subject to authorisation or other binding decision by the governing body of the Natural Reserve ⁽¹²⁾.

⁽¹²⁾ Article 9 of the Regulation approved by Resolution of the Council of Ministers no.º 180/2008 of 24 November.

In certain countries a licence is even necessary for research activities in protected areas. For example, in Australia, The Management Plan for the Great Barrier Reef Marine Park determines that it is necessary to get a permit for certain scientific research activities. The need for a research permit may depend on the area where the research is carried out (according to the zoning of the Park), the equipment used, the number of samples of particular species (there are tables with the maximum number of samples) and the species to be captured ⁽¹³⁾.

In the United States of America a licence is required for scientific research and collection for almost every activity related to natural resources or social science studies, in areas of the National Park System, those involving field work, collection of specimens or which potentially disturb resources or visitors. In order to obtain the licence it is necessary to supply information about the objectives of the project, financial sources, location of the research, methodology, and other ⁽¹⁴⁾.

These licences for scientific research may be justified by the ecological sensitivity of the areas or resources or by the sensitivity or status of conservation of certain species or groups of species, such as whales. Article VIII of The International Convention for Regulation of Whaling gives member states the right to issue licences to kill whales for scientific purposes. Countries like Canada, USA, JAPAN and recently Iceland have issued this type of licence. The licences are issued by the countries, although Member-States have to submit the application to International Whaling Commission for assessment/revision. The application for licences includes extensive information about the goals, methods and potential impact of the research project ⁽¹⁵⁾.

⁽¹³⁾ Information available at: http://www.gbrmpa.gov.au/corp_site/permits/research_permits.

⁽¹⁴⁾ Information available at: <https://science.nature.nps.gov/research/ac/Research/Index;jsessionid=3C3EC14ED928A73697F446F2E361B024>.

⁽¹⁵⁾ Information available at: <http://www.iwcoffice.org/conservation/permits.htm>.

Therefore, authorisations and licences for scientific research, especially sample collection, are imposed with the purpose of protecting the ecological integrity of certain geographic areas, usually with protection status, or protecting certain species of fauna and flora. Even licences for scientific research in protected areas are, in the majority of cases, connected to protection of species of fauna and/or flora. This is understandable because of the high value of biological diversity and the innumerable threats it is exposed to.

2.3. Biological and Genetic Resources

Biological diversity is defined as the variability between living beings of all origins, including marine-terrestrial ecosystems and other aquatic ecosystems and the ecological complexes those organisms are part of. It comprises the diversity within each species, between species and ecosystems. Biological diversity and its components present priceless ecological, genetic, social, economical, scientific, educational, cultural, recreational and aesthetic value, besides their inherent value¹⁶. Biological diversity components also present a potential value, related to direct uses not yet made of those components because they are unknown, but which may come about in the future.

Biological resources include *genetic resources, organisms or part of them, populations or any other type of biotic component of ecosystems, of actual or potential use to mankind*. In turn, genetic resources are the *genetic material with actual or potential value* ⁽¹⁶⁾.

The value of genetic resources is mainly understood by its social and economical importance as the base of food, agriculture, horticulture, silviculture and medicine. However, genetic resources play an equally crucial role in the functioning and resilience of ecosystems ⁽¹⁷⁾.

⁽¹⁶⁾ Cfr. *Convention on Biological Diversity*. Rio de Janeiro, Brazil, 1992.

⁽¹⁷⁾ Information available at: <http://biodiversity-chm.eea.europa.eu/information/F1046684686/F1120565936>.

Despite its importance, biological diversity is seriously threatened by certain human activities and it is undergoing significant reductions, not only in the number of species but also through the loss of genetic diversity.

2.3.1. Protection of biological diversity

The drastic consequences of the reduction of biological diversity came to the attention of the United Nations Environmental Programme, which in 1988 created an *Ad Hoc* work group, comprising biological diversity experts to explore the need for biological diversity international convention. This process led up to the approval of the Biological Diversity Convention, during the United Nations Environment and Development Conference in Rio de Janeiro in 1992, and came into force on 29 December 1993.

The Convention has three main goals: the conservation of biological diversity, sustainable use of the components of biological diversity and fair and equal share of benefits resulting from the use of genetic resources ⁽¹⁸⁾.

Up to the moment when the Convention came into force, there was a high chance of users of genetic resources gaining huge value without the country of origin of the resources getting any significant return. The inclusion of fair and equal share of the benefits was the *quid pro quod* conditions of developing countries to accept the Convention ⁽¹⁹⁾.

Developing countries usually present high biodiversity. In the group of 17 mega-diverse countries ⁽²⁰⁾ identified by the United Nations Envi-

⁽¹⁸⁾ Cfr. *Convention on Biological Diversity*, Rio de Janeiro, Brasil, 1992.

⁽¹⁹⁾ Cfr. Morten Walløe/Tomme Young, *Beyond Access: Exploring Implementation of the Fair and Equitable Sharing Commitment in the CBD*, IUCN, Gland, Switzerland, 2007, p. 1.

⁽²⁰⁾ Group of countries which, as a group, make up less than 10% of the land surface, but in which can be found 70% of global biological diversity.

ronment Programme there are countries such as Colombia, the Democratic Republic of Congo, Costa Rica, the Philippines and Ecuador. Despite the concentration of biological diversity, in many cases these countries do not have yet the technological and scientific ability to explore the potential of their resources, which makes the issues of access and share of benefits particularly relevant.

In 2002, in the scope of the Convention on Biological Diversity, approval was given to the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits arising from their utilization. These Guidelines present the steps in the process of access and benefit sharing, the requisites for mutually agreed conditions, the main roles and responsibilities of users and providers, amongst other elements, and are mere recommendations, with no binding nature.

2.3.2. Genetic Resources and Intellectual Property

The World Intellectual Property Organization (WIPO), through the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, aimed to develop guiding contractual practices, guidelines and model clauses on intellectual property contractual arrangements relating to access to genetic resources and benefit sharing (ABS).

Contractual arrangements for sharing of benefits involve an agreement between the supplier and the recipient of the genetic material transferred, which creates obligations for both parties.

There is a wide variety of agreements, ranging from declarations attached to sending germplasm, through memoranda of understanding, to comprehensive and formally negotiated contracts covering a broad program of cooperation between the parties. The contracts are used to transfer an increasingly wide range of genetic resources for commercial and non-commercial uses, or a combination of both.

The major challenges for the development and adoption of guidelines and models in the field of intellectual property for contractual agreements on access to genetic resources and benefit sharing lie especially in the number of stakeholders in the process of exchange of genetic resources, which is not limited to a simple relationship between a supplier and a user ⁽²¹⁾.

Although the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore produced various support documentation on these matters, progress has been rather slow. One of the reasons is the great divergence of positions about the role that a system of intellectual property may have in the protection and appropriation of genetic resources, traditional knowledge and folklore. There are even those who argue that developed countries, mainly users but not providers of genetic resources, have an interest in the slow progress or even cessation of the process.

On the other hand, developing countries emphasise the urgency in accelerating the process and getting tangible results, such as, possible international instruments for the protection of traditional knowledge and traditional cultural expressions, as well as mechanisms for the prevention of misappropriation of genetic resources ⁽²²⁾. The truth is that the first guidelines were presented in 2001 and so far the process is still at an impasse.

2.3.3. Codes of conduct for access and benefit sharing

The genetic resources from different organisms (like animals, plants and microorganisms) are used for several purposes by different users

⁽²¹⁾ Cfr. Comité Intergubernamental sobre Propiedad Intelectual y Recursos Genéticos, Conocimientos Tradicionales y Folclore *Principios operativos de las cláusulas sobre propiedad intelectual en arreglos contractuales relativos al acceso a los recursos genéticos y la distribución de beneficios (OMPI/GRTKF/IC/2/3)*, Ginebra, 2001, p. 4 and following.

⁽²²⁾ Information available at: <http://www.ipngos.org/casestudies/agriculture/index.html>.

(researchers, private companies, botanical gardens, etc.). With the rise of the issues of access and benefit sharing related to genetic resources, some groups of users and organisations decided to develop codes of conduct and good practices which included these issues. Despite their non-binding nature, these instruments contribute to the practical implementation of the arrangements set forth in the Convention on Biological Diversity, adjusting them to the specificities of certain groups of users.

One example is the Micro-Organisms Sustainable Use and Access Regulation International Code of Conduct developed by BCCM — Belgian Co-ordinated Collections of Micro-organisms, with the support of the European Commission and involving partners such as the OECD and the International Union for Conservation of Nature. This code was developed to enable access to microbial genetic resources and assist the partners of the Code in the establishment of appropriate arrangements for the transfer of these resources, in the framework of the Convention on Biological Diversity. In general, the Code provides terms for access, benefit-sharing agreements, access to and transfer of technology and scientific and technical cooperation. It is recommended to obtain Prior Informed Consent for obtaining microbial genetic resources *in situ* and the subsequent deposit of a culture of the collected resource in a long-term conservation institution/unit *ex situ* ⁽²³⁾.

Another example is the manual developed by the Swiss Academy of Sciences, on Access and Benefit Sharing — Good Practice for Academic Research on Genetic Resources. The manual was developed with the objective of informing and raising awareness in the academic community of the system of access and benefit-sharing established under the Convention on Biological Diversity, presenting concrete instructions to

⁽²³⁾ Document available at: <http://bccm.belspo.be/projects/mosaicc/docs/code2009.pdf>.

scientists for all phases of research projects, and compelling scientists to respect the rights of countries of origin of genetic resources ⁽²⁴⁾.

3. INTERNATIONAL FRAMEWORK

The AAR, like the rest of the country, had no legal instruments that would specifically regulate access to samples of natural resources for scientific purposes in the region. The genetic and natural heritage of the Azores region has enormous potential that can be one of the bases for the development of the region and the country itself; however, the lack of a system to regulate access to natural resources could contribute to the impoverishment of scientific knowledge.

Natural resources fit the concept of *biodiversity* and hence the framework we need to develop must meet this concept. According to the Convention on Biological Diversity (CBD), *biodiversity* is the "variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (cf. Article 2.). The CBD thus enshrines an extremely broad and comprehensive concept of biodiversity, suitable mainly because it includes the notion of variability, which is one of its key aspects, not being limited to a mere sum of its parts ⁽²⁵⁾.

On the other hand, CBD addresses "any source", whether terrestrial, marine or aquatic, in relation to which there would be three basic levels, namely, habitats, species and genetic resources, although the Convention does not specify or systematize these. In any case, "the concept of biological diversity involves the selection of genetic elements found in indi-

⁽²⁴⁾ Document available at: http://abs.scnat.ch/downloads/documents/ABS_GoodPractice_2009.pdf.

⁽²⁵⁾ Cfr. Agustín García Ureta, *Derecho Europeo de la Biodiversidad — Aves silvestres, hábitats y especies de flora y fauna*, Iustel, Madrid, 2010, p. 44.

vidual representatives of a species; the diversity of species; the variety of living organisms found in a particular place; and the diversity of ecosystems: the variety of species and functions and ecological processes, both in quality and quantity, which occur in different physical scenarios”⁽²⁶⁾.

In principle, whether governments or researchers, both in industrialized and in developing countries, everyone seems to agree that non-commercial research in the area of biodiversity is a factor which contributes to the objectives of the Convention on Biological Diversity. Moreover, "this type of research is essential for the conservation and sustainable use of biodiversity, and is closely aligned with the Fair and Equitable Benefit-Sharing Arising from genetic resources”⁽²⁷⁾.

The assumption is that the benefits from research without commercial purposes are not monetary. However, such research will often also provide *commercial development* which may indirectly trigger economic benefits for both supplier and user countries. Access to natural resources is essential to achieve such benefits and, therefore, non-commercial biodiversity research should be recognized and promoted through any international agreement, and/or other instrument, for access and benefit sharing⁽²⁸⁾.

Concern about the loss of biodiversity and the recognition of its important role in sustaining human life gave rise to the creation of the Convention on Biological Diversity, a legally binding global treaty, in 1992. The Convention covers three equally important and complementary objectives: the conservation of biodiversity, sustainable use of its components and the fair and equitable sharing of benefits arising from the utilization of genetic resources. Participation in the Convention is

⁽²⁶⁾ Cfr. Agustín García Ureta, *Derecho Europeo de la Biodiversidad*, cit., p. 44.

⁽²⁷⁾ Cfr. Report of a Workshop on Access and Benefit Sharing in Non-Commercial Biodiversity Research Held at the Zoological Research Museum Alexander Koenig, Bonn, Germany On 17-19 November 2008, p. 2.

⁽²⁸⁾ Cfr. Report of a Workshop on Access and Benefit Sharing, cit., p. 2.

almost universal, a sign that our global society is well aware of the need to work together to ensure the survival of life on Earth.

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits arising from their Utilization was adopted by the Contracting Parties in the Convention on Biological Diversity (CBD) at the Conference of the Parties, held in Nagoya, Japan, 18-29 October 2010.

The period for signing this Protocol took place from 1 February 2011 to 1 February 2012 and the Protocol shall enter into force 90 days after the deposit of the fiftieth instrument of ratification, acceptance, approval or accession of the States or regional economic integration organizations.

Taking as a starting point the adoption of the CBD Bonn Guidelines on the same topic, the Nagoya Protocol is the culmination of six years of difficult negotiations on the issues of access to genetic resources, benefit sharing and the important role of traditional knowledge.

Some of the most controversial issues debated in the final phase of negotiations revolved around themes such as measures for monitoring and enforcement of agreements for access to genetic resources, the scope of the Protocol (genetic resources vs. biological resources in general) and involvement of the traditional knowledge holders related to genetic resources in procedures for access to that knowledge.

Unlike the Bonn Guidelines, which were adopted on a voluntary, *i.e.* non-binding, basis, the Nagoya Protocol constitutes a binding instrument to its Contracting Parties, under the general framework of the CBD. The different legal nature of the two documents is reflected in the different structure and language used. Besides these obvious differences, the following differences/changes are also worth noting:

1. The protocol adds the definition of two terms that do not appear in the text of the CBD but which are needed in view of

- the subject. These terms are "utilization of genetic resources" and "derivative";
2. The protocol attaches great importance to traditional knowledge associated with genetic resources; although the provisions for the use of genetic resources and the use of traditional knowledge are quite similar, there is a clear need for demarcation throughout the document;
 3. The importance given to the relationship between the Protocol and other instruments/international agreements, including the fact that the protocol does not apply to parties already linked to any other specific instrument on genetic resources (in points already covered by the same instruments);
 4. Regarding the procedure itself the differences are not very significant; they are those of prior informed consent and establishing "conditions previously agreed upon." The procedure must be established through appropriate national legal, administrative and political measures. The protocol stipulates the minimum requirements which procedures at national level must respect (clarity, transparency, etc.). The mechanisms for benefit-sharing are basically the same as indicated in the Guidelines;
 5. One of the main innovations of the Protocol in respect of the Guidelines is the special considerations section. In this section, simplified access measures for non-commercial research and readily accessible in present or imminent emergency situations that threaten human, animal or plant health are recommended;
 6. The importance of genetic resources in the matter of food and food security is also highlighted;
 7. Another highlighted factor is that the Protocol points out the need to develop new methods for benefit-sharing mechanisms at the multilateral global level; cases where genetic resources occur in cross-border situations or for which it is not possible to obtain prior informed consent. The cross-border issue is also referred to in cases where the same genetic resources occur *in-situ* within more than one country;

8. The Protocol also establishes a "new" concept/mechanism, the internationally recognized certificate of compliance. This certificate must be "applied" to the licenses (or equivalent) issued for access to genetic resources or traditional knowledge in compliance with the provisions of the Protocol. The Protocol sets out the requirements for this certificate;
9. Lastly the mechanism for monitoring the utilization of genetic resources also includes checkpoints that will condense the information relating to requests for prior informed consent, licenses and certificates.

Finally, it should be noted that even though this framework does not forget access to natural resources for *scientific research* it focuses primarily, in broad terms, on genetic resources. As for access to natural resources for *scientific purposes*, most Universities have a completely free informal system of access.

This is what Suzette Biber-Klemm and Sylvia Martinez observe ⁽²⁹⁾ for scientific samples within medicine, and even if *prior informed consent* (formal or informal) is required, in most cases it is not even necessary to enter into an ABS contract. The authors propose two options: (i) if the research takes place in the country where the sample is found, it is not necessary to enter into an ABS contract (ii) if the research entails transportation outside the country where the sample is found, then a simple contract ABS will suffice.

4. ANALYSIS AND DISCUSSION

The first conclusion to draw from the analysis of the case studies ⁽³⁰⁾ is linked to the fact that the procedures established for access to bio-

⁽²⁹⁾ Cfr. Susette Biber-Klemm/Sylvia Martinez, *Access and Benefit Sharing — Good practice for academic research on genetic resources*, 2nd Ed., Swiss Academy of Sciences, Bern, 2009, p. 26 e 27.

⁽³⁰⁾ SRCTE-DRCTC (2010), pp. 88-148. (case studies: Australia/Queensland, Brazil, Costa Rica, India, Philippines, South Africa and Mozambique).

logical/genetic resources can be very different, more or less complex, with more or less imposed limitations. The case of Brazil, where only national institutions (public or private) may be authorized to conduct sampling of components of the genetic heritage, is one of the most restrictive examples.

Access to resources can be made by request, license, authorization, prior informed consent or even agreements/contracts, the distinction between these terms not being very clear. The choice of one of these forms of permission for access to resources was thoroughly considered and clearly defined. The information that the applicant must provide in each case may also be diverse; however, it should always include information on the sampling location (with geographical coordinates) and the purpose of the samples. Another requirement may be a mandatory report to the State of research results arising from the resources. In most case studies analysed, a deposit of samples or sub-samples with one (or more) State body(ies) is compulsory. In some cases it requires a lot of information about the sample (for example scientific data).

Legislation regarding access to biological/genetic resources has a range of broader or more specific objectives. The option can be on legislation that regulates access to biological and genetic resources or, alternatively, that establishes specific rules for access to genetic resources, genetic material, derivatives and associated traditional knowledge, as in the case of Acre.

The concepts to be defined in legislation will depend on the objectives established, the procedure established and elements selected (license, prior informed consent, among others). As we see from the case studies, definitions of key concepts such as genetic resources and access are not consensual and may differ. Unfortunately this complicates the implementation of legislation, particularly when applied to foreign entities. Thus, whenever possible, the definitions should be based on internationally defined concepts (in particular within the CBD), obviously respecting the necessary regional specificities.

The scope of the legislation will be another topic to consider. By analysing the case studies we verify that the rules of access to genetic resources may be applicable to the whole State's territory, only to public domain areas or to elements of native biodiversity (as in the case of Costa Rica). It can also bind all State bodies (e.g. South Africa), public and private, domestic and foreign bodies.

The analysis of case studies highlights the importance of designating an institution/body responsible for centralizing the whole process, notwithstanding other entities with responsibilities in this area (as in Queensland).

Another issue to consider is whether or not to have of fees for access to biological resources. Although in the majority of cases analysed, the evidence suggests that the monetary counterparts are only to be applied in cases of transfer of material or commercial/potentially commercial uses (under the benefit-sharing agreements).

5. DIFFICULTIES ENCOUNTERED

One of the biggest difficulties that legislators face is related to intellectual property rights, which are an important part of the agreements on access to genetic resources, and more generally to natural resources, and the subsequent sharing of benefits. If, on one hand, this is one of the most discussed matters regarding genetic resources, on the other, there continues to be international discussion on the implementation of these aspects for the development of a protocol under the CBD.

The definition of the key concepts of the legislation seems to be another major difficulty. Although some of the concepts have already been defined in Portuguese legislation (e.g. concepts such as "biodiversity" and "genetic resources" can be found in — Law Decree n.º 142/2008), the concepts of "user", "supplier" and "access" may have different interpretations, as evidenced by the case studies presented.

Moreover, the inclusion of different natural resources used by multiple areas of science imposes added difficulties in defining concepts that normally do not have the same interpretation for the entire scientific community. For example, the concept of the sample may be different depending whether it is referred to in the field of biology, palaeontology or chemistry.

6. MARINE RESOURCES

The questions surrounding marine (genetic) resources could be presented among the “difficulties encountered” as they are hard to clarify and may take several years to find international consensual solutions. On the case here discussed, the marine resources approach must consider two different types of areas: areas under Portuguese jurisdiction and areas beyond national jurisdiction.

For the purpose of scientific research, on the areas under national jurisdiction, a careful attention must be paid to the provisions of Part XIII (on Marine Scientific Research) of the United Nations Convention on the Law of the Sea, especially:

“Article 246

Marine scientific research in the exclusive economic zone and on the continental shelf

- 1. Coastal States, in the exercise of their jurisdiction, have the right to regulate, authorize and conduct marine scientific research in their exclusive economic zone and on their continental shelf in accordance with the relevant provisions of this Convention.*
- 2. Marine scientific research in the exclusive economic zone and on the continental shelf shall be conducted with the consent of the coastal State.”*

However, the interpretation of the entire Part XIII raises no doubts on the intention that marine scientific research should be encouraged and no obstacles should be raised. On this sense, the licensing/author-

ization procedure, imposed by the AAR to collecting and sampling in the Azores maritime area, may raise some concern. But it also must be kept in mind that this procedure complies with UNCLOS provisions and doesn't aim at failing pretensions but only to keep record and provide legal background to possible access and benefit sharing mechanisms.

Still, regarding marine resources, several constraints remain to overcome. On one side, the lack of clarification between collecting/sampling and fishing may pose some doubts, on another side, the vast maritime area and the lack of adequate surveillance/monitoring resources contribute to weaken any imposition. In response, and although nothing states that such requirement can't be asked, the AAR must rely on voluntary and case-by-case willing to comply with the system on the early stages of the process development.

The fuzzy and dynamic characteristics of the maritime realm present some challenges, one being the little we know about the ocean resources. This stresses the need for comprehensive mechanisms when discussing access (and benefit sharing) to marine genetic resources or other ocean resources. In the AAR it is expected that, after a maturing period, such mechanism will be fully operational and translating the international options concerning the adoption of the Nagoya Protocol.

The Regional Legislative Decree n.º 9/2012/A, of 20 March, extends its spatial scope to the entire AAR including the sea. This scope didn't raised constitutional doubts and, therefore, it is expected that all collecting and sampling actions on the Azores ocean follow the procedure stipulated in this legal document. However, it is recommended that the operational procedure should be simple, transparent, no time consuming and efficient. The mechanism must evolve and adapt to any new directions followed by the EU on the adoption of the Nagoya Protocol.

On the maritime space major obstacles are foreseen to the full accomplishment of the Nagoya objectives. A strong diplomatic dialogue must be initiated in order to protect access and benefit sharing rights for the AAR.

As for the outer continental shelf, Portugal has five Marine Protected Areas recognized under the OSPAR Convention, being four in the Azores sea: Rainbow, Altair, Anti-Altair and MARNA. These areas are also acknowledged by the Portuguese law through the creation of the Azores Marine Park (Regional Legislative Decree n.º 28/2011/A, of 11 November. In light of that legal instrument, the AAR sees these spaces as part of the Azores environmental responsibility and, therefore, the application of the Regional Legislative Decree n.º 9/2012/A, of 20 March, would be direct.

Turning our attention to areas beyond national jurisdiction (ABNJ), in 1982, when UNCLOS came into force, the use of genetic resources and biotechnology was not foreseen. The provisions set for the Area are those referred to mining, based on the common heritage of humankind. In the high seas the principle applicable is the “freedom of the high seas”. While for deep seabed mining UNCLOS was able to create a system for world cooperation, for marine genetic resources the discussion is still far from the end.

According to Leary (2012) it is possible “to discern four broad approaches to questions of the relevance of the common heritage of mankind to the debate: 1) those authors that maintain that marine genetic resources in ABNJ are covered by the common heritage of the mankind; 2) those who acknowledge that they fall outside the common heritage but advocate that they should be within the common heritage of mankind; 3) those who maintain that freedom of the high seas is the relevant principle and that therefore they are free to all who want to access and use them; 4) a fourth group of authors who acknowledge that there is uncertainty on this point and do not express a clear conclusion on the question either way”⁽³¹⁾.

⁽³¹⁾ Leary, David. *Moving the Marine Genetic Resources Debate Forward: Some Reflections* in *The International Journal of Marine and Coastal Law* 27 (2012) 435-448.

Among the solutions proposed two have notoriously been discussed: a solution based on the system that is being used for plant genetic resources, as developed by the Food and Agriculture Organization provided on Part IV of the International Treaty on Plant Genetic Resources for Food and Agriculture ⁽³²⁾; another is based on a solution were States agree to disagree, and provide a mechanism so flexible that ultimately may be inefficient.

All these issues have been considered since 2004 by the Ad Hoc Open-ended informal working Group on Biodiversity Beyond National Jurisdiction under the UN. The actions discussed range from multi-lateral agreements to international instruments but always leading to a new agreement under UNCLOS. The timeline for discussions is expected to present results in 2014 or 2015, before the UN Assembly starts.

In conclusion, regarding access and benefit sharing in ABNJ it is recommended to keep updated with the ongoing debate and expect the UN conclusions and outcomes.

7. RECOMMENDATIONS

Regarding the issues related to traditional knowledge associated with the use of biological and genetic resources it was recommended that they should not be included in the legal regime governing access to natural resources for scientific purposes. Traditional knowledge should be addressed under a separate legal regime by the entity with jurisdiction in the matter.

Regulation on questions surrounding intellectual and industrial property should be avoided for three reasons: firstly, they give rise to

⁽³²⁾ Drankier, Petra; Elferink, Alex G. Oude; Visser, Bert; Takács, Tamara *Marine Genetic Resources in Areas beyond National Jurisdiction: Access and Benefit-Sharing in The International Journal of marine and Coastal Law* 27 (2012) 375-433.

jurisdiction questions; secondly, there is specific international, community and national legislation governing this matter, which should be referred to; and thirdly, the governing scope of the regulations is restricted to the access to natural resources for scientific research, clearly excluding access for commercial purposes or scientific research for commercial purposes, in which cases problems related to intellectual property usually occur.

In our opinion, the best option for a general procedure is one of *prior informed communication with consent* since it is a legal-urban figure of prior notification. Moreover, the usual types of operation procedure and licensing under Urbanism Law (Law Decree n.º 555/99, of 16 December, modified, at last, by the Law n.º 60/2007, of 4th september,) such as prior communications, permits and licenses, have been long used as a reference in all other areas of special Administrative Law, such as environment, water, waste, among others.

There is still another issue on the theme of established procedure, and taking again into account jurisdictional issues, particularly of the Island Natural Parks. In view of the fact that these bodies have the competence to authorise the harvesting of natural resources, we recommend a possible distinction of procedure for access to natural resources depending on whether the resource lies within or outside of a Natural Park.

The definition of legal key concepts must be careful and judicious, using definitions, wherever possible and appropriate, already existing in national and regional legislation.

The procedure for access to natural resources samples for scientific research, from a practical point of view, should be accessible, transparent and simplified, requiring only essential information from the applicant for fast processing and response from the competent authority. This should be ideally via an online system that facilitates remote access. The procedure established should not contribute to barriers to scientific

research activities; on the contrary, it is intended that the procedure should foster research, sharing and dissemination of information.

Similarly to what occurs in most analysed study cases and suggested by several codes of conduct it is recommended that, whenever possible, the user should deposit a sub-sample of the collected resource(s) with an entity designated for this purpose. This deposit will contribute to increasing the scientific knowledge of the AAR and the sharing and dissemination of knowledge. Deposits suitable for the storage of such samples must be created, taking into account the specificities of the resources to which they refer. The regulation also indicates which information should be recorded with the sample, such as sampling location, including geographic coordinates.

The successful implementation of the established procedure largely depends upon broadcasting; the national and international scientific community should be informed of the procedure. To this end publicity on the Internet, airports and tourist offices, among others is recommended.

The regulation makes provision for exception regimes in justified situations, e.g. in cases where the procedure set is considered to impede rapid scientific solutions to public health problems. In such exceptional cases, despite the possibility of waiving the prior informed consent procedure, the information shall be provided at a later and suitable date.

The regime of access to natural resources samples for scientific research makes provision for agreements with Research & Development institutions carrying out on-going scientific activity and frequent sampling in the region, in order to reduce the number of prior informed communications to provide. Through these agreements, the research institution may submit the required information regarding all of its research projects requiring sampling in the region and on the sites and sampling techniques for a given period of time at a single time. Thus, it is intended to reduce the time and means for communication of

multiple samples, facilitating scientific research for institutions with frequent activities in AAR, such as regional institutions.

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TOWARDS A TREATY INSTRUMENT ON MARINE GENETIC RESOURCES

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Abstract: *Marine Genetic Resources (MGRs) other than fish and mammals comprise sea stars, sponges, jellyfish and bottom-dwelling fish, worms, molluscs, crustaceans, and a broad range of single-celled organisms. These organisms are of increasing commercial interest and importance in genetic engineering, but fail being properly addressed in the law of the sea and in international economic law. The paper analyses the implication of UNCLOS III, the Convention on Biodiversity, the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) and related instruments under the auspices of WIPO. The paper argues that the triangle of these agreements does not adequately address MGRs in particular in the high seas. Neither concerns of protecting biodiversity nor of access and benefit sharing find appropriate answers commensurate to the commercial potential of MGRs. The paper suggests developing an instrument inspired by, and comparable to, the mechanisms developed by the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The instrument would grant facilitated access to MGRs and offer a more detailed set of rules with respect to the sharing of benefits resulting from their use, thereby addressing the existing legal gaps in a comprehensive way.*

1. INTRODUCTION

Marine biology and genetics in recent decades considerably enlarged scientific knowledge and thus potentially long-term commercial exploi-

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tation of marine genetic resources — resources almost unknown at the time when the United Nations Convention on the Law of the Sea was negotiated in the 1970s and the Convention on Biodiversity was expounded following the 1992 Rio Conference. The law, and international law, finds itself in the classic constellation of *ex post* assessment of the implications of rules not per se designed to deal with novel and impending challenges. It is timely to take up the subject 30 years upon the adoption of the 1982 Convention on the Law of the Sea.

The oceans, which constitute 70 per cent of the Earth's surface, are home to a rich and colourful variety of life and encompass an abundance of habitats, such as coastal shores and estuaries, mudflats, mangrove marshes and coral reefs ⁽¹⁾. Even the deep sea, which belongs to the least explored areas in the world, supports a high diversity of marine plants and animals beyond mammals and fish, including sea stars, sponges, jellyfish and bottom-dwelling fish, worms, molluscs, crustaceans, and a broad range of single-celled organisms ⁽²⁾. However, most of the oceanic habitats and their biological diversity are little understood. We are only starting to discover the functioning and sensitivity of marine ecosystems and the real impacts human activity has on them, whether because of marine debris, ocean pollution, or climate change. Marine ecosystems, as we learn, are fragile: they are as sensitive to human disturbance as they are essential to human life. At the same time, we become aware of how much we depend on our oceans. In fact, they are not only a huge reservoir of all different forms of life and home to some of the most amazing and mysterious creatures, but provide all kinds of services to terrestrial life. Most importantly, the oceans' biodiversity provides food and oxygen, medicine, and key information on how life came to be on Earth. Marine micro-organisms moreover degrade oil, heavy metals and other pollutants and absorb

⁽¹⁾ Cf. Michelle Allsopp and others, *World Watch Report 174: Oceans in Peril: Protecting Marine Biodiversity* (World Watch Institute, Washington, DC September 2007) 7.

⁽²⁾ *Allsopp* (n 1).

huge quantities of carbon dioxide, which significantly mitigates climate change ⁽³⁾.

Our raising awareness of the oceans' abundance in terms of species and ecosystems, of the services they provide to mankind, as well as of the fragility of marine ecosystems triggered in parallel two apparently contradictory developments. On the one hand, the conservation of marine biodiversity and marine ecosystems has become a major concern in international law and policy. Sustainable use of resources and managing them in terms of ecosystems form an integral part in today's global environmental strategies and governance ⁽⁴⁾. On the other hand, the development of biotechnology along with the discovery of new marine organisms has potentially led to "a commercial race to find genetic resources and biochemical substances for use in profitable industrial applications" ⁽⁵⁾. Tensions between the protection and commercial exploitation of marine biology raise difficult issues in law and marine policy. This situation is exacerbated by the fact that the use of aquatic genetic resources in biotechnology is a relatively new phenomenon, almost unknown by the authors of the legal instruments dealing with the law of the sea. The relevant legal framework, including intellectual property rights, arguably is not well tailored to marine genetic resources (MGRs). It was designed prior to discovery and developing awareness of these genetic resources beyond fish and mammals. As a consequence, there is uncertainty and disagreement as how to handle them, especially

⁽³⁾ Cf. United Nations General Assembly (UNGA) 'Report of the Secretary-General, Oceans and the Law of the Sea' (2007) UN Doc A/62/66 [158].

⁽⁴⁾ Cf. Convention on Biological Diversity, (opened for signature 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79 (CBD), article 1; CBD Conference of the Parties (COP) Decisions V/6 and VII/11; European Commission, 'Environment: Sustainable Use of Natural Resources' (22 February 2012), at <http://ec.europa.eu/environment/natres/index.htm> (accessed 26 November 2013).

⁽⁵⁾ Louise Angélique de La Fayette, 'A New Regime for the Conservation and Sustainable Use of Marine Biodiversity and Genetic Resources Beyond the Limits of National Jurisdiction' (2009) 24 *The International Journal of Marine and Coastal Law* 221, 222.

in the case of their origin lying outside the scope of national jurisdiction, their use thus constituting common concern.

These legal uncertainties also include issues of distributive justice and raise equity concerns, even more profoundly so than in land-based plant genetic and animal genetic resources ⁽⁶⁾. Biodiversity-rich marine ecosystems are often located in tropical zones. Developing countries therefore provide some of the richest concentrations of biodiversity and, thus, of genetic resources. With respect to MGRs, some of the most interesting organisms are collected from the ocean's remotest areas, where jurisdictional claims of states are not accepted. However, mainly due to the high costs of the extraction of the resources and of biotechnological research and development operations in general, these resources are usually prospected for and marketed by private companies or public institutions of industrialized countries ⁽⁷⁾. Developing countries often lack the necessary capital, technology and scientific expertise ⁽⁸⁾. It may still be difficult to thoroughly assess the commercial value of MGRs; yet, controversies on how to deal with actual or potential benefits arising from their use have been held in different international fora and dragged on for several years now.

This paper aims to roughly map the current legal framework applying to MGRs and their use except for fish and mammals, and to point out possible gaps. We outline the international debate on the topic, main

⁽⁶⁾ See, in general, Susette Biber-Klemm and Thomas Cottier, *Rights to Plant Genetic Resources and Traditional Knowledge: Basic Issues and Perspectives* (CABI Publishing, Wallingford 2006), Daniel Wüger and Thomas Cottier (eds.), *Genetic Engineering and the World Trade System* (Cambridge 2008).

⁽⁷⁾ Kirsten E Zewers, 'Bright Future for Marine Genetic Resources, Bleak Future for Settlement of Ownership Rights: Reflections on the United Nations Law of the Sea Consultative Process on Marine Genetic Resources' (2007) 5 *Loyola University Chicago International Law Review*, 151-152; David Greer and Brian Harvey, *Blue Genes: Sharing and Conserving the World's Aquatic Biodiversity* (Earthscan, London 2004) 5 and 46.

⁽⁸⁾ Zewers (n 7).

concerns and arguments raised, and propose a set of tools that might help to tackle the issue. The paper does not claim completeness in either of these points. It starts with some general observations on MGRs, and then examines the three main aspects of the current legal regime in place that applies to these resources, *i.e.* the law of the sea, the law of biodiversity, and intellectual property rights law. Our findings suggest the validity of moving towards a future regime inspired by the FAO International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) ⁽⁹⁾ as a model upon which a regime for MGRs could be designed.

2. THE NATURE AND USE OF MARINE GENETIC RESOURCES

The boost in developing new technologies during the last decades not only allowed to penetrate oceans more deeply, but also revealed a whole new range of potential usages of marine organisms in terms of genetic resources in biotechnological activities. The topic thus adds a new dimension to addressing and regulating biotechnology in international law, which, so far, has mainly focused on land-based genetic resources and its implications for trade and environment ⁽¹⁰⁾. *Genetic resources* are most commonly defined as genetic material (*i.e.* “any material of plant, animal, microbial or other origin containing functional units of heredity”) that is of “actual or potential value” ⁽¹¹⁾. MGRs thus are hereditary units of all different kinds of oceanic macro- and micro-organisms, including bacteria, algae, fungi, yeasts and viruses, as

⁽⁹⁾ International Treaty on Plant Genetic Resources for Food and Agriculture, (adopted 3 November 2001, entered into force 29 June 2004) (ITPGRFA).

⁽¹⁰⁾ C.f. ILA, Committee on International Law in Biotechnology, Reports 2008 and 2010, available at <http://www.ila-hq.org/en/committees/index.cfm/cid/1016> (accessed 27 November 2013); Susette Biber-Klemm and others, ‘Challenges of biotechnology in international trade regulation’ in Thomas Cottier and Panagiotis Delimatsis (eds), *The Prospects of International Trade Regulation: From Fragmentation to Coherence* (Cambridge University Press 2011) 284 ss.

⁽¹¹⁾ CBD (n 4) article 2.

well as all kinds of fish, shellfish, jellyfish or marine mammals ⁽¹²⁾. Genetic resources such as enzymes and other DNA derivatives catalyse biochemical reactions and contain small molecules with secondary adaptive functions. They are also responsible for “chemical communication between or within a species” ⁽¹³⁾. Due to these and other functions, they provide the raw material for a vast variety of biotechnological processes. The term *biotechnology* refers to the use of living organisms for the development or improvement of a certain product, or for the improvement of plants and animals ⁽¹⁴⁾. Today, biotechnological methods particularly include the use of cellular and biomolecular processes in genetic engineering ⁽¹⁵⁾. DNA derivatives extracted from marine organisms have a broad range of actual or potential uses, in particular for the pharmaceutical, cosmetic and bioremediation sectors, but also in the food sector, for instance in aquaculture.

The scientific investigation of living organisms for commercially valuable genetic and biochemical resources is generally referred to as *bioprospecting* ⁽¹⁶⁾. Bioprospecting of MGRs only includes the identification and isolation of the relevant compounds. However, for a successful exploitation of these resources, different value-adding processes have to take place, each relatively time-consuming and expensive, and a number of preclinical tests and clinical trials have to be passed ⁽¹⁷⁾.

⁽¹²⁾ Cf. UNGA ‘Report of the Secretary-General, Oceans and the Law of the Sea’ (2007) UN Doc A/62/66 [132].

⁽¹³⁾ UNGA ‘Report of the Secretary-General, Oceans and the Law of the Sea’ (2007) UN Doc A/62/66 [133].

⁽¹⁴⁾ In this sense, the production of beer, wine, bread and cheese include biotechnology. Cf. *Greer* (n 7) 40-41.

⁽¹⁵⁾ Cf. Roxanna Guilford-Blake and Debbie Strickland (eds.), *Guide to biotechnology 2008* (Biotechnology Industry Organization 2008) 1.

⁽¹⁶⁾ *La Fayette* (n 5) 228; cf. UNGA ‘Report of the Secretary-General, Oceans and the Law of the Sea’ (2007) UN Doc A/62/66 [150].

⁽¹⁷⁾ Cf. *Zewers* (n 7) 156.

MGRs commercially used today include snails, sponges, plants or bacteria providing chemical compounds with possible pharmaceutical or other uses. Once the relevant DNA strands are replicated in the laboratory, they can be linked to other organisms and used for “antioxidant, antiviral, anti-inflammatory, anti-fungal, anti-HIV, antibiotic, anticancer, anti-tuberculosis and anti-malarial purposes”⁽¹⁸⁾. However, it usually takes several years, if not decades, and a considerable amount of investment to develop a new marketable product. In addition, the percentage of the explored marine genetic material that has passed all relevant tests (and might thus be marketed) is to date almost negligible⁽¹⁹⁾. MGRs nevertheless show a much higher potential to contain useful material than terrestrial compounds. For instance, their potential for curing cancers is estimated twice as high as the one derived from terrestrial organisms⁽²⁰⁾.

The reasoning behind these hopeful estimates is the potential of investigating organisms living in extreme environments such as hydrothermal vents. Hydrothermal vents are home to a large number of specialized microbes and animals that are adapted to extreme conditions, including high pressure, temperature and toxicity. The fluid from the vents is up to about 400 degrees Celsius. It does not contain oxygen and is often highly acidic and enriched with various metals⁽²¹⁾. Due to their resistance to high pressures and temperatures, the extremophile organisms contain heat-stable enzymes, which, when isolated, may be useful for pharmaceutical applications, but also in food and cosmetic manufacturing processes. Scientists therefore expect that there is a rela-

⁽¹⁸⁾ UNGA ‘Report of the Secretary-General, Oceans and the Law of the Sea’ (2007) UN Doc A/62/66 [164].

⁽¹⁹⁾ Cf. Simon Munt, ‘From Marine Expeditions to New Drugs in Oncology’ (presentation at the United Nations Informal Consultative Process on Oceans and the Law of the Sea, 26 June 2007) cited in: *Zewers* (n 7) 156.

⁽²⁰⁾ Cf. *Munt* (n 19).

⁽²¹⁾ Census of Marine Life, ‘Extreme Life, Marine Style, Highlights 2006 Ocean Census’, press release (Washington, DC 10 December 2006) cited in *Allsopp* (n 1) 8.

tively strong potential for discoveries of biotechnological and medical importance with regard to genetic resources found in these environments⁽²²⁾. Another extraordinary characteristic of hydrothermal vent organisms is their ability to build organic compounds from carbon molecules and water. Since they live in complete darkness, they use the oxidation of hydrogen sulphide or methane as a source of energy. This process is known as chemosynthesis and does not rely on sunlight, in contrast to the equivalent process of photosynthesis⁽²³⁾.

3. THE LEGAL REGIME OF MARINE GENETIC RESOURCES IN MULTILATERAL TREATY LAW

At the international level, there is no single contemporary legal instrument governing issues related to MGRs in a comprehensive and holistic manner. As a subject matter, existing sources of international law apply, including customary principles and treaties. The exploration and exploitation of MGRs, as well as their conservation and patentability, pertain to different fields of law and are therefore regulated by a plurality of treaties. We limit this inquiry to the main instruments, and leave aside the implications of general principles of law beyond those relating to sovereignty over natural resources. Also, we do not include trade-related issues beyond intellectual property protection at this stage.

First of all, the regulatory framework for the use of the world's oceans and seas is provided by the United Nations Convention on the Law of the Sea (UNCLOS)⁽²⁴⁾. UNCLOS defines the territorial scope

⁽²²⁾ Cf. Colin Devey, 'InterRidge Statement of Commitment to Responsible Research Practices at Deep-sea Hydrothermal Vents' (2009), at <http://www.interridge.org/irstatement> (accessed 26 November 2013).

⁽²³⁾ World Ocean Review, 'Rechtliche Fragen der marinen Medizinforschung', at <http://worldoceanreview.com/medizin/recht-und-medizin/> (accessed 26 November 2013).

⁽²⁴⁾ United Nations Convention on the Law of the Sea, (opened for signature 10 December 1982, entered into force 16 November 1994) 1833 UNTS 397 (UNCLOS).

of national jurisdiction in the oceans and the rights and duties of states with respect to all different kinds of use of the oceans, including the exploitation of marine resources. Second, the Convention on Biological Diversity (CBD) ⁽²⁵⁾ deals with the conservation of biodiversity, including MGRs, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources ⁽²⁶⁾. With respect to MGRs, such benefits, especially monetary benefits, particularly result from their use in inventions, such as pharmaceutical products or industrial processes. An inventor might want to prevent others from selling or using the invention without compensating the costs for research and development. In this situation the role of intellectual property rights law is twofold: The granting of intellectual property rights for inventions obtained from MGRs may limit the future use of such resources and, therefore, conflict with objectives and principles of the CBD, especially with regard to access and benefit sharing. On the other hand, intellectual property rights provide “a legal and commercial framework to generate benefits from the use of genetic resources” and can hence be part of the solution ⁽²⁷⁾. Within intellectual property rights law, this paper especially focuses on the provisions of the Trade-Related Intellectual Property Rights Agreement (TRIPS) ⁽²⁸⁾, as well as on discussions in related fora.

While none of these treaties specifically address MGRs, they all are relevant to the regulation of these resources. Different aspects of the management of MGRs fall under the scope of the UNCLOS, the CBD or the TRIPS Agreement. However, as explained in the following sections, the

⁽²⁵⁾ CBD (n 4).

⁽²⁶⁾ CBD (n 4) article 1.

⁽²⁷⁾ Cf. Thomas Greiber, ‘Access and Benefit Sharing in Relation to Marine Genetic Resources from Areas Beyond National Jurisdiction: A Possible Way Forward’ (German Federal Agency for Nature Conservation, Bonn 2011) 24.

⁽²⁸⁾ Agreement on Trade-Related Aspects of Intellectual Property Rights, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 15 (adopted April 1994, entered into force 1 January 1995) 869 UNTS 299 (TRIPS Agreement).

legal challenges with respect to MGRs are manifold. Due to their specific nature, some MGRs are not easily assigned to a certain legal regime, especially if two different regimes apply to the ocean floor and the superjacent water column. Moreover, since at the time of negotiation and adoption of these treaties, MGRs were largely undiscovered and their scope of applicability and commercial value remains to be explored, it can be readily seen that the regime as it results from this ensemble of treaties does not seem to properly deal with MGRs, particularly with regard to areas beyond national jurisdiction. While there exist certain rules applying to MGRs in these areas, at least at the level of general principles, there are some essential legal gaps and contentious issues that remain, as for now, unresolved⁽²⁹⁾. These issues “illustrate an inter-systemic dialogue and the need of such dialogue in order to form a coherent legal framework for MGRs”⁽³⁰⁾. Regulatory and governance gaps regarding MGRs fit into a collection of current discussions on the problems when envisaging global law of the sea. As a common denominator, they all focus on areas beyond national jurisdiction and address common concerns, including marine pollution, the loss of marine biodiversity, illegal, unregulated and unreported fishing and the impact of climate change on the seas⁽³¹⁾. A coherent regime on MGRs, while benefitting from current discussions and experiences in the relevant fields of law, should therefore also focus on issues of common concern and take into account approaches to resolve similar problems.

3.1. The United Nations Convention on the Law of the Sea

UNCLOS was adopted by the Third United Nations Conference on the Law of the Sea on 10 December 1982, long before the issue of

⁽²⁹⁾ Cf. *La Fayette* (n 5) 226.

⁽³⁰⁾ Angelica Bonfanti and Seline Trevisanut, ‘TRIPS on the High Seas: Intellectual Property Rights on Marine Genetic Resources’ (2011) 37 *Brook. J. Int'l L.* 187, 191.

⁽³¹⁾ Tullio Treves, ‘Principles and Objectives of the Legal Regime Governing Areas Beyond National Jurisdiction’ in AG Oude Elferink and EJ Molenaar (eds), *The International Legal Regime of Areas beyond National Jurisdiction* (Martinus Nijhoff Publishers, Leiden 2010) 7, 8.

MGRs emerged. It entered into force on 16 November 1994. As of January 2013, 163 states and the European Union are party to the convention. UNCLOS “sets out the legal framework within which all activities in the oceans and seas must be carried out”⁽³²⁾, and is therefore considered by some the “Constitution for the oceans”⁽³³⁾. Most of the convention’s provisions are nowadays considered to correspond to customary international law, unless the contrary is proven⁽³⁴⁾.

UNCLOS divides the ocean space into two vertical and several horizontal zones, which equally apply to MGRs⁽³⁵⁾. Vertically, the convention differentiates between the seabed or ocean floor on the one hand, and the superjacent water columns on the other. The horizontal division determines different degrees of national jurisdiction, depending on the distance to the coast. The first zone as defined by UNCLOS is the territorial sea of the coastal states⁽³⁶⁾. It begins at a baseline along the coasts and extends to at most 12 nautical miles outwards. Basically, a coastal state exercises full sovereignty over its territorial sea. However, every state enjoys the right to innocent passage through it⁽³⁷⁾. This first zone is bordered by a contiguous zone, which may not extend beyond 24 nautical miles from the baselines and allows the coastal states to exercise limited control⁽³⁸⁾. The Exclusive Economic Zone (EEZ) is an area beyond and adjacent to the territorial sea⁽³⁹⁾ (thus including the contiguous zone) and extends up to 200 nautical miles from the base-

⁽³²⁾ Cf., for instance, ‘Oceans and the Law of the Sea’, UNGA Res 62/215, UN Doc A/RES/62/215 (22 December 2008).

⁽³³⁾ Cf. *Bonfanti* (n 30) 192.

⁽³⁴⁾ Cf. Tullio Treves, ‘Development of the Law of the Sea: Achievements and Challenges’ in Davor Vidas (ed), *Law, Technology and Science for Oceans in Globalisation* (Brill Academic Pub, Leiden 2010) 41-58, 42.

⁽³⁵⁾ Cf. *La Fayette* (n 5) 235.

⁽³⁶⁾ UNCLOS (n 24) article 2 ff.

⁽³⁷⁾ UNCLOS (n 24) article 17.

⁽³⁸⁾ UNCLOS (n 24) article 33.

⁽³⁹⁾ UNCLOS (n 24) article 55.

lines⁽⁴⁰⁾. In accordance with the vertical division of the ocean space as mentioned above, there are two separate but overlapping regimes. One applies to the continental shelf, the other to the superjacent water columns. As stipulated in part V of the convention, the coastal state has sovereign rights in the EEZ for the management of natural resources, whether living or non-living, and with regard to other activities for the economic exploration and exploitation of the zone⁽⁴¹⁾. Moreover, the coastal state has jurisdiction with regard to marine scientific research⁽⁴²⁾ and determines the allowable catch of the living resources in its EEZ⁽⁴³⁾. According to UNCLOS part VI, the coastal state exercises sovereign rights over the continental shelf “for the purpose of exploring it and exploiting its natural resources”⁽⁴⁴⁾. The continental shelf is defined as the seabed and subsoil thereof which corresponds to the natural prolongation of the land territory. It may exceed the 200 nautical miles limit of the EEZ, its regime thus partially applying to the seabed beyond that zone to the outer edge of the continental margin (outer continental shelf)⁽⁴⁵⁾.

This vertical separation between the ocean floor and the water columns becomes more significant when it comes to the areas beyond the EEZ and the continental shelf, and thus beyond national jurisdiction. The water columns in areas beyond national jurisdiction — the high seas — are regulated by UNCLOS part VII, and governed by the principle of the freedom of the high seas. While the high seas are con-

⁽⁴⁰⁾ UNCLOS (n 24) article 57.

⁽⁴¹⁾ UNCLOS (n 24) article 56 para 1 lit a.

⁽⁴²⁾ UNCLOS (n 24) article 56 para 1 lit b (ii).

⁽⁴³⁾ UNCLOS (n 24) article 61 para 1.

⁽⁴⁴⁾ UNCLOS (n 24) article 77 para 1.

⁽⁴⁵⁾ UNCLOS (n 24) article 76 paras 1 and 4. The outer limits of the continental shelf are currently being set by the coastal states according to a complex formula. The process is accompanied and monitored by the Commission on the Limits of the Continental Shelf, consisting of 21 members, who are experts in the relevant fields (article 2 para 1 of UNCLOS Annex II).

sidered a *res nullius* and cannot be appropriated or occupied, their resources, whether living or non-living, are open for use by all states, whether coastal or land-locked. The freedom of the high seas moreover comprises lawful activities such as navigation, overflight, fishing, the laying of submarine cables and pipelines, the construction of artificial islands and other installations and marine scientific research ⁽⁴⁶⁾.

In contrast to the freedom of the high seas, the seabed in areas beyond national jurisdiction — the deep seabed or ‘Area’ in UNCLOS terminology — is regulated by part XI of the convention, and administered by the International Seabed Authority (ISA). ⁽⁴⁷⁾ The deep seabed and its resources are defined as the common heritage of mankind ⁽⁴⁸⁾, whereas the term *resources* refers to mineral resources only ⁽⁴⁹⁾. According to the principle of common heritage of mankind, no state can claim or exercise sovereignty or sovereign rights over any part of the Area or its (mineral) resources, nor would an appropriation of any part thereof by any state or natural or juridical person be recognized ⁽⁵⁰⁾. Activities in the Area are to be “carried out for the benefit of mankind as a whole, [...] taking into particular consideration the interests and needs of developing states” ⁽⁵¹⁾. The ISA provides for the “equitable sharing of financial and other economic benefits derived from activities in the Area” ⁽⁵²⁾.

With respect to MGRs, there is a considerable number of important marine habitats that are most commonly found in areas beyond the EEZ,

⁽⁴⁶⁾ UNCLOS (n 24) article 87 para 1.

⁽⁴⁷⁾ Established on 16 November 1994, the ISA became fully operational as an autonomous international organization in June 1996. Its headquarters are in Kingston, Jamaica. Its 18th session was held in June 2012. For more information, see <http://www.isa.org.jm> (accessed 26 November 2013).

⁽⁴⁸⁾ UNCLOS (n 24) article 136.

⁽⁴⁹⁾ UNCLOS (n 24) article 133.

⁽⁵⁰⁾ UNCLOS (n 24) article 137.

⁽⁵¹⁾ UNCLOS (n 24) article 140 para 1.

⁽⁵²⁾ UNCLOS (n 24) article 140 para 2.

including hydrothermal vent sites and cold seeps, cold-water coral reefs, seamounts, sponge reefs and abyssal plains⁽⁵³⁾. The different treatment of the high seas and the subjacent ocean floor — which will either belong to the deep seabed or the outer continental shelf of a coastal state — causes some problems here. Under the regime of the outer continental shelf, a coastal state exercises sovereign rights with regard to the exploration and exploitation of living resources if the respective organisms belong to sedentary species⁽⁵⁴⁾. By contrast, migratory species fall under the regime of the high seas. For some MGRs, however, it is difficult to determine whether they belong to sedentary or migratory species. This might for instance be the case for micro-organisms, including bacteria and viruses, that live in symbiosis with the local flora or fauna, or that depend on extreme environments, such as hydrothermal vents, though without being considered as sedentary *strictu sensu*⁽⁵⁵⁾. It is therefore unclear whether they fall under the regime of the high seas (UNCLOS part VI) or the outer continental shelf, and thus under national jurisdiction.

Even if specific MGRs are considered to be sedentary, but beyond national jurisdiction, it is still unclear whether they fall under the regime of the Area (UNCLOS part XI) or the high seas. The uncertainty is due to the narrow definition of the term *resources* in part XI, which includes only mineral resources. The issue has been discussed in a number of international fora, including Conferences of the Parties to the CBD and meetings of the United Nations General Assembly (UNGA) and its subsidiary bodies⁽⁵⁶⁾. However, there is still considerable disagreement as to whether MGRs fall under the scope of the

⁽⁵³⁾ Cf. *Greiber* (n 27) 6.

⁽⁵⁴⁾ UNCLOS (n 24) article 77.

⁽⁵⁵⁾ For the purpose of the Convention, organisms belonging to sedentary species are defined as “organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil”, UNCLOS (n 24) article 77 para 4.

⁽⁵⁶⁾ *La Fayette* (n 5) 224.

freedom of the high seas or should rather be included in the ‘common heritage of mankind’ regime and administered by the ISA ⁽⁵⁷⁾.

The polarised positions in this field are strongly reminiscent of the debate on the regime of polymetallic nodules in the 1960s and 1970s ⁽⁵⁸⁾. Polymetallic nodules are rock formations consisting of, amongst others, manganese, iron, nickel and copper. They cover the deep seabed in large quantities. At the time, the extraction of these nodules became technically feasible for the first time. Both developed and developing countries considered polymetallic nodules as highly promising, especially because of the increasing concern regarding the supposedly imminent exhaustion of respective terrestrial resources. However, it was extremely difficult to access the nodules in the deep sea. Developing countries therefore feared that only developed countries could afford the necessary technologies, and that the latter alone would profit from unrestricted access to the deep sea. Adopting a proposal of a Maltese Ambassador ⁽⁵⁹⁾, the UN General Assembly declared in 1970 the seabed to be the common heritage of mankind and called for the establishment of an international regime governing the ocean floor and its resources ⁽⁶⁰⁾. The common heritage principle was finally embedded in the UNCLOS.

⁽⁵⁷⁾ Cf. *Bonfanti* (n 30) 190.

⁽⁵⁸⁾ Tullio Treves, ‘Development of the Law of the Sea: Achievements and Challenges’ in *Vidas* (n 34) 55.

⁽⁵⁹⁾ Speech by Arvid Pardo at the UN General Assembly, as contained in UN doc A/C.1/PV.1515 and A/C.1/PV.1516, of 1 November 1967;

https://www.un.org/depts/los/convention_agreements/texts/pardo_ga1967.pdf (accessed 26 November 2013).

⁽⁶⁰⁾ UNGA Res 2749 (XXV) (17 December 1970). The General Assembly declared in its resolution that the area of “the sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction [...], as well as [...their] resources, are the common heritage of mankind” (para 1). The resolution called for the establishment of an international regime governing this area in a way that provides for “the orderly and safe development and rational management of the area and its resources and for expanding opportunities in the use thereof and ensure the equitable sharing by States in the benefits derived therefrom, taking into particular consideration the

As a result of the negotiations between developing and developed states with several reciprocal concessions, UNCLOS part XI originally set out a complex regime. Allegedly interventionist aspects of this new regime, such as obligatory technology transfer ⁽⁶¹⁾, contradictions to intellectual property rights law and the coordination of the exploration and exploitation of deep seabed resources by the ISA's own mining operator (the 'Enterprise') immediately faced resistance from industrialized countries. As a consequence, the respective parts had to be revised by an implementing agreement even before UNCLOS came into force ⁽⁶²⁾.

Since the interest of the states merely focused on the nodules, living resources were left out completely at the time. The situation changed after the fall of the Berlin Wall in 1989 and the end of Apartheid in the early 1990s, when abundant land-based mineral resources in Russia and South Africa became available ⁽⁶³⁾. Technologies to extract mineral resources from the deep seabed have therefore never been commercialized. The fact that geopolitical changes would erase the need to extract manganese and other minerals from the ocean floor and that, instead, living resources would gain international attention and be considered as far more promising, was simply not foreseen when UNCLOS was negotiated more than thirty years ago.

As a consequence, the legal regime of MGRs as stipulated in UNCLOS is ambiguous. A merely textual interpretation of the convention excludes

interests and needs of the developing countries." (para 9). The common heritage principle, as set out in the resolution, is now embedded in UNCLOS part XI.

⁽⁶¹⁾ UNCLOS (n 24) article 144 in conjunction with article 5 of UNCLOS Annex III.

⁽⁶²⁾ Agreement relating to the implementation of part XI of the United Nations Convention on the Law of the Sea (adopted on 28 July 1994, entered into force on 28 July 1996) (1994) 33 ILM 1309.

⁽⁶³⁾ Thomas Cottier and Sofya Matteotti-Berkutova, 'International environmental law and the evolving concept of "common concern of mankind"' in *International Trade Regulation and the Mitigation of Climate Change* (Cambridge University Press 2009), 21, 24.

MGRs from the scope of provisions regarding the exploitation of deep-sea-bed resources (*i.e.* minerals). This interpretation is supported by the fact that the ISA's key organ, the Council, is composed of states' representatives of the mineral sector, such as investors, producers or consumers of the metal industry. The ISA might therefore be unsuitable for the management of MGRs since the Council members' expertise focuses on a different area⁽⁶⁴⁾. A more systematic or teleological interpretation, however, might lead to a different result. In this respect, it is important to note that UNCLOS does not distinguish between marine scientific research carried out for commercial purposes and pure scientific research activities without any sort of commercial purpose or potential⁽⁶⁵⁾. Provisions regulating marine scientific research therefore have to be taken into account for research activities related to the development and potential commercialization of products based on MGRs, including bioprospecting⁽⁶⁶⁾. UNLCOS provides that, with regard to the Area, such activities "shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole"⁽⁶⁷⁾, and that state parties carrying them out "shall promote international cooperation in marine scientific research in the Area"⁽⁶⁸⁾. A systematic approach moreover calls for an examination of other relevant instruments, the objectives and meaning of which could help to fill the gap⁽⁶⁹⁾.

3.2. The Convention on Biological Diversity

The CBD was adopted in June 1992 at the Earth Summit in Rio de Janeiro, Brazil, and entered into force on 29 December 1993. It has,

⁽⁶⁴⁾ Cf. Tullio Treves, 'Principles and Objectives of the Legal Regime Governing Areas Beyond National Jurisdiction' in *Oude Elferink* (n 31) 17.

⁽⁶⁵⁾ Cf. *Bonfanti* (n 30) 196.

⁽⁶⁶⁾ Cf. Tullio Scovazzi, 'The Seabed Beyond The Limits Of National Jurisdiction: General And Institutional Aspects' in *Oude Elferink* (n 31) 58.

⁽⁶⁷⁾ UNCLOS (n 24) article 143 para 1.

⁽⁶⁸⁾ UNCLOS (n 24) article 143 para 3.

⁽⁶⁹⁾ Cf. Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force on 27 January 1980) 1155 UNTS 331 (VCLT) article 31 para 3 lit c.

as of January 2013, 193 parties. The convention aims at “the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies”⁽⁷⁰⁾. As a framework convention, the CBD sets out goals and general principles that have to be implemented by the parties through national measures, including national legislation. The Conference of the Parties to the CBD, as well as its subsidiary bodies, such as the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), provide some guidance as to the implementation of the convention⁽⁷¹⁾.

The CBD defines *genetic resources* as “genetic material of actual or potential value”, while *genetic material* is defined as “any material of plant, animal, microbial or other origin containing functional units of heredity”⁽⁷²⁾. Issues related to access to genetic resources and benefit-sharing are addressed in articles 15-21 of the convention and include technology transfer, exchange of information, technical and scientific cooperation, handling of biotechnology and distribution of benefits, and financial issues. Recognizing the states’ sovereign right to exploit their own resources, the CBD provides that “the authority to determine access to genetic resources rests with the national governments and is subject to national legislation”⁽⁷³⁾. Each member state “shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses” by others⁽⁷⁴⁾. Access is subject to prior informed consent of the provider state. Where access is granted, it shall be on

⁽⁷⁰⁾ CBD (n 4) article 1.

⁽⁷¹⁾ Cf. United Nations University Institute of Advanced Studies (UNU-IAS), ‘Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects’ (2005), 38, available at: <http://www.ias.unu.edu/binaries2/DeepSeabed.pdf> (accessed 26 November 2013).

⁽⁷²⁾ CBD (n 4) article 2.

⁽⁷³⁾ CBD (n 4) article 15 para 1.

⁽⁷⁴⁾ CBD (n 4) article 15 para 2.

mutually agreed terms ⁽⁷⁵⁾. Parties are requested to take appropriate measures “with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources” with the state providing such resources ⁽⁷⁶⁾. In addition, the convention emphasizes the states’ responsibility “to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction” ⁽⁷⁷⁾.

Moreover, parties shall “provide and/or facilitate access for and transfer [...] of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment” ⁽⁷⁸⁾. Parties shall also take appropriate measures “to provide for the effective participation in biotechnological research activities” by developing countries in particular ⁽⁷⁹⁾. Technology transfer is particularly important with regard to activities in deep-sea areas, since they require extremely sophisticated equipment, which only a few countries have at their disposal.

While deep-seabed genetic resources in areas beyond national jurisdiction are not *per se* included in the scope of the CBD ⁽⁸⁰⁾, processes and activities carried out under the jurisdiction of a contracting party fall within the convention’s scope of applicability, wherever their effects occur ⁽⁸¹⁾. Such activities may include scientific research and bioprospect-

⁽⁷⁵⁾ CBD (n 4) article 15 paras 4 and 5.

⁽⁷⁶⁾ CBD (n 4) article 15 para 7.

⁽⁷⁷⁾ CBD (n 4) article 3.

⁽⁷⁸⁾ CBD (n 4) article 16 para 1.

⁽⁷⁹⁾ CBD (n 4) article 19 para 1.

⁽⁸⁰⁾ According to the convention’s jurisdictional scope, the provisions of the CBD only apply to components of biological diversity in areas within the limits of its national jurisdiction, cf. CBD (n 4) article 4 lit a.

⁽⁸¹⁾ CBD (n 4) article 4 lit b.

ing in areas beyond national jurisdiction⁽⁸²⁾. State parties that operate in areas beyond national jurisdiction have a duty to cooperate with other states for the conservation and sustainable use of biological diversity in these areas. This can be done either directly or through competent international organisations such as the ISA⁽⁸³⁾. However, the contracting parties have so far failed to adopt any measures “specifically addressing bioprospecting undertaken by their nationals outside the limits of national jurisdiction”⁽⁸⁴⁾.

In order to “enhance the conservation and sustainable use of biological diversity of marine living resources in areas beyond the limits of national jurisdiction”⁽⁸⁵⁾, the Conference of the Parties urged the governments of CBD member states as well as the UN General Assembly and other relevant international or regional organizations to adopt measures to eliminate “destructive practices adversely impacting the marine biological diversity associated with marine areas beyond the limits of national jurisdiction”⁽⁸⁶⁾. Particular attention is to be paid to areas with “seamounts, hydrothermal vents, and cold-water corals, other vulnerable ecosystems and certain other underwater features”⁽⁸⁷⁾.

Parties to the CBD are required to implement the convention in consistency with their obligations deriving from other international agreements, such as UNCLOS⁽⁸⁸⁾. The Conference of the Parties therefore requested its secretariat to undertake a study of the relationship between the CBD and UNCLOS with regard to the conservation and

⁽⁸²⁾ Cf. *Greiber* (n 27) 18.

⁽⁸³⁾ CBD (n 4) article 5.

⁽⁸⁴⁾ *UNU-IAS* (n 71) 38.

⁽⁸⁵⁾ CBD (n 4) COP Decision VII/5, Annex I section III, operational objective 2.4.

⁽⁸⁶⁾ CBD (n 4) COP Decision VII/5, Annex I section III, operational objective 2.4.

⁽⁸⁷⁾ CBD (n 4) COP Decision VII/5, Annex I section III, operational objective 2.4.

⁽⁸⁸⁾ Cf. CBD (n 4) article 22.

sustainable use of genetic resources on the deep seabed, with a view to enabling the SBSTTA to address issues relating to bioprospecting of genetic resources on the deep seabed ⁽⁸⁹⁾. In the respective study, which was presented at the 8th SBSTTA meeting in March 2003, the general secretary to the CBD concluded that neither UNCLOS nor the CBD provides “a specific legal regime for commercially-oriented activities relating to marine genetic resources on the High Seas and in the Area” ⁽⁹⁰⁾. The study stressed the need to develop such a regime, and emphasized the similarity in the two conventions’ objectives in this field, aiming at a fair and equitable sharing of the benefits arising out of the use of genetic resources (CBD) or mineral resources (UNCLOS) in the Area ⁽⁹¹⁾.

In October 2010, the Conference of the Parties to the CBD adopted the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization ⁽⁹²⁾. The protocol, which builds upon the former Bonn Guidelines informing access and benefit sharing, will enter into force after having been ratified by fifty countries ⁽⁹³⁾. It aims to contribute to the conservation of biological diversity and the sustainable use of its components through “the

⁽⁸⁹⁾ CBD (n 4) COP Decision II/10.

⁽⁹⁰⁾ CBD, ‘Study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed’ (22 February 2003) UNEP/CBD/SBSTTA/8/INF/3/Rev.1 (*CBD Study of relationship between CBD and UNCLOS*) [103]; *UNU-IAS* (n 71) 39.

⁽⁹¹⁾ *CBD Study of relationship between CBD and UNCLOS* (n 90) [104].

⁽⁹²⁾ Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (adopted 29 October 2010, not yet into force) UNEP/CBD/COP/DEC/X/1 (Nagoya Protocol).

⁽⁹³⁾ Nagoya Protocol (n 92) article 33. As of November 2013, 26 instruments of ratification have been deposited, cf. CBD, ‘Nagoya Protocol: Status of Signature, and ratification, acceptance, approval or accession’, see <http://www.cbd.int/abs/nagoya-protocol/signatories/> (accessed 25 November 2013).

fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies”⁽⁹⁴⁾. The Nagoya Protocol applies to genetic resources within the scope of article 15 of the CBD⁽⁹⁵⁾. The reference to article 15 of the CBD leaves some room for interpretation as to whether the Nagoya Protocol applies to genetic resources in areas beyond national jurisdiction. However, a closer examination of the Nagoya Protocol’s provisions reveals that it might not be practical to apply them to these kinds of resources⁽⁹⁶⁾. The regulations regarding the access to and use of genetic resources as provided by the protocol are based on the concepts of prior informed consent and mutual agreed terms⁽⁹⁷⁾. Prior informed consent can only be obtained by a state, and mutual agreed terms can only be negotiated with a state (that is, the state providing the respective resources)⁽⁹⁸⁾. In areas beyond national jurisdiction there is no such state. To include their resources under the general scope of the Nagoya Protocol therefore makes little sense⁽⁹⁹⁾.

The Nagoya Protocol urges the parties to “consider the need for and modalities of a global multilateral benefit-sharing mechanism to address the fair and equitable sharing of benefits derived from the utilization of genetic resources [...] for which it is not possible to grant or obtain prior informed consent”⁽¹⁰⁰⁾. The benefits shared by users of genetic resources through this mechanism “shall be used to support the conservation of biological diversity and the sustainable use of its components globally”⁽¹⁰¹⁾.

⁽⁹⁴⁾ Nagoya Protocol (n 92) article 1.

⁽⁹⁵⁾ Nagoya Protocol (n 92) article 3.

⁽⁹⁶⁾ Cf. *Greiber* (n 27) 18-19.

⁽⁹⁷⁾ Nagoya Protocol (n 92) articles 5 para 1 and 6 para 1.

⁽⁹⁸⁾ Cf. *Greiber* (n 27) 19.

⁽⁹⁹⁾ Cf. *Greiber* (n 27) 19.

⁽¹⁰⁰⁾ Nagoya Protocol (n 92) article 10.

⁽¹⁰¹⁾ Nagoya Protocol (n 92) article 10.

3.3. The Agreement on Trade-Related Aspects of Intellectual Property Rights of the World Trade Organization

Concluded under the auspices of the World Trade Organization (WTO), the TRIPS Agreement entered into force on 1 January 1995. The currently 159 members of the WTO (including the European Union) are parties to the agreement⁽¹⁰²⁾. The TRIPS is the most comprehensive multilateral agreement dealing with intellectual property rights law, incorporating the substantive provisions of the Paris Convention on Industrial Property⁽¹⁰³⁾ and the Berne Convention for the Protection of Literary and Artistic Works⁽¹⁰⁴⁾. While intellectual property rights are granted by states, the TRIPS Agreement sets minimal standards for intellectual property rights protection and contains requirements as to the national regulation in this field⁽¹⁰⁵⁾.

With respect to inventions obtained from MGRs, patents are the most relevant form of protection. They grant the right to prevent others from making, using, selling or distributing a patented invention without permission. Patent owners may conclude licensing contracts with third parties. Patents therefore protect the inventors' economic interests and compensate them for their investments. In return, applicants for a patent have to "disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a

⁽¹⁰²⁾ Cf. WTO, 'Understanding the WTO: The Organization, Members and Observers'; http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (accessed 26 November 2013).

⁽¹⁰³⁾ Paris Convention for the Protection of Industrial Property (adopted 20 March 1883; last revised 14 July 1967; amended 28 September 1979) 828 UNTS 305.

⁽¹⁰⁴⁾ Berne Convention for the Protection of Literary and Artistic Works (adopted 9 September 1886; last revised at Paris, 24 July 1971; amended 28 September 1979) 828 UNTS 221.

⁽¹⁰⁵⁾ See generally Frederick M. Abbott, Thomas Cottier, Francis Gurry, *International Intellectual Property in an Integrated World Economy* (2nd ed Kluwer, Austin, Boston 2011).

person skilled in the art”⁽¹⁰⁶⁾. Moreover, they may be required to “indicate the best mode for carrying out the invention known to the inventor at the filing date or, where priority is claimed, at the priority date of the application”⁽¹⁰⁷⁾. The concrete requirements placed on the patentee, the extent of the patent, and regulations on the patentability of living objects depend on national legislation and widely vary between states. With regard to the duration of patent protections, TRIPS requires that they shall not end before the expiration of a period of twenty years from the filing date⁽¹⁰⁸⁾.

The TRIPS Agreement provides that “patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application”⁽¹⁰⁹⁾. The agreement does not mention or define the term of genetic resources. Yet, while article 27 paragraph 3 lit. b of the TRIPS Agreement allows member states to exclude plants and animals from patentability, micro-organisms are not excludable. Similarly, parties may exclude “essentially biological processes for the production of plants or animals”, but not non-biological or microbiological processes. The TRIPS thereby imposes the patentability of products based upon, or related to, MGRs⁽¹¹⁰⁾.

In 2001, the WTO’s Doha Ministerial Declaration required the TRIPS Council to examine in its review of article 27 paragraph 3 lit. b the relationship between the TRIPS Agreement and the CBD, as well as the protection of traditional knowledge and folklore⁽¹¹¹⁾. In the context of this review process, a long-lasting debate arose between

⁽¹⁰⁶⁾ TRIPS (n 28) article 29 para 1.

⁽¹⁰⁷⁾ TRIPS (n 28) article 29 para 1.

⁽¹⁰⁸⁾ TRIPS (n 28) article 33.

⁽¹⁰⁹⁾ TRIPS (n 28) article 27 para 1.

⁽¹¹⁰⁾ TRIPS (n 28) article 27 para 3 lit b.

⁽¹¹¹⁾ WTO, ‘Doha Ministerial Declaration’ (14 November 2001) WT/MIN(01)/DEC/1, 41I.L.M. 746 (2002) [19].

developing and developed countries as to whether allowing patents to be granted for genetic material is consistent with the CBD⁽¹¹²⁾. Particular concern has been expressed by developing countries about patenting genetic materials in their natural state or after mere isolation from nature without the materials being otherwise modified, as well as about the grant of “overly broad patents [which] could impede access to and use of genetic resources” in a way that is incompatible with the CBD⁽¹¹³⁾.

The debate currently focuses on the question of whether consistency with the CBD could be enhanced by the introduction of a *disclosure-of-origin* requirement into patent law. A group of 71 developing countries proposed an amendment to the TRIPS Agreement, which would require patent applicants to disclose the country of origin of any genetic resources and traditional knowledge they used in the inventions. In order to align the TRIPS Agreement and the CBD, patent applicants should — according to the group’s proposal — moreover evidence that they received prior informed consent and that they shared their benefit arising from the use of the genetic resources in a fair and equitable way⁽¹¹⁴⁾. In the discussions on the matter within the TRIPS Council, the general principles of prior informed consent and equitable sharing of benefits were broadly supported by member states. TRIPS member states also voiced support for the CBD objectives in general, “but

⁽¹¹²⁾ Cf. WTO, Council for Trade-Related Aspects of Intellectual Property Rights, ‘The Relationship Between the TRIPS Agreement and the Convention on Biological Diversity — Summary of Issues Raised and Points Made. Note by the Secretariat’ (8 February 2006) IP/C/W/368/Rev.1 (*TRIPS Council 2006*, IP/C/W/368/Rev.1) [19 ss.].

⁽¹¹³⁾ *TRIPS Council 2006*, IP/C/W/368/Rev.1 (n 112) [22].

⁽¹¹⁴⁾ Cf. WTO, Trade Negotiations Committee, ‘Draft decision to enhance mutual supportiveness between the TRIPS Agreement and the Convention on Biological Diversity, Communication from Brazil, China, Colombia, Ecuador, India, Indonesia, Peru, Thailand, the ACP Group, and the African Group’ (19 April 2011) TN/C/W/59.

remained divided as to the best means to fulfil them within the TRIPS framework”⁽¹¹⁵⁾.

Developed countries in particular voiced some doubts as to “whether a disclosure requirement would be the most effective or desirable way of supporting compliance with access and benefit-sharing obligations in the source country of genetic resources and associated [traditional knowledge]”⁽¹¹⁶⁾. Furthermore, a certain risk was pointed out that a disclosure requirement would be “unreasonably burdensome for patent applicants or for patent offices” and that the incorporation of such a requirement in patent law might “result in uncertainty and deter investment in innovation, thus undermining the role of the patent system”⁽¹¹⁷⁾. It has therefore been proposed to transfer the issue to other fora dealing with intellectual property law⁽¹¹⁸⁾, or to examine the introduction of a disclosure requirement referring only to the geographic origin of genetic resources or traditional knowledge, with legal consequences to the non-respect of the requirement lying outside the ambit of patent law⁽¹¹⁹⁾.

4. INSTRUMENTS AND DEBATES UNDER THE AUSPICES OF THE WORLD INTELLECTUAL PROPERTY ORGANIZATION

Along with the TRIPS Council, the World Intellectual Property Organization (WIPO) is one of the major fora where the disclosure

⁽¹¹⁵⁾ WTO, Trade Negotiations Committee, ‘Issues related to the extension of the protection of geographical indications provided for in article 23 of the TRIPS Agreement to products other than wines and spirits and those related to the relationship between the TRIPS Agreement and the Convention on Biological Diversity. Report by the Director-General’ (21 April 2011) TN/C/W/61 (*Trade Negotiations Committee Report 2011*, TN/C/W/61) [18].

⁽¹¹⁶⁾ *Trade Negotiations Committee Report 2011*, TN/C/W/61 (n 115) [20].

⁽¹¹⁷⁾ *Trade Negotiations Committee Report 2011*, TN/C/W/61 (n 115) [20].

⁽¹¹⁸⁾ Cf. WTO, Council for Trade-Related Aspects of Intellectual Property Rights, ‘Communication from Switzerland’ (14 June 2004) IP/C/W/423.

⁽¹¹⁹⁾ Cf. WTO, Council for Trade-Related Aspects of Intellectual Property Rights, ‘Communication from the European Communities and their Member States’ (17 October 2002) IP/C/W/383 [51-55].

requirement is being discussed ⁽¹²⁰⁾. WIPO is a United Nations agency promoting the protection of intellectual property throughout the world. The Organization has, as of November 2013, 186 member states and hosts various treaties such as the Patent Cooperation Treaty (PCT) ⁽¹²¹⁾, establishing a unified procedure for filing patent applications in all its member states. In 2000, WIPO established an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC), which serves as main discussion forum within WIPO on patent issues related to genetic resources.

In response to an invitation from the Conference of the Parties to the CBD ⁽¹²²⁾, WIPO prepared a technical study on patent disclosure requirements related to genetic resources and traditional knowledge ⁽¹²³⁾. The study analyzes the consistency of disclosing methods with international property rights law, especially with regard to the disclosure of genetic resources utilized in the development of the claimed inventions; their country of origin (or more specific source); associated traditional knowledge, innovations and practices utilized in the development of the claimed inventions and their source; as well as evidence of prior informed consent ⁽¹²⁴⁾. The document presents “a range of methods that are con-

⁽¹²⁰⁾ Cf. WIPO, Working Group on Reform of the PCT, ‘Proposals by Switzerland Regarding the Declaration of the Source of Genetic Resources and Traditional Knowledge in Patent Applications’ (19 November 2003) PCT/R/WG/5/11 Rev; WIPO, IGC, ‘Document submitted by the European Community and its Member States’ (17 May 2005) WIPO/GRTKF/IC/8/11.

⁽¹²¹⁾ Patent Cooperation Treaty, (adopted 19 June 1970, amended 28 September 1979, modified 3 February 1984 and 3 October 2001, entered into force 1 April 2002), 1160 UNTS 231 (PCT).

⁽¹²²⁾ CBD (n 4) COP Decision VI/24, Annex section C [4].

⁽¹²³⁾ WIPO, IGC, ‘Draft Technical Study on Patent Disclosure Requirements Related to Genetic Resources and Traditional Knowledge’ (2 May 2003) WIPO/GRTKF/IC/5/10 (*IGC Study on Patent Disclosure Requirements*, WIPO/GRTKF/IC/5/10).

⁽¹²⁴⁾ *IGC Study on Patent Disclosure Requirements 2003*, WIPO/GRTKF/IC/5/10 (n 123) [200].

sistent with the essential elements of patent law and key aspects of WIPO treaties”⁽¹²⁵⁾. The study moreover emphasizes the need to clarify the question of whether the aim of disclosure requirements consists in monitoring the actual use of genetic resources or traditional knowledge, or rather in regulating the act of filing a patent application in itself. It submits that there are possibilities to access genetic resources outside the patent system. The recourse to these alternative strategies to access genetic resources could be increased if requirements for filing a patent application were to prove too burdensome⁽¹²⁶⁾. Users of genetic resources, including MGRs, could for instance rely on non-disclosure mechanisms such as trade secret protection.

An important tool for managing patents relating to genetic resources are depositories for genetic materials used in patented inventions. Since deep seabed genetic resources are extremely difficult to access *in situ*, their deposit with a recognized culture collection may be necessary for disclosing the invention “in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art”⁽¹²⁷⁾. That is to say, in cases where a written description of a strain alone is not sufficient to enable an expert to obtain the same strain (and thus to carry out or repeat the invention), the deposit of the strain can be part of the patent applicant’s obligation to give a full description of the invention⁽¹²⁸⁾. The Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure⁽¹²⁹⁾,

⁽¹²⁵⁾ *IGC Study on Patent Disclosure Requirements 2003*, WIPO/GRTKF/IC/5/10 (n 123) [201].

⁽¹²⁶⁾ Cf. *IGC Study on Patent Disclosure Requirements 2003*, WIPO/GRTKF/IC/5/10 (n 123) [207].

⁽¹²⁷⁾ TRIPS (n 28) article 29 para 1.

⁽¹²⁸⁾ Cf. *IGC Study on Patent Disclosure Requirements 2003*, WIPO/GRTKF/IC/5/10 (n 123) [102]; *UNU-IAS* (n 71) 43.

⁽¹²⁹⁾ Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, (adopted 28 April 1977, entered into force 9 August 1980, amended 26 September 1980), 1861 UNTS 361 (Budapest Treaty).

which is administered by WIPO, established a system of national depositories which are recognized by all 78 contracting parities as ‘international depository authorities’ (IDAs). IDAs have to be available on the same terms to any depositor, store deposited materials adequately, and furnish samples of deposited microorganisms only to those entitled to receive them ⁽¹³⁰⁾.

Enhancing the use of depositories and databases of genetic resources and associated traditional knowledge in patent applications is also being discussed in the TRIPS Council. However, some countries raised concerns about the difficulty of having fully exhaustive databases of traditional knowledge, especially if it is transferred orally, and about the risk of misappropriation once traditional knowledge is recorded in a database. They moreover pointed out “the difficulty of fully mapping out all the genetic resources potentially available in a mega-diverse country” ⁽¹³¹⁾. Databases could therefore be a complementary measure, but not an alternative to the proposed introduction of a *disclosure-of-origin* requirement.

5. TOWARDS A COMPREHENSIVE REGIME FOR MGRs

In light of this brief analysis of the most relevant multilateral treaties with respect to the management of MGRs, the conclusion cannot be avoided that the currently existing legal framework manifestly lacks an overall coherent approach to MGRs; it is characterized by fragmentation and *lacunae* and does not sufficiently respond to the challenges of access and benefit sharing relating to MGRs in areas beyond national jurisdiction ⁽¹³²⁾. In a nutshell, there is disagreement on three main issues: under UNCLOS, countries differ about the regime MGRs belong

⁽¹³⁰⁾ WIPO, ‘Guide to the Deposit of Microorganisms under the Budapest Treaty — Introduction to the Budapest Treaty’ (1 November 2012) 3, at <http://www.wipo.int/export/sites/www/treaties/en/registration/budapest/guide/pdf/introduction.pdf> (accessed 26 November 2013).

⁽¹³¹⁾ *Trade Negotiations Committee Report 2011*, TN/C/W/61 (n 115) [21].

⁽¹³²⁾ Cf. *Greiber* (n 27) 29.

to in areas beyond national jurisdiction, *i.e.* the Area or the high seas ⁽¹³³⁾. With regard to biodiversity law, it is unclear whether and to what extent the CBD and its fundamental principles of prior informed consent and fair and equitable benefit sharing apply to MGRs in these areas. Last but not least, it is being discussed whether and under what circumstances intellectual property rights are compatible with these principals of the CBD and with according obligations of the states parties to the CBD. In this context, some wish for the introduction of additional disclosure requirements, including the origin of genetic resources, evidence of compliance with CBD obligations and the genetic resource itself, which would require depositing it with a recognized culture collection for the sake of public accessibility.

Obviously, the discussions under these treaties are closely interrelated: those who count MGRs as common heritage of mankind deem CBD principles to be applicable and will hence be reluctant in allowing these resources — or their use — to be patented without the sharing of the resulting benefit with the international community. By contrast, those who count MGRs as part of the high seas and consider them to be open for use by all states will not recognise any conflict between the granting of intellectual property rights and their obligations under the CBD. They will therefore refuse any kind of restriction or additional requirements on the patentability of MGRs. A possible way towards a harmonized regime on MGRs — a regime which addresses the legal gaps, including those regarding benefit sharing — would therefore have to tackle all three challenges at the same time and take both positions into account.

In a recent resolution, the UNGA welcomed on-going processes towards the establishment of a “legal framework for the conservation

⁽¹³³⁾ In contrast, there is no such discussion with regard to MGRs within national jurisdiction, “as coastal States enjoy jurisdiction and sovereign rights for the conservation and sustainable use of the living resources of the sea in both the water column and the seabed, as well as for the protection of the marine environment, including all forms of marine life and their genetic material”, *La Fayette* (n 5) 225.

and sustainable use of marine biodiversity in areas beyond national jurisdiction” aiming at the identification of gaps and ways forward, including “the implementation of existing instruments and the possible development of a multilateral agreement under the United Nations Convention on the Law of the Sea”⁽¹³⁴⁾. It recalls the states’ commitment to address, on an urgent basis, “the issue of the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, including by taking a decision on the development of an international instrument under the United Nations Convention on the Law of the Sea”⁽¹³⁵⁾. We submit that such an instrument could be inspired by the experience gained under the International Treaty on Plant Genetic Resources for Food and Agriculture⁽¹³⁶⁾. The Treaty addresses the problem of conservation through use of plant genetic resources and seeks to facilitate the exchange of plant genetic resources for the purpose of breeding. It was adopted in 2001 under the auspices of the UN Food and Agriculture Organization and entered into force in 2004. According to its article 10, a special mechanism was established in order to provide farmers and other stakeholders with access to plant genetic resources, in particular seeds for agriculture that are crucial for ensuring world food security⁽¹³⁷⁾. The Multilateral System on access and benefit sharing, as the mechanism is called, today puts 64 of the most important crops into an easily accessible global pool of genetic resources that is freely available to potential users⁽¹³⁸⁾. Facilitated access is granted for research, breeding and training for food and agriculture⁽¹³⁹⁾. The mechanism also contains rules as to the sharing of the benefits resulting from the use of the respective resources, including non-monetary benefits, such as the exchange of information, access to

⁽¹³⁴⁾ UNGA Res 67/78, UN Doc A/RES/67/78 [181].

⁽¹³⁵⁾ UNGA Res 67/78, UN Doc A/RES/67/78 [181].

⁽¹³⁶⁾ ITPGRFA (n 9).

⁽¹³⁷⁾ ITPGRFA (n 9) article 10 para 2 and article 11.

⁽¹³⁸⁾ ITPGRFA, ‘Overview’; <http://www.planttreaty.org/content/overview> (accessed 26 November 2013); cf. ITPGRFA (n 9) article 11.

⁽¹³⁹⁾ ITPGRFA (n 9) article 12 para 3 lit a.

and transfer of technology, and capacity building⁽¹⁴⁰⁾. If seeds covered by the Multilateral System are commercialized, an equitable share of the resulting monetary benefits (1.1% of gross sales minus 30%) has to be paid into an international benefit-sharing fund⁽¹⁴¹⁾. The recipient is exempted from this obligation, if others may use the developed product without restriction for further research and breeding. Still, the recipient is encouraged to pay a share all the same. Moreover, “recipients shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System”⁽¹⁴²⁾. If plant genetic resources for food and agriculture are already protected by intellectual or other property rights, their access “shall be consistent with relevant international agreements, and with relevant national laws”⁽¹⁴³⁾.

The Multilateral System of the ITPGRFA could serve as a model for a similar mechanism in a refined regime on MGRs. However, it would have to be adapted to the specific nature of MGRs. Instead of dealing with a limited number of seeds registered, which are crucial for food security, it would apply to a yet undefined number of MGRs, which are not very well explored so far. Furthermore, the new mechanism would apply to MGRs in areas beyond national jurisdiction, and would therefore have to be implemented and operationalized by an international institution. Notwithstanding these challenges, such a mechanism would bring significant advantages.

A possible element of the mechanism could be the establishment of a public trust for MGRs in areas beyond national jurisdiction. The idea

⁽¹⁴⁰⁾ ITPGRFA (n 9) article 13 para 2 lit a-c.

⁽¹⁴¹⁾ Manuel Ruiz and Ronnie Vernooy, *The Custodians of Biodiversity: Sharing Access and Benefits to Genetic Resources* (Earthscan, Milton Park, Abingdon, Oxon 2012) 15; Greiber (n 27) 35; ITPGRFA (n 9) article 13 para 2 lit d.

⁽¹⁴²⁾ ITPGRFA (n 9) article 12 para 3 lit d.

⁽¹⁴³⁾ ITPGRFA (n 9) article 12 para 3 lit f.

is to collect royalties or other fees from users of MGRs in these areas, which could then be shared in a fair and equitable way and be used for the conservation of marine biology and marine ecosystems ⁽¹⁴⁴⁾. This would allow including both MGRs from the high seas and from the deep seabed, thus avoiding the difficult assignment of some MGRs to one of the two, as well as the different treatment of MGRs under either of those two regimes. While open access could still be granted, compliance with rules for sustainable management and benefit sharing could be required from those accessing the resources ⁽¹⁴⁵⁾. This would reflect the essential aspects of both regimes, *i.e.* the high seas (common interest in MGRs and open access) and the common heritage of mankind (common concern, conservation of marine biodiversity and benefit sharing).

The establishment of a benefit-sharing mechanism for MGRs would be in line with the call under the Nagoya Protocol for “a global multi-lateral benefit-sharing mechanism to address the fair and equitable sharing of benefits derived from the utilization of genetic resources [...] for which it is not possible to grant or obtain prior informed consent” ⁽¹⁴⁶⁾. However, UNCLOS seems to be the more appropriate forum to administer the mechanism, since it regulates the use of the oceans in an almost comprehensive manner. The ISA, whether or not it would be the institution to administer the mechanism, has important know-how in the fields of marine scientific research ⁽¹⁴⁷⁾ and the protection and conservation of the marine environment in the deep seabed ⁽¹⁴⁸⁾. In addition, UNCLOS already provides for a comparable royalty system for the exploitation of non-living resources of the continental shelf beyond 200 nautical miles ⁽¹⁴⁹⁾. A possible way to introduce such a

⁽¹⁴⁴⁾ Cf. David Leary, *International Law and the Genetic Resources of the Deep Sea* (Martinus Nijhoff Publishers, Leiden 2007) 176.

⁽¹⁴⁵⁾ Cf. *Greiber* (n 27) 36.

⁽¹⁴⁶⁾ Nagoya Protocol (n 92) article 10.

⁽¹⁴⁷⁾ UNCLOS (n 24) article 143.

⁽¹⁴⁸⁾ UNCLOS (n 24) article 145.

⁽¹⁴⁹⁾ UNCLOS (n 24) article 82.

mechanism for genetic resources in areas beyond national jurisdiction would be through an implementing agreement to UNCLOS⁽¹⁵⁰⁾.

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⁽¹⁵⁰⁾ Cf. dissenting view of *Bonfanti* (n 30) 230.

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PROGRAMA

PROGRAMME

**PROGRAMA INTEGRAL DA CONFERÊNCIA
INTERNACIONAL '30 ANOS DA ASSINATURA
DA CONVENÇÃO DAS NAÇÕES UNIDAS SOBRE
O DIREITO DO MAR: PROTECÇÃO DO AMBIENTE
E O FUTURO DO DIREITO DO MAR'**

**Faculdade de Direito da Universidade do Porto, 15-17 de Novembro
de 2012**

Página web: <http://www.direito.up.pt/LawoftheSeaConference/index.html>

Dia 15/11/2012

SESSÃO DE ABERTURA

Vice-Reitor da Universidade do Porto, Professor Doutor *Jorge Gonçalves*

Vice-Director da Faculdade de Direito da Universidade do Porto,
Professor Doutor *Luís Miguel Pestana de Vasconcelos*

Presidente do Centro Interdisciplinar de Investigação Marinha e
Ambiental, Professor Doutor *João Coimbra*

Responsável pela Estrutura de Missão para a Extensão da Plataforma
Continental, Eng. *Miguel Sequeira*

Representante da Câmara Municipal do Porto, Professor Doutor
Joaquim Poças Martins

SESSÃO I: RETRATO ACTUAL DA PROTECÇÃO DO AMBIENTE MARINHO: ambiente *versus* pesca, navegação, exploração e aproveitamento de recursos minerais

Moderador: Giuseppe CATALDI

Professor de Direito Internacional (Facoltà di Scienze Politiche) e Pro-Rettore Vicario dell'Università degli Studi di Napoli "L'Orientale", Itália; Presidente da *Association International du Droit de la Mer*

Pesca (direito internacional e direito da UE):

Fisheries and their impact on the marine environment: UNCLOS and beyond

Robin CHURCHILL

Professor de Direito Internacional — University of Dundee, Reino Unido

Fisheries and their impact on the marine environment: EU law

Daniel OWEN

Advogado — *Fenners Chambers*, Reino Unido; especialista em Direito do Mar

Navegação:

Commercial navigation and the protection of the marine environment: From conflict of interests to reconciliation through UNCLOS and IMO instruments

Agustín BLANCO-BAZÁN

Advogado internacional; Ex Senior Deputy Director of Legal Affairs — *Organización Marítima Internacional*

Freedom of navigation and responsibility for damage to the marine environment

José JUSTE-RUIZ

Professor de Direito Internacional — Universidad de Valencia, Espanha

Exploração e aproveitamento de recursos minerais:

The exploration of mineral resources in the Area

Pedro MADUREIRA

Membro da Comissão Jurídica e Técnica da *Autoridade Internacional dos Fundos Marinhos*

A preparar o terreno para a partilha do 'Eldorado': algumas reflexões sobre o regime jurídico-internacional da exploração de recursos minerais marinhos

Fernando Loureiro BASTOS

Professor da Faculdade de Direito da Universidade de Lisboa, Portugal; Doutoramento na área de Direito do Mar; Fellow, *Institute for International and Comparative Law in Africa*, University of Pretoria

Perspectiva geral e resolução de diferendos:

The settlement of disputes concerning the protection of the marine environment and the exploitation of marine resources

Tullio TREVES

Professor de Direito Internacional — Università degli Studi di Milano, Itália; juiz do *Tribunal Internacional do Direito do Mar* (1996-2011)

Dia 16/11/2012

SESSÃO COMEMORATIVA DO DIA NACIONAL DO MAR

Vice-Reitor da Universidade do Porto, Professor Doutor *Jorge Gonçalves*

Representante da Câmara Municipal do Porto, Professor Doutor *Joaquim Poças Martins*

Secretário Geral do Fórum Empresarial para a Economia do Mar, Eng. *Fernando Ribeiro e Castro*

Director Executivo do Cluster do Conhecimento e da Economia do Mar: Oceano XXI — Associação para o Conhecimento e Economia do Mar, Dr. *Rui Azevedo*

Vice-Presidente da CCDR-N (Comissão de Coordenação e Desenvolvimento Regional do Norte), Eng. *Carlos Neves*

Fundação AEP (Associação Empresarial de Portugal), Professor Doutor *Luís Valente de Oliveira*

Secretário de Estado do Mar, Professor Doutor *Manuel Pinto de Abreu*

SESSÃO II: NOVOS RUMOS DO DIREITO DO MAR: áreas marinhas protegidas, recursos genéticos, plataforma continental ('estendida' e Ártico)

Moderador: Manuel de Almeida RIBEIRO

Professor do Instituto Superior de Ciências Sociais e Políticas da Universidade Técnica de Lisboa, Portugal; Presidente da *Sociedade Portuguesa de Direito Internacional*

Gaps in UNCLOS:

Myron NORDQUIST

Professor da Virginia University Law School, Estados Unidos da América; Director Associado do *Center for Oceans Law & Policy*

AMPs (ASJN e AAJN):

Marine protected areas: the case of the extended continental shelf

Marta Chantal RIBEIRO

Professora da Faculdade de Direito da Universidade do Porto, Portugal; Doutorada na área do Direito do Mar; Coordenadora do *Marine Environmental Law Research Group* (CIIMAR)

Marine protected areas in waters beyond national jurisdiction

Tullio SCOVAZZI

Professor de Direito Internacional — Università degli Studi di Milano-Bicocca, Itália

Recursos genéticos:

Marine biotechnology perspectives: scientific and legal challenges

Laura GIULIANO

Science and Policy Advisor at the *Mediterranean Science Commission* (CIESM)

Evolving perspectives: marine genetic resources in areas beyond the limits of national jurisdiction

Lyle GLOWKA

Legal Advisor, *Convention on Biological Diversity Secretariat*

Extensão da plataforma continental:

Desafios e incertezas dos projectos de extensão da plataforma continental: o caso português

Paulo Neves COELHO

Anterior Coordenador Jurídico da *Estrutura de Missão para a Extensão da Plataforma Continental* (EMEPC), Portugal

Ártico:

The Area in the Arctic: To be or not to be?

Erik FRANCKX

Professor da Faculty of Law and Criminology — Vrije Universiteit Brussel, Bélgica; Presidente do *Department of International and European Law*; Director do *Centre for International Law*; Membro do *Permanent Court of Arbitration*

Perspectiva geral e resolução de diferendos:

Rüdiger WOLFRUM

Antigo Presidente e membro actual do *Tribunal Internacional do Direito do Mar*; Director do *Max Planck Institute for Comparative Public Law and International Law*, Alemanha

SESSÃO III: DESAFIOS DA INVESTIGAÇÃO CIENTÍFICA MARINHA

Moderador: Phil WEAVER

National Oceanography Centre, Southampton, Reino Unido

The impact of technological developments on the international legal regime of marine scientific research

Alfred SOONS

Professor de Direito Internacional — Universidade de Utrecht, Holanda; Director do *Netherlands Institute for the Law of the Sea* (NILOS)

Por mares nunca de antes navegados: gestão do risco e investigação científica no meio marinho

Carla Amado GOMES

Professora da Faculdade de Direito da Universidade de Lisboa, Portugal; Doutorada na área de Direito do Ambiente

Conservation and sustainable use of coastal ecosystems and their services

Isabel Sousa PINTO

Professora do Departamento de Biologia da Faculdade de Ciências da Universidade do Porto, Portugal; Directora do Laboratório de Biodiversidade Costeira e Membro da Direcção do *Centro Interdisciplinar de Investigação Marinha e Ambiental* (CIIMAR)

Deep sea research and conservation biology

Ricardo Serrão SANTOS

Pró-Reitor para a Integração dos Assuntos do Mar — Universidade dos Açores, Portugal

A Estratégia Nacional para o Mar

João Fonseca RIBEIRO

Comandante; Director da *Direcção-Geral de Política do Mar*, Portugal

Dia 17/11/2012

SESSÃO IV: MODELOS DE 'GOVERNAÇÃO'

Moderador: José Manuel PUREZA

Professor da Faculdade de Economia da Universidade de Coimbra, Portugal

UNCLOS and climate change

Alan BOYLE

Professor de Direito Internacional — University of Edinburgh, Reino Unido; Barrister

Can we protect high seas ecosystems under current international law? Lessons from the Sargasso Sea Project

David FREESTONE

Professor da George Washington University Law School, Estados Unidos da América; Director Executivo da *Sargasso Sea Alliance*; Editor do *The International Journal of Marine and Coastal Law*

Regional co-operation in enclosed and semi-enclosed seas for protection of the marine environment: an assessment

Nilufer ORAL

Istanbul Bilgi University — Faculty of Law, Turquia; Deputy Director of Istanbul Bilgi University *Center for Marine Law and Policy Research*

Enhancing integrated governance beyond national jurisdiction

Kristina GJERDE

Senior High Seas Advisor — Global Marine and Polar Programme — IUCN: *International Union for Conservation of Nature*

SESSÃO DE ENCERRAMENTO

Conclusões: *Wladimir Brito*, Professor da Escola de Direito da Universidade do Minho, Portugal

Director da Faculdade de Direito da Universidade do Porto, Professor Doutor *Cândido da Agra*

Reitor da Universidade do Porto, Professor Doutor *José Marques dos Santos*

Ministra da Agricultura, Mar, Ambiente e Ordenamento do Território, Professora Doutora *Assunção Cristas*

Informação complementar:

Grupo de trabalho das Conclusões: *Wladimir Brito* e *Maria Ana Martins, Francisco Noronha* e *Vasco Becker-Weinberg*

**FULL PROGRAMME OF THE INTERNATIONAL
CONFERENCE '30 YEARS AFTER THE SIGNATURE OF THE
UNITED NATIONS CONVENTION ON THE LAW OF THE
SEA: THE PROTECTION OF THE ENVIRONMENT AND THE
FUTURE OF THE LAW OF THE SEA'**

Faculty of Law, University of Porto, 15-17 November 2012

Website: <http://www.direito.up.pt/LawoftheSeaConference/index.en.html>

Day 15/11/2012

OPENING SESSION

Vice-Rector of the University of Porto, Professor *Jorge Gonçalves*

Vice-Dean of the Faculty of Law of the University of Porto, Professor *Luís Miguel Pestana de Vasconcelos*

President of the Interdisciplinary Centre of Marine and Environmental Research, Professor *João Coimbra*

Acting Head of the Task Group for the Extension of the Continental Shelf, Eng. *Miguel Sequeira*

Representative of the Porto City Council, Professor *Joaquim Poças Martins*

SESSION I: CURRENT STATUS OF THE PROTECTION OF THE MARINE ENVIRONMENT: marine environment *v.* fisheries, navigation, exploration and exploitation of mineral resources

Chair: Giuseppe CATALDI

Professor of International Law and Pro-Rettore Vicario dell'Università degli Studi di Napoli "L'Orientale", Italy; President of the *Association International du Droit de la Mer* (AIDM) — *International Association for the Law of the Sea*

Fisheries (international law and EU law):

Fisheries and their impact on the marine environment: UNCLOS and beyond

Robin CHURCHILL

Professor of International Law — University of Dundee, United Kingdom

Fisheries and their impact on the marine environment: EU law

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Barrister — *Fenners Chambers*, United Kingdom; expert in Law of the Sea

Navigation:

Commercial navigation and the protection of the marine environment: From conflict of interests to reconciliation through UNCLOS and IMO instruments

Agustín BLANCO-BAZÁN

International lawyer; Ex Senior Deputy Director of Legal Affairs — *International Maritime Organization*

Freedom of navigation and responsibility for damage to the marine environment

José JUSTE-RUIZ

Professor of International Law — Universidad de Valencia, Spain

Exploration and exploitation of mineral resources:

The exploration of mineral resources in the Area

Pedro MADUREIRA

Member of the Legal and Technical Commission of the *International Seabed Authority*

Setting the field for future 'mineral rushes': some reflections on the international regime for the exploration and exploitation of marine minerals

Fernando Loureiro BASTOS

Professor of the Faculdade de Direito da Universidade de Lisboa, Portugal; PhD on Law of the Sea; Fellow, *Institute for International and Comparative Law in Africa*, University of Pretoria

Global perspective and settlement of disputes:

The settlement of disputes concerning the protection of the marine environment and the exploitation of marine resources

Tullio TREVES

Professor of International Law — Università degli Studi di Milano, Italy; judge of the *International Tribunal for the Law of the Sea* (1996-2011)

Day 16/11/2012

SPECIAL SESSION: NATIONAL DAY OF THE SEA

Vice-Rector of the University of Porto, Professor *Jorge Gonçalves*

Representative of the Porto City Council, Professor *Joaquim Poças Martins*

Secretary General of the Fórum Empresarial para a Economia do Mar (FEEM: *Entrepreneurs Forum on Sea Economics*), Eng. *Fernando Ribeiro e Castro*

Executive Director of the Cluster do Conhecimento e da Economia do Mar: Oceano XXI — Associação para o Conhecimento e Economia do Mar (*Sea Knowledge and Economy Cluster: Oceano XXI — Association for the Knowledge and Economy of the Sea*), Dr. *Rui Azevedo*

Vice-President of the CCDR-N (Comissão de Coordenação e Desenvolvimento Regional do Norte — *North Regional Coordination and Development Commission*), Eng. *Carlos Neves*

Foundation AEP (Associação Empresarial de Portugal — *Portuguese Entrepreneurial Association*), Professor *Luís Valente de Oliveira*

Portuguese Secretary of State for the Sea, Professor *Manuel Pinto de Abreu*

SESSION II: PROSPECTS OF EVOLUTION OF THE LAW OF THE SEA: MPAs, genetic resources, continental shelf (outer CS and Arctic)

Chair: Manuel de Almeida RIBEIRO

Professor of the Instituto Superior de Ciências Sociais e Políticas da Universidade Técnica de Lisboa, Portugal; President of the *Sociedade Portuguesa de Direito Internacional* — *Portuguese Society of International Law*

Gaps in UNCLOS:

Myron NORDQUIST

Professor of the Virginia University Law School, United States of America; Associate Director of the *Center for Oceans Law & Policy*

MPAs (AUNJ and ABNJ):

Marine protected areas: the case of the extended continental shelf

Marta Chantal RIBEIRO

Professor of the Faculdade de Direito da Universidade do Porto, Portugal; PhD on Law of the Sea; Coordinator of the *Marine Environmental Law Research Group* (CIIMAR)

Marine protected areas in waters beyond national jurisdiction

Tullio SCOVAZZI

Professor of International Law — Università degli Studi di Milano-Bicocca, Italy

Genetic resources:

Marine biotechnology perspectives: scientific and legal challenges

Laura GIULIANO

Science and Policy Advisor at the *Mediterranean Science Commission* (CIESM)

Evolving perspectives: marine genetic resources in areas beyond the limits of national jurisdiction

Lyle GLOWKA

Legal Advisor, *Convention on Biological Diversity Secretariat*

'Extension' of the continental shelf:

Challenges and uncertainties of the continental shelf extension projects: the Portuguese case

Paulo Neves COELHO

Former Legal Coordinator of the *Task Group for the Extension of the Continental Shelf* (EMEPC), Portugal

Arctic:

The Area in the Arctic: To be or not to be?

Erik FRANCKX

Professor of the Faculty of Law and Criminology — Vrije Universiteit Brussel, Belgium; President of the *Department of International and European Law*; Director of the *Centre for International Law*; Member of the *Permanent Court of Arbitration*

Global perspective and settlement of disputes:

Rüdiger WOLFRUM

Former President and current member of the *International Tribunal for the Law of the Sea*; Director of the *Max Planck Institute for Comparative Public Law and International Law*, Germany

SESSION III: CHALLENGES OF MARINE SCIENTIFIC RESEARCH

Chair: Phil WEAVER

National Oceanography Centre, Southampton, United Kingdom

The impact of technological developments on the international legal regime of marine scientific research

Alfred SOONS

Professor of International Law — University of Utrecht, Netherlands; Director of the *Netherlands Institute for the Law of the Sea* (NILOS)

Through seas where sail was never spread before: risk management and scientific research on marine environment

Carla Amado GOMES

Professor of the Faculdade de Direito da Universidade de Lisboa, Portugal; PhD on Environmental Law

Conservation and sustainable use of coastal ecosystems and their services

Isabel Sousa PINTO

Professor at the Department of Biology of the Faculty of Sciences of the University of Porto, Portugal; Head of the Laboratory of Coastal Biodiversity and Member of the Board of Directors of the *Interdisciplinary Centre of Marine and Environmental Research* (CIIMAR)

Deep sea research and conservation biology

Ricardo Serrão SANTOS

Provost for the Integration of Sea Affairs — Universidade dos Açores, Portugal

National Ocean Strategy

João Fonseca RIBEIRO

Commandant; Director of the *Directorate-General for the Sea Policy*, Portugal

Day 17/11/2012

SESSION IV: MODELS OF ‘GOVERNANCE’

Chair: José Manuel PUREZA

Professor of the Faculdade de Economia da Universidade de Coimbra, Portugal

UNCLOS and climate change

Alan BOYLE

Professor of Public International Law — University of Edinburgh, United Kingdom; Barrister

*Can we protect high seas ecosystems under current international law?
Lessons from the Sargasso Sea Project*

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Professor of the George Washington University Law School, United States of America; Executive Director of the *Sargasso Sea Alliance*; Editor-in-Chief of *The International Journal of Marine and Coastal Law*

Regional co-operation in enclosed and semi-enclosed seas for protection of the marine environment: an assessment

Nilufer ORAL

Istanbul Bilgi University — Faculty of Law, Turkey; Deputy Director of Istanbul Bilgi University *Center for Marine Law and Policy Research*

Enhancing integrated governance beyond national jurisdiction

Kristina GJERDE

Senior High Seas Advisor — Global Marine and Polar Programme — IUCN: *International Union for Conservation of Nature*

CLOSING SESSION

Conclusions: *Wladimir Brito*, Professor of the Law School of University of Minho, Portugal

Dean of the Faculty of Law of the University of Porto, Professor *Cândido da Agra*

Rector of the University of Porto, Professor *José Marques dos Santos*

Minister of Agriculture, Sea, Environment and Spatial Planning of Portugal, Professor *Assunção Cristas*

Complementary information:

Working group for the Conclusions: *Wladimir Brito* and *Maria Ana Martins*, *Francisco Noronha* and *Vasco Becker-Weinberg*

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