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BIOSAFETY TECHNICAL SERIES 03

Review of Issues, Instruments and Practices Relevant to Liability and Redress for Damage Resulting from Transboundary Movements of Living Modified Organisms

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Biological Diversity

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CBD BIOSAFETY TECHNICAL SERIES 03

Review of Issues, Instruments and Practices Relevant to Liability and Redress for Damage Resulting from Transboundary Movements of Living Modified Organisms

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Foreword

This publication brings together information from some of the notes that were prepared and made available by the Secretariat between 2004 and 2010 to facilitate the process of elaborating rules and procedures in the field of liability and redress in the context of Article 27 of the Cartagena Protocol on Biosafety which culminated in the adoption of the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety.

The publication is intended to contribute to informing national dialogues and action towards the adoption and implementation of policy or legal frameworks on liability and redress for damage resulting from living modified organisms. It may also serve as a reference for scholars working in the area of liability for environmental damage. The information from the original notes has been modified or updated, as appropriate, with a view to presenting a consistent and up-to-date overview of concepts, functions and elements relevant to liability and redress as well as a survey of a number of international agreements and practices in this field.

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Table of treaties and other international instruments

Name	Short form	Entry into force[1]
Antarctic Treaty		23 June 1961
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	Basel Convention	5 May 1992
Cartagena Protocol on Biosafety to the Convention on Biological Diversity		11 September 2003
Contract Regarding an Interim Supplement of Tanker Liability for Oil Pollution	CRISTAL	No longer in force
Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean	Barcelona Convention	9 July 2004
Convention for the Protection of the Mediterranean Sea against Pollution		12 February 1978 (amended to become Barcelona Convention, see above)
Convention on Biological Diversity		29 December 1993
Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail And Inland Navigation Vessels	CRTD	Not in force
Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment	Lugano Convention	Not in force
Convention on Civil Liability for Oil Pollution Damage resulting from the Exploration for and Exploitation of Seabed Mineral Resources		Not in force
Convention on Compensation for Damage Caused by Aircraft to Third Parties	General Risks Convention	Not in force
Convention on Compensation for Damage to Third Parties, Resulting from Acts of Unlawful Interference Involving Aircraft	Unlawful Interference Compensation Convention	Not in force
Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface	Rome Convention	4 February 1958
Convention on Environmental Impact Assessment in a Transboundary Context		10 September 1997

1 The status of the treaties was current as of 17 May 2012.

Name	Short form	Entry into force
Convention on Liability for Damage Caused by Space Objects		1 September 1972
Convention on Limitation of Liability for Maritime Claims		1 December 1986
Convention on Long-range Transboundary Air Pollution		16 March 1983
Convention on Supplementary Compensation for Nuclear Damage	CSC	Not in force
Convention on the Protection of the Environment through Criminal Law		Not in force
Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material	1971 Brussels Convention	15 July 1975
Convention for the Protection of Human Rights and Fundamental Freedoms		3 September 1953
International Convention on Civil Liability for Bunker Oil Pollution Damage		21 November 2008
International Convention on Civil Liability for Oil Pollution Damage, 1969	Oil Pollution Convention	19 June 1975
International Convention on Civil Liability for Oil Pollution Damage, 1992	1992 Civil Liability Convention	30 May 1996
International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea	HNS Convention	Not in force
International Convention on the Establishment of an International Fund for Compensation for Oil Pollution	Oil Fund Convention	Superseded by 1992 Fund Convention
International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992	1992 Fund Convention	30 May 1996
International Convention Relating to Intervention on the High Seas in Case of Oil Pollution Casualties	Intervention Convention	6 May 1975
Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992	Supplementary Fund Protocol	3 March 2005
Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention	Joint Protocol	27 April 1992
Kiev Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters	Kiev Protocol	Not in force
Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety		Not in force
Offshore Pollution Liability Agreement		1 May 1975
Paris Convention on Third Party Liability in the Field of Nuclear Energy ▪ Amending protocol, 1964 ▪ Amending protocol, 1982 ▪ Amending protocol, 2004	Paris Convention	1 April 1968 ▪ 1 April 1968 ▪ 1 August 1991 ▪ Not in force
Protocol concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea		17 March 2004

Name	Short form	Entry into force
Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean		12 December 1999
Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea		Not yet in force
Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities		11 May 2008
Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil	Offshore Protocol	24 March 2011
Protocol of 2010 to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996	HNS Protocol	Not in force
Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies		Not in force
Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal	Hazardous Wastes Protocol	19 January 2008
Protocol on Liability and Compensation to the Basel Convention on the Transboundary Movement of Hazardous Wastes	Basel Protocol	Not in force
Protocol Relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil		30 March 1983
Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage	Vienna Amending Protocol	4 October 2003
Protocol to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter		24 March 2006
Small Tanker Oil Pollution Indemnification Agreement	STOPIA 2006	20 February 2006
Supplementary Convention on Third Party Liability in the Field of Nuclear Energy ▪ Amending protocol, 1964 ▪ Amending protocol, 1982 ▪ Amending protocol, 2004	Brussels Supplementary Convention	4 December 1974 ▪ 4 December 1974 ▪ 7 October 1988 ▪ Not in force
Tanker Oil Pollution Indemnification Agreement	TOPIA 2006	20 February 2006
Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution	TOVALOP	No longer in force
United Nations Convention on the Law of the Sea		16 November 1994
United Nations Framework Convention on Climate Change		21 March 1994
Vienna Convention for the Protection of the Ozone Layer		22 September 1988
Vienna Convention on Civil Liability for Nuclear Damage	Vienna Convention	12 November 1977

Table of acronyms

ATCM	Antarctic Treaty Consultative Meeting
COP-MOP	Conference of the Parties serving as the meeting of the Parties
EU	European Union
GDP	Gross domestic product
GMOs	Genetically modified organisms
HNS	Hazardous and noxious substances
IAEA	International Atomic Energy Agency
ICAO	International Civil Aviation Organization
ICJ	International Court of Justice
IGY	International Geophysical Year
ILC	International Law Commission
IMO	International Maritime Organization
LNG	Liquefied natural gases
MAP	Mediterranean Action Plan
OECD/NEA	Nuclear Energy Agency of the Organization for Economic Cooperation and Development
PCIJ	Permanent Court of International Justice
P&I	Protection and Indemnity
SDRs	Special Drawing Rights
UNCC	United Nations Compensation Commission
UNEP	United Nations Environment Programme
UNRA	United Nations rate of assessment

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Section I: Concepts, Functions and Elements Relevant to Liability and Redress

1. Background: The Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety

Liability and redress for damage resulting from the transboundary movements of living modified organisms was one of the most controversial issues during the negotiations of the *Cartagena Protocol on Biosafety to the Convention on Biological Diversity*. Some were in favour of rules on liability and redress being developed and included in the Protocol while others were opposed to the idea of having any such provision in the Protocol. Some argued that even if there was consensus to have substantive rules on liability and redress in the Protocol, there was not enough time to elaborate such rules, which were believed to be highly complex and sensitive to several Governments. As the negotiations on the Protocol entered the final phase, negotiators realized that there was a lack of both consensus and sufficient time to deal with any contents of possible rules on liability and redress. It was, therefore, finally accepted to continue the debate in a more deliberate manner after the adoption and entry into force of the Protocol.[2]

Accordingly, when the Biosafety Protocol was adopted in January 2000, it contained a provision committing the Conference of the Parties serving as the meeting of the Parties to the Protocol (COP-MOP, the governing body of the Protocol) to adopt, at its first meeting, a process for the elaboration of liability and redress rules. That commitment was reflected in Article 27 of the Protocol which states as follows:

> "The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first meeting, adopt a process with respect to the appropriate elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms, analysing and taking due account of ongoing processes in international law on these matters, and shall endeavour to complete this process within four years."

The Intergovernmental Committee on the Cartagena Protocol on Biosafety, an interim arrangement established following the adoption of the Protocol to oversee preparations for the entry into force of the Protocol, carried out extensive work on a number of items, including liability and redress in the context of Article 27 of the Protocol. The Biosafety Protocol entered into force on 11 September 2003. Soon after, in February 2004, the first meeting of the COP-MOP was held. The meeting decided to establish, on the basis of the work and recommendations of the Intergovernmental Committee, an Open-ended *Ad Hoc* Working Group of Legal and Technical Experts on Liability and Redress to carry out the process pursuant to Article 27 of the Protocol.[3]

2 For a complete record of the negotiations, visit the Secretariat's web page at this link: http://bch.cbd.int/protocol/cpb_art27_info.shtml.

3 "Establishment of an Open-ended Ad Hoc Working Group of Legal and Technical Experts on Liability and Redress in the context of the Protocol", decision BS-I/8 (27 February 2004), online: http://bch.cbd.int/protocol/decisions/decision.shtml?decisionID=8290.

The Working Group met five times between 2005 and 2008. The result of the five meetings of the Working Group supplemented by the work of a small group that met just before COP-MOP 4 was submitted to the fourth meeting of the Parties. Negotiations also continued in a contact group setting during COP-MOP 4. All these deliberations made good progress in advancing agreement on the text. Nevertheless, they were not sufficient to resolve all the outstanding issues and to lead the process to finalization in 2008 as required by Article 27. Consequently, COP-MOP 4 adopted a decision[4] in which the Parties agreed to establish a Group of the Friends of the Co-Chairs of the former Working Group to continue the negotiations.

The Group of Friends of the Co-Chairs met four times between 2008 and 2010. The negotiation process was focused on issues such as the definition of damage, the attribution of responsibility for damage to a person or persons, the kind of response measures that need to be taken to redress the damage or to prevent it, and what the nature of the instrument resulting from the negotiations should be. The Group finally agreed to the text of the *Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety* and submitted its report, including the text and a draft decision on 11 October 2010 for consideration and adoption by the fifth meeting of the COP-MOP in Nagoya, Japan. The Supplementary Protocol was adopted on 15 October 2010.[5]

The Supplementary Protocol seems also to be inspired, as stated in its preamble, by Principle 13 of the 1992 Rio Declaration on Environment and Development (Rio Declaration) which appeals to States to "cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control".

The objective of the Supplementary Protocol as stated in its Article 1 is to contribute to the conservation and sustainable use of biological diversity, taking also into account risks to human health by providing international rules and procedures in the field of liability and redress relating to living modified organisms.

The Supplementary Protocol defines "damage" as an adverse effect on the conservation and sustainable use of biological diversity that is measurable and significant.[6] It also provides for an indicative list of factors that should be used to determine the significance of an adverse effect.[7] Once the threshold of significant damage has been met, the need for response measures arises.[8] The Supplementary Protocol is the first multilateral environmental agreement to define 'damage to biodiversity'. Traditional damage, which is common in third-party civil liability instruments, and which includes personal injury, loss or damage to property or economic interests, is only covered marginally by the Supplementary Protocol to the extent it arises from damage to biodiversity and a Party wishes to address it in the context of its domestic civil liability law. [9]

The Supplementary Protocol is the second liability instrument to be concluded in the context of a multilateral environmental agreement following the 1999 *Protocol on Liability and Compensation to the Basel Convention on the Transboundary Movement of Hazardous Wastes* (Basel Protocol). The Basel Protocol adopts a civil liability approach, in particular in its definition of damage. It covers traditional damage due to an incident occurring during a transboundary movement of hazardous wastes and other wastes and their disposal. It envisages compensation for such damage, including the recovery of costs of preventive and reinstatement measures in the event of environmental damage. It enters into force if ratified or acceded to by twenty Parties to the Convention. In contrast, the Nagoya – Kuala Lumpur Supplementary Protocol has adopted an administrative approach for addressing damage caused by living modified organisms. The elements

4 "Liability and redress under the Cartagena Protocol on Biosafety", decision BS-IV/12 (16 May 2006), online: http://bch.cbd.int/protocol/decisions/decision.shtml?decisionID=11691.

5 "International rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms", decision BS-V/11 (15 October 2010), online: http://bch.cbd.int/protocol/decisions/decision.shtml?decisionID=12324.

6 Paragraph 2, Article 2.

7 Paragraph 3, Article 2.

8 Article 5.

9 Paragraph 2, Article 12.

of the administrative approach are specified in Article 5 of the Supplementary Protocol. Article 5 deals with how, when and who should take response measures in the event of damage or sufficient likelihood of damage resulting from living modified organisms that find their origin in a transboundary movement. This provision, together with the definitions of 'damage' and 'response measures', forms the core of the Supplementary Protocol. The Supplementary Protocol will enter into force when ratified or acceded to by 40 Parties to the Biosafety Protocol.[10]

It is common practice to name treaties after their place of adoption. The Supplementary Protocol was adopted in Nagoya, Japan following the final and critical negotiations. It was also noted, however, that Kuala Lumpur, Malaysia, has a special place in the history of the Supplementary Protocol. Kuala Lumpur was the city where the initial mandate for the negotiations on liability and redress under Article 27 of the Protocol was adopted on 27 February 2004 by the first meeting of the COP-MOP, and the city hosted the last two negotiation sessions preceding Nagoya. Parties considered these events as crucial and, therefore, decided to acknowledge the places where these events took place by attaching the names of the two cities to the Supplementary Protocol.

The conclusion of the Cartagena Protocol on Biosafety has been hailed as a significant step forward in providing an international regulatory framework that reconciles the respective needs of protecting free trade on the one hand and protecting the environment on the other in the face of a rapidly growing biotechnology industry. The conclusion of the Supplementary Protocol on Liability and Redress is equally significant because it puts in place the missing piece from the Protocol on Biosafety and makes it complete ten years after its adoption. The Supplementary Protocol is expected to be an important additional tool and a trigger for Parties to take measures at the national level in the field of liability and redress and fulfil their obligations under the Biosafety Protocol to "ensure that the development, handling, transport, use, transfer and release of any living modified organisms are undertaken in a manner that prevents or reduces the risks to biological diversity, taking also into account risks to human health"[11].

2. Liability for transboundary environmental damage

Whereas international law regarding liability and redress for transboundary damage to health and property (traditional damage) is fairly well developed, this is hardly the case with respect to transboundary environmental damage. The rapid expansion of the scope of international environmental treaty law since the 1972 Stockholm Conference on the Human Environment has, unfortunately, not been accompanied by developments in the legal rules governing international liability and redress for environmental damage. The appeal to States, in both the 1972 Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) and the 1992 Rio Declaration to cooperate to develop further international law regarding liability and compensation for environmental damage, has been met with only a limited response. In the negotiations of several multilateral environmental agreements, the development of liability and compensation regimes has often been postponed to some future date, which may or may not ever come.[12]

It can be argued, however, that an international environmental liability and redress regime is an essential mechanism for the enforcement of the environmental policies and standards established through multilateral treaties. Liability and redress rules promote compliance with international environmental norms and the implementation of the precautionary approach, the preventive principle and the polluter pays principle.

Liability for international environmental harm subsumes both the concept of State responsibility for breaches of international law, which predates the emergence of the global environmental agenda, and liability for harm resulting from activities permitted

10 Article 18.

11 Paragraph 2, Article 2, Cartagena Protocol on Biosafety.

12 See, for example, the 1979 *Convention on Long-range Transboundary Air Pollution*; the 1982 *United Nations Convention on the Law of the Sea*; the 1989 *Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*; and the 2000 Cartagena Protocol on Biosafety.

under international law. The general principle of international law that States are under an obligation to protect, within their own territory, the rights of other States to territorial integrity and inviolability has been progressively extended over the years through State practice and judicial decisions to cover transboundary environmental harm. In the 1938-1941 *Trail Smelter Arbitration*,[13] the Arbitral Tribunal affirmed that "under the principles of international law, as well as the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or of property or persons therein". This principle of State responsibility was restated by the International Court of Justice (ICJ) in the 1949 *Corfu Channel Case*,[14] where it observed that there were "general and well-recognized principles" of international law concerning "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States" and by the Arbitral Tribunal in the 1956 *Lac Lanoux* arbitration.[15] In 1996, in its advisory opinion on *The Legality of the Threat or Use of Nuclear Weapons,* the ICJ declared that "the existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment".[16]

The general obligation upon States with respect to transboundary environmental harm was reaffirmed in principle 21 of the Stockholm Declaration and principle 2 of the Rio Declaration. In both instances, it was asserted that "States have…the 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". It was subsequently incorporated, in identical terms, in the preambular paragraphs of the 1979 *Convention on Long-range Transboundary Air Pollution*, the 1985 *Vienna Convention for the Protection of the Ozone Layer*, and the 1992 *United Nations Framework Convention on Climate Change*; and in the operational text of the 1982 *United Nations Convention on the Law of the Sea* (Article 194), and the 1992 *Convention on Biological Diversity* (Article 3). These instruments and the ICJ opinion in *The Legality of the Threat or Use of Nuclear Weapons Case* extended the transboundary reach of the obligation to include areas beyond the limits of national jurisdiction, thus transcending the limits set in the *Trail Smelter Arbitration.*

The obligation has two parts: first, to take measures to prevent the occurrence of transboundary environmental harm and, secondly, to redress the damage if the transboundary harm occurs. The general principle of international law is that a State which breaches its international obligation has a duty to right the wrong committed. The Permanent Court of International Justice (PCIJ) clearly stated in the *Chorzow Factory Case*[17] that a State in breach owes to the affected States a duty of reparation, which must "as far as possible, wipe out the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed". The ICJ, in the *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary/Slovakia*)[18] has, however, noted the limitations inherent in the very mechanism of reparation of environmental damage. On this account and because such damage is often irreversible, the Court emphasized the need for vigilance and prevention.

The issue of reparation with regard to damage to the environment beyond the limits of national jurisdiction, outside the framework of specific treaty provisions, raises interesting questions: what indemnities are due and who is to claim them? *Obiter dicta* by the ICJ in the *Barcelona Traction Case*[19] would seem to suggest that there exist basic obligations to the international community as a whole (*erga omnes*) that can consequently be asserted by any State. Whether this extends to environmental damage in areas beyond the limits of national jurisdiction is an arguable point.[20]

13 United Nations, *Reports of International Arbitral Awards*, vol. III, 1906-1982.

14 1949 ICJ Rep. 4, online: http://www.icj-cij.org/docket/files/1/1645.pdf.

15 1957 I.L.R. 101.

16 Advisory Opinion, 1996 ICJ Rep. 226, online: http://www.icj-cij.org/docket/files/95/7495.pdf.

17 (1927) PCIJ Ser. A, No. 13, 46-48.

18 *Case Concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, Judgment of 25 September 1997, I.C.J. Reports 1997, p. 7, available at: http://www.icj-cij.org/docket/files/92/7375.pdf?PHPSESSID=8633f6c82453d56be4798963f9436ee4. The case is discussed in more detail in section 5.3(b)(iii) below.

19 1970 ICJ 4.

20 See Francisco Orrego Vicunna, "State Responsibility, Liability and Remedial Measures under International Law" in E. B. Weiss, ed. *Environmental Change and International Law: New Challenges and Dimensions* (Tokyo: United Nations University: 1992).

Since 1955, the International Law Commission has been working on the topic of State responsibility. At its fifty-third session, in 2001, the Commission adopted text of draft articles on responsibility of States for internationally wrongful acts, which were subsequently noted by the General Assembly.[21] According to the draft articles, every breach by a State of an obligation under international law constitutes an internationally wrongful act and entails the international responsibility of that State (article 1). Specific legal consequences arise from such an internationally wrongful act. First, the responsible State must cease the wrongful act if it is of a continuing character and must offer appropriate assurances and guarantees of non-repetition (article 30). Secondly, the responsible State is under an obligation to make full reparation for the injury caused by the internationally wrongful act (article 31). Full reparation can take three forms: restitution, compensation and satisfaction, either singly or in combination (article 35). A responsible State is under an obligation to make restitution, that is, to re-establish the situation, which existed before the wrongful act was committed (article 36). In so far as the damage is not made good by restitution, the responsible State is under an obligation to compensate for the damage caused by the wrongful act (article 37). Finally, where restitution or compensation cannot make good the damage, the responsible State is under an obligation to give satisfaction for the injury caused (article 38). Satisfaction may consist of an acknowledgement of the breach, an expression of regret or a formal apology.

3. Functions of international rules on liability and redress

A liability and redress regime is seen to serve several important functions. First, it is believed to promote compliance with international environmental norms and the implementation of the precautionary approach, the preventive principle and the polluter pays principle. Generally, the threat of incurring liability and the potential burden of redress measures act as an incentive towards more precautionary approaches to economic activities resulting in the avoidance of environmental risk and damage. Secondly, it serves a reparative function by shifting the costs of environmental damage from society at large to the person or persons responsible for the activity causing damage. By allocating responsibility for repairing the damage caused by an act or activity, a liability and redress regime serves as an instrument for the implementation of the polluter pays principle. Lastly, holding the author of environmental harm responsible for redressing it may act as a deterrent regarding environmentally harmful activities or at least lead to investment in preventive measures. It is an incentive to States and non-State actors to avoid environmentally harmful conduct.

The stringency of a liability and redress regime may vary depending on whether and to what extent it aims at protecting an injured individual, the environment or the relevant economic sector or industry. For example, if the main objective of the liability instrument is to protect victims, the standard of liability tends to be strict and the operator may be required to carry insurance against the risk. If the primary goal is protecting the environment, the liability regime may emphasize implementation of preventative and reinstatement measures, recovery of the costs of such measures and compulsory intervention by a public authority. On the other hand, liability may need to be limited in time and amount with a view to protecting the relevant operator or industry from open-ended legal actions and financial burdens.

4. Elements commonly considered in elaborating rules and procedures on liability and redress

A review of international legal instruments and guidelines dealing with liability and redress shows that many of these instruments and guidelines share some common elements. With the exception of some elements, the same is also true for domestic liability and redress regimes. These elements or issues could be summarized under the following headings:

21 *Report of the International Law Commission: Fifty-third session* (23 April-1 June and 2 July-10 August 2001), UN General Assembly Official Records, 56th sess., Supp. No. 10, doc. A/56/10 (2001), online: http://www.un.org/documents/ga/docs/56/a5610.pdf. The draft articles and the commentaries thereto are at paragraphs 76 and 77 respectively in chapter IV.E. See also *Responsibility of States for internationally wrongful acts*, GA Res. A/RES/56/83, UN General Assembly, 56th sess. (adopted on 12 December 2001) where the General Assembly took note of the articles.

(a) Types of activities/situations causing damage;
(b) The concept and threshold of damage;
(c) Jurisdictional application or geographical scope;
(d) Channelling liability;
(e) The nature of liability;
(f) Exemptions from liability;
(g) The nature and scope of redress, including valuation of damage;
(h) Limitation of liability in amount and time;
(i) Financial security and funds;
(j) The right to bring claims; and
(k) Jurisdiction and mutual recognition and enforcement of judgments.

4.1 TYPES OF ACTIVITIES/SITUATIONS CAUSING DAMAGE

A liability and redress instrument needs a clear description of the activities, substances or situations which the law recognizes as potentially causing damage and from which, the law intends to protect the potential victims. This is a crucial issue which essentially determines the scope of the instrument. Following the language of Article 27 of the Cartagena Protocol on Biosafety, the scope of the Nagoya – Kuala Lumpur Supplementary Protocol is damage resulting from living modified organisms which find their origin in a transboundary movement.

4.2 THE CONCEPT AND THRESHOLD OF DAMAGE

Many of the international civil liability treaties specify the nature of the damage for which liability can be incurred under the agreement. In this regard, liability and redress regimes have usually found it fairly easy to conceptualize and address issues relating to damage to traditional heads of damage – i.e. damage to person or property and economic loss. However, the concept of damage in a number of existing international legal regimes has gradually evolved over the years to include "environmental damage". In most cases, environmental damage is restricted to three categories of losses: the costs of measures of reinstatement of the impaired environment; loss of income deriving from an economic interest in any use or enjoyment of the environment incurred as a result of the impairment of the environment; and the costs of measures undertaken or to be undertaken to prevent environmental damage.[22] As regards reinstatement and restoration measures, questions arise, for example, as to whether it is desirable to restore the environment to its exact previous state or whether natural regeneration should be allowed to take its course.

A component of environmental damage is pure ecological damage. It is doubtful whether pure ecological damage would be recoverable where the definition of damage is restricted to the costs of measures to reinstate or restore the damaged or destroyed components of the environment. Legal developments regarding environmental damage, however, point to a recognition that the environment represents a value on its own merit that is subject to legal protection. In the *Patmos Case*,[23] the Messina Court of Appeals awarded the Italian Government damages not only for the cost of clean-up measures due to oil pollution but also for ecological damage arising from the affected beneficial uses of the marine environment, for example, as a source of food, for recreation or scientific research. The court asserted that the fact that such losses were difficult to compute was no bar to compensation. Similarly, the rulings to date regarding the damage from the oil pollution caused by the sinking of the *Erika* off the coast of France in 1999 have also supported the principle that damage to the environment – even without an economic interest – is recoverable. The details of the case are discussed in sub-section 2.5 of section II below.

For the Nagoya – Kuala Lumpur Supplementary Protocol, damage means an adverse effect on the conservation and sustainable use of biological diversity, taking also into account risks to human health. This concept is a novel one and is discussed in more detail in sub-section 5.2 below.

A related problem is the question of the threshold of damage. It is generally agreed that in order for liability to arise, damage needs to exceed a *de minimis* threshold – not every change to the quality or quantity

22 See, for example, the 1997 *Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage* (Vienna Amending Protocol); the 1996 *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea* (HNS Convention); and the Basel Protocol.
23 Messina Court of Appeals, 1989, cited in F. O. Vicunna, *supra* note 20.

of natural resources should constitute damage that gives rise to liability. For an environmental liability regime to function well, it is essential to set threshold criteria below which the responsible party will not be liable. In some of the international instruments on liability, the terms "significant harm", "significant damage", or "above tolerable levels" are used as an indicator for the threshold of damage.[24] The Nagoya – Kuala Lumpur Supplementary Protocol follows suit and requires damage to be significant and measurable in order to trigger response measures.

The concept of damage is explored further in subsection 5 below.

4.3 Jurisdictional application or geographical scope

In general, international liability regimes apply only in respect of either damage caused or an incident occurring in the territory of a contracting State. However, in an important number of instances there are no jurisdictional limitations as regards preventive measures. This latter fact is quite crucial in the conservation of environmental resources located in areas beyond the limits of national jurisdiction. The Nagoya – Kuala Lumpur Supplementary Protocol applies to damage that occurs in areas within the limits of national jurisdiction of Parties.[25] The Convention on Biological Diversity applies, in relation to each Contracting Party: (a) in the case of components of biological diversity, in areas within the limits of 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.[26] Article 5 calls on Contracting Parties to cooperate in respect of areas beyond national jurisdiction for the conservation and sustainable use of biological diversity.

4.4 Channelling liability

The issue of who should be liable for damage is one of the most critical elements in a liability regime. Most international legal instruments on liability channel liability to a clearly identifiable person or persons. The question of channelling liability generally depends on the nature of the obligation breached or the level of control that one might have over the activity or the object that has allegedly caused the damage. Assigning liability to appropriate persons may be determined by principles such as fairness—reflecting an equitable balance between the interests of victims, the environment and other stakeholders including industry; effectiveness—allocating liability to a person who was in the best position to prevent damage and purchase financial security; and transparency—facilitating the identification of the persons liable.

Generally, liability is channelled to the "operator" of the activity causing damage, that is, the person who has the operational control of the activity at the time of the incident causing damage. The categories of "operator" need to be refined to include those who might otherwise escape liability and exclude others who are thought to merit protection. The Nagoya – Kuala Lumpur Supplementary Protocol defines "operator" as any person in direct or indirect control of the living modified organism and it could include the permit holder, person who placed the living modified organism on the market, developer, producer, notifier, exporter, importer, carrier or supplier.[27]

In a growing number of cases, international legal instruments also envisage subsidiary State liability to supplement the liability of the operator. Such subsidiary State liability has taken a number of forms: from systems where the State is required to pay certain sums into funds which are drawn upon to satisfy liability claims;[28] through those where the State is held liable when the operator has failed to provide adequate compensation under the liability regime;[29] to those where the State is liable beyond

24 For "significant harm" see, for example, paragraph (b), Article 2, Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies. For "significant damage" see, for example, paragraph (a), principle 2, Principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities, infra note 68. For "above tolerable levels" see, for example, paragraph (d), Article 8, 1993 *Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment.*

25 Paragraph 5, Article 3.

26 Article 4.

27 Paragraph (c), Article 2.

28 See, for example, the Oil Fund Convention.

29 See, for example, the 1963 *Vienna Convention on Civil Liability for Nuclear Damage.*

the maximum limit of operator liability.[30] The only instrument that establishes *original* State liability is the 1972 *Convention on Liability for Damage Caused by Space Objects*. In this case, it is the "launching State", defined as the State which launches or procures the launching or from whose territory an object is launched, that is liable.

4.5 THE NATURE/STANDARD OF LIABILITY

Generally speaking, there are three standards of liability: fault-based liability where proof of the fault of the actor (operator) is required; strict liability where there is no need to establish the fault of the actor, only the fact that the act caused the damage; and absolute liability where almost no defences are available.

A number of existing international treaties establish a system of strict liability, mainly applying to dangerous activities that may lead to inevitable or extremely harmful consequences. Use of strict liability is based on the fact that, for many technologically advanced activities, it would be very difficult for a victim to prove fault on the part of an operator. Strict liability alleviates the burden that would otherwise weigh upon a victim who has suffered damage.

4.6 EXEMPTIONS FROM LIABILITY

Liability rules in the form of a civil liability regime typically allow for a limited number of exceptions from liability relating to cases where damage has been occasioned by or through events and situations beyond the control of the operator. Across most international and national liability regimes, commonly accepted exemptions from liability include: (i) act of God (*force majeure*); (ii) act of war or civil unrest; (iii) contribution by the victim; and (iv) intervention by a third party. It is the availability of such exemptions or defences that distinguishes strict from absolute liability regimes. The Nagoya – Kuala Lumpur Supplementary Protocol provides that Parties may provide exemptions in their domestic law on the basis of the exceptions mentioned in (i) and (ii) as well as any other exemptions or mitigations, as they may deem fit.[31]

4.7 THE NATURE AND SCOPE OF REDRESS, INCLUDING VALUATION OF DAMAGE

Public international law generally requires the defendant to make full reparation for the damage caused. Reparation can take the form of restitution or compensation. Traditional approaches to liability cover compensation for injured persons or property. Restitution in the context of environmental damage would encompass measures of environmental restoration or reinstatement. Where restitution is not possible or is inadequate, monetary compensation or any equivalent measures of reinstatement would be necessary. Punitive damages are not usually accepted under international law.

As regards damage to biological diversity, there are conceivably many situations where restoration or reinstatement may not be feasible. Cases of damage to endemic species or unique ecosystems are good examples. In such cases, it may well be impossible to restore or reinstate the species or ecosystems given their unique nature and so it would be manifestly unjust not to pay monetary compensation for the loss suffered, especially if the species or ecosystems played an important role in the socio-economic life of the inhabitants of the affected State in general, and of indigenous and local communities in particular.

The Nagoya – Kuala Lumpur Supplementary Protocol provides for an order of preference in the response measures to be taken with a view to restoring biological diversity damaged by living modified organisms. Accordingly, the operator or, as appropriate, the competent authority has to undertake, as a matter of priority, response measures with the aim of restoring the biological diversity to the condition that existed before the damage occurred, or its nearest equivalent. Where restoration to the condition that existed before or to its nearest equivalent is determined not to be possible, the restoration measure should focus on replacing the loss with other components of biological diversity for the same or another type of use either at the same or at an alternative location, as appropriate.[32]

30 See the 1963 *Supplementary Convention on Third Party Liability in the Field of Nuclear Energy*; the Vienna Amending Protocol.

31 Article 6.

32 Paragraph 2(d)(ii), Article 2.

4.8 LIMITATION OF LIABILITY IN AMOUNT AND TIME

Liability under many of the existing regimes is strict but limited both in amount and time. The justification is the need for balance: whereas it is necessary to guarantee prompt and adequate compensation for victims of damage, it is also necessary not to unduly impose onerous or unknown financial burdens on legitimate economic activity. Thus, the total amount of compensation that can be paid in respect of damage arising from any one incident may be limited to specified maximum amounts. Whether or not a liability regime chooses to set a ceiling on the amount of compensation payable for an incident may depend on the nature of the activity being regulated and the magnitude of the damage that may occur. Most strict liability regimes opt for financial limitation of liability, which establishes either fixed limits or minimum limits. For damage caused by fault, the liability may be unlimited. It is important to note that there may be need to review such ceilings regularly since they do become outdated over time.

Time limits within which claims for compensation can be instituted have also been defined in almost all liability instruments. The periods, however, vary considerably.

The Nagoya – Kuala Lumpur Supplementary Protocol states that Parties have the option of providing in their domestic law for relative and/or absolute time limits, and for financial limits for the recovery of costs and expenses related to response measures.[33]

4.9 FINANCIAL SECURITY AND FUNDS

In order to guarantee adequate compensation for victims of damage, many international liability regimes oblige the "operator" to maintain insurance or other forms of financial security to the extent of his maximum liability. Various options may be available for guaranteeing adequate compensation for victims of damage. The most common practice is the maintenance of insurance by the operator. Without insurance, reparations may fail if the operator is undercapitalized. Insurance reduces the risks to which operators are exposed by transferring part of these risks to the insurers. Some liability regimes establish compulsory insurance. However, the availability of insurance may be constrained by factors such as the lack of widely accepted measurement techniques to quantify damage to the environment, which makes it difficult to determine the amount of damage. This could be particularly true for calculating damage to the conservation and sustainable use of biodiversity.

The creation of funds is another possible way to provide financial security for compensating victims or remedying damage. Funds are used in the situations where: (i) the operator cannot be held liable due to defences, time or financial limits; (ii) the operator is financially incapable of meeting his liability up to the financial limit; or (iii) relief is provided on an interim basis. A voluntary fund outside any liability treaty regime could also be established. The sources of funding could be from companies or States that benefit most from the activities that may lead to damage.

The Nagoya – Kuala Lumpur Supplementary Protocol leaves the question of whether to provide for financial security to the discretion of Parties.[34] In 2010, six leading biotechnology companies signed a binding agreement among themselves with the aim "to assure timely response in the event of damage to biological diversity caused by the release of a living modified organism" developed by one of the member companies.[35] The agreement, otherwise known as the "Compact", is intended "to give States a readily accessible, expedited means for seeking remedial measures from the company that is a member of the Compact in the event that the release of a living modified organism causes damage to biological diversity in that State".[36]

Sub-section 6 below explores different aspects of financial security to cover liability in more detail.

33 Articles 7 and 8.

34 Paragraph 1, Article 10.

35 "Compact FAQs", online: http://www.croplife.org/compact_FAQs.

36 Compact FAQs, *ibid*. The biotechnology companies that are Members of the Compact are: BASF, Bayer CropScience, Dow AgroSciences, DuPont, Monsanto, and Syngenta. It should be noted that there is no formal nexus between the Compact and the Nagoya – Kuala Lumpur Supplementary Protocol or any liability and redress regime that may be adopted by individual States pursuant to the Supplementary Protocol.

4.10 THE RIGHT TO BRING CLAIMS

Under traditional liability regimes, in principle, only a person with a direct interest (i.e. a person having suffered some damage or loss) may bring a civil action for compensation. However, the case of damage to the environment or biodiversity may be different from claiming traditional damage in that the public may be responsible for the environment and act on its behalf under certain circumstances since protection of the environment is in the public interest. Certain domestic laws allow some non-public entities to access the justice system and to bring claims on behalf of the general public or specific communities that have allegedly suffered from environmental damage.

Under the Nagoya – Kuala Lumpur Supplementary Protocol, it is the competent authority of a Party that requires the concerned operator to take response measures appropriate to the damage.[37]

4.11 JURISDICTION, MUTUAL RECOGNITION AND ENFORCEMENT OF JUDGMENTS

An important issue that must be addressed in a liability and redress regime concerns the question of jurisdiction. This question has two aspects: first, determining the competent court to entertain claims for compensation; and, secondly, ensuring the recognition and enforcement of judgments arrived at by such a competent court in the territories of other contracting parties. Victims of damage must be certain of the court or courts that are competent to entertain their claims. The fact that there may be numerous victims from a single incident also makes it imperative that only one court should have jurisdiction over claims from any one incident so as to be able to apportion compensation, where appropriate, among the victims. A multiplicity of claims in diverse jurisdictions does not create certainty or efficiency in the judicial processing of claims for compensation.

In a large number of treaties, jurisdiction over actions for compensation lie with the courts of the contracting party in whose territory the incident giving rise to liability has occurred. When the incident occurs outside the jurisdiction of any State party, some treaties allow for the possibility that courts in different countries may have jurisdiction. In cases where courts of different parties have been seized of related actions, any court other than the court first seized is required to stay its proceedings until the jurisdiction of the first court is established. The purpose of this requirement is to allow the consolidation of related actions and single determination by one competent court. A number of civil liability international instruments further provide that, where a judgment has been entered by a court of competent jurisdiction that is enforceable in the State of origin and is no longer subject to ordinary forms of review, the judgment is to be recognized and enforced in the territory of any contracting party. This provision obviates the need for claimants to institute further proceedings in the courts of other contracting States in order to secure their compensation.

Once judgment is delivered, it should be recognized as final and binding in the respective territories of contracting States, and a victim should be able to enforce it in any of those territories.

The Nagoya – Kuala Lumpur Supplementary Protocol contains no provision related to the issues of jurisdiction, mutual recognition and enforcement of judgements.[38]

5. The concept of damage

As described above, an increasing number of international civil liability treaties include environmental damage as part of their concept of damage. The Nagoya – Kuala Lumpur Supplementary Protocol covers damage to the conservation and sustainable use of biological diversity. Exploration of these concepts, some of their components and their application was an important aspect of the negotiations that led to the adoption of the Supplementary Protocol.

5.1 DAMAGE TO THE ENVIRONMENT

According to the growing international, regional, and domestic level understanding and practice,

37 Article 5.

38 This may be attributed to the administrative nature of the instrument.

"environmental damage" is a change that has a measurable adverse impact on the quality of a particular environment or any of its components, including its use and non-use values, and its ability to support and sustain an acceptable quality of life and a viable ecological balance.

The United Nations Compensation Commission in its work on Iraq's liability for environmental damage from the invasion and occupation of Kuwait has considered the meaning of 'environmental damage'. In its June 2005 report and recommendations on the so-called "F4" claims, the Panel of Commissioners considered whether claims for damage to natural resources without commercial value were compensable. The Panel framed the issue as follows: "the Panel considers that the fundamental issue to be resolved is whether, pursuant to Security Council resolution 687 (1991), claimants who suffer damage to natural resources that have no commercial value are entitled to compensation beyond reimbursement of expenses incurred or to be incurred to remediate or restore the damaged resources. In other words, the question is whether the term "environmental damage", as used in Security Council resolution 687 (1991), includes what is referred to as "pure environmental damage"; i.e., damage to environmental resources that have no commercial value."[39]

The Panel concluded that the concept of "environmental damage and the depletion of natural resources" as used in Security Council resolution 687 (1991) means any loss of or damage to natural resources that can be demonstrated to have resulted directly from Iraq's invasion and occupation of Kuwait.[40] The Panel did not consider there to be "anything in the language or context of Security Council resolution 687 (1991) or Governing Council decision 7 that mandates or suggests an interpretation that would restrict the term "environmental damage" to damage to natural resources which have commercial value."[41] Iraq had argued that awarding compensation for a claim for interim loss of non-commercial environmental resources would be a revolutionary change in international law. The Panel disagreed and found that the assertion that general international law precludes compensation for pure environmental damage was not justified and that the exclusion of compensation for pure environmental damage in some international conventions on civil liability and compensation did not illustrate a general principle of international law to this effect.

Iraq's arguments had initially been stated in terms of the temporal nature of the damage, i.e., that interim loss or damage to natural resources should not be compensable. The Panel also found that whether the loss or damage was temporary in nature did not have any relevance to the issue of compensability of this loss or damage.

In another example, the *Environmental Liability Directive*[42] (ELD) of the European Union (EU) defines "environmental damage" as (a) damage to protected species and natural habitats, which is any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species; (b) water damage, which is any damage that significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential, of the waters concerned; and (c) land damage, which is any land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms.[43]

5.2 DAMAGE TO THE CONSERVATION AND SUSTAINABLE USE OF BIOLOGICAL DIVERSITY

Damage to biological diversity does not seem to be synonymous with damage to the environment. The concept of "damage to biological diversity" or "damage to the conservation and sustainable use of biological diversity" is not well-explored in the literature. In fact, the inclusion of damage to biodiversity as a head of liability in international law has been virtually unknown until the adoption of the

39 "Report and Recommendations made by the Panel of Commissioners concerning the Fifth Instalment of "F4" Claims", doc. S/AC.26/2005/10 (30 June 2005), online: http://www.uncc.ch/reports/r05-10.pdf at paragraph 52.
40 *Ibid*. at paragraph 55.
41 *Ibid*.

42 *Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage* [2004] O.J. L 143/56.
43 *Ibid*. at paragraph 1, Article 2.

Nagoya – Kuala Lumpur Supplementary Protocol in October 2010.

Paragraph 2 of Article 14 of the Convention on Biological Diversity specifically refers to "liability and redress for damage to biological diversity". Biological diversity is defined broadly in the Convention to include "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". Therefore, damage to biological diversity as defined in the Convention will need to measure damage to the 'variability among living organisms', which is a concept new to the field of liability and redress.

The group that the Conference of the Parties established for the purpose of considering the issue of liability and redress, known as the Group of Legal and Technical Experts on Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity, considered, at its meeting in 2005, the issue of damage to biological diversity and arrived at a number of pertinent conclusions. These were: that a mere change in the state of biological diversity might not necessarily constitute damage; to constitute damage, the change had to result in an adverse or negative effect and it should be measurable; that information on baseline conditions for determining and measuring change was often not available and in its absence, other methodologies for measuring change would be needed; and that some environmental changes do not manifest themselves immediately, so the issue of linking actors and long-term environmental effects also arises.[44]

Experts within the Group also noted: that the concept of damage to biological diversity should reflect the definition of "biological diversity" as contained in Article 2 of the Convention; that the concept should incorporate negative changes in variability or diversity; that the term 'variability' in the definition was overly broad and unworkable; and that there is a need to take into account the definition of 'biodiversity loss' in decision VII/30 of the Conference of the Parties.[45]

The question has also been raised whether the concept of 'damage to the conservation and sustainable use of biological diversity' is distinct from the concept of 'damage to biological diversity'. The former refers to an activity ('conservation and sustainable use') while the latter refers to a thing ('biological diversity') suggesting that there is a difference between the two. The term 'conservation' is not per se defined in the Convention but Article 2 does include definitions of in-situ and ex-situ conservation suggesting that the concept of "conservation" in the phrase "damage to conservation" could refer to these two categories. 'Sustainable use' is defined in Article 2 of the Convention but the definition is not very precise.

5.3 IMMINENT THREAT OF DAMAGE

The concept of imminent threat of damage substantially overlaps with the precautionary principle or approach. It is clear that the precautionary approach is incorporated throughout the Biosafety Protocol (see, for example, the objective of the Protocol as stated in Article 1.) The meaning and status of the precautionary principle or approach is, however, the subject of continued debate in international law. This section is not intended to revisit those debates. The focus is rather on the principle of prevention of damage as there is a direct relationship between preventive measures and the concept of imminent threat of damage.

(a) General

The use of the "imminent threat" threshold pervades many spheres of life. The concept applies in relation to a range of different subject matters. It is, for example, used to guide the development and application of measures for: workplace safety; the safety of infrastructure such as buildings, installations and other operations such as mines; determining the proportionality of response actions to aggressions directed against an individual's life or property or to national security; public health and

44 "Report of the Group of Legal and Technical Experts on Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity", doc. UNEP/CBD/COP/8/27/Add.3 (18 October 2005), online: http://www.cbd.int/doc/meetings/cop/cop-08/official/cop-08-27-add3-en.pdf.

45 *Ibid.*

medical practices; emergency response activities in relation to natural or man-made phenomena or exposure. Different expressions are used to describe the different consequences that may be caused by an imminent threat. "Imminent threat of danger", "imminent threat of hazard", "imminent threat of harm", "imminent threat of damage", are some of the common expressions, depending on the context in which they are used. However, as a matter of policy or legislative considerations, all these expressions have one thing in common, i.e. the intent to prevent danger, hazard, harm or damage.

The identification or recognition and management of an imminent threat vary depending on the context within which the concept has been adopted or implemented. Some questions need to be answered in order to establish imminent threat of damage. Is the damage that may be caused by the threat significant, grave or serious? Is the risk of damage immediate or nearly so? The answers to these questions could provide an objective test to show imminent threat of damage.

The recognition of imminent threat of damage leads to response actions. It entails obligations on certain groups of people or entities. These obligations could be procedural such as the requirement to notify an imminent threat of damage to public authorities or to people likely to be affected, or substantive actions to prevent or mitigate the damage. Depending on the policy environment and legal requirements, factors such as the cost of response measures as against the cost of damage may be taken into account to determine the appropriateness or feasibility of any particular response action.

(b) Application or use of the concept

(i) Multilateral agreements and arrangements

A number of multilateral agreements, in particular environment-related liability instruments, address, in one form or another, the concept of imminent threat of damage. It is a concept encapsulated in the subject of damage and it is integral to the overall legal purpose of dealing with damage. Regardless of the different formulations under the different instruments and circumstances, the underlying rationale of the concept of imminent threat as a threshold for action to prevent or mitigate damage has been one of the regulatory approaches adopted almost invariably by the instruments with a view to meeting their objective.

The 1969 *International Convention Relating to Intervention on the High Seas in Case of Oil Pollution Casualties* (Intervention Convention) is one of the earliest treaties to incorporate the concept. The Convention called upon Parties to take measures "as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences".[46] Measures are expected to be proportionate to the damage by taking into account "(a) the extent and probability of imminent damage if those measures are not taken; (b) the likelihood of those measures to be effective; and (c) the extent of the damage which may be caused by such measures".[47]

In 1973, the Intervention Convention was supplemented by a *Protocol Relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil*. The Protocol allows Parties to take similar action to that recognized under the Convention in cases of substances listed in the annex to the Protocol, and those other substances which are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.[48] In the case of the latter category of substances, i.e. substances that are not listed, the Party taking action has the burden of establishing that the substance, under the circumstances present at the time of intervention, could reasonably pose a grave and imminent danger analogous to that posed by any of the listed substances.[49]

The Convention on Biological Diversity includes, among other things, a provision on the principle of State responsibility not to cause damage to the environment of other States or of areas beyond the

46 Paragraph 1, Article I.
47 Paragraph 3, Article V.
48 Paragraphs 1 and 2, Article I.
49 Paragraph 3, Article I.

limits of national jurisdiction.[50] It requires Parties to identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity.[51] Environmental impact assessment is also a requirement for proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects.[52] Each Party has an obligation to promote notification, exchange of information and consultation on activities that are likely to cause significant adverse effects on biological diversity.[53] In the case of imminent or grave danger or damage, there is a duty to immediately notify the potentially affected States and to initiate action to prevent or minimize such danger or damage.[54] In terms of its purpose, this requirement is identical to the concept of imminent threat of damage.

There is also a similar requirement in the Biosafety Protocol in the case of unintentional transboundary movements of living modified organisms and emergency situations. Each Party is required to notify affected or potentially affected States and the Biosafety Clearing-House when there is a known occurrence resulting in a release of a living modified organism that leads or may lead to an unintentional transboundary movement that is likely to have significant adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health.[55] In addition, each Party is to immediately consult the affected or potentially affected States to enable them to determine appropriate responses.[56]

Other liability-related multilateral agreements that incorporate the concept of imminent threat of damage include:

(a) Annex VI to the 2005 *Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies*;
(b) 2001 *International Convention on Civil Liability for Bunker Oil Pollution Damage* (Bunker Oil Convention);
(c) Basel Protocol;
(d) 1997 *Convention on Supplementary Compensation for Nuclear Damage* (CSC);
(e) 1996 *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea* (HNS Convention);
(f) 1993 *Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment* (Lugano Convention);
(g) 1992 *International Convention on Civil Liability for Oil Pollution Damage* (1992 Civil Liability Convention);
(h) 1989 *Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels* (CRTD).

Most of these instruments provide for the definition of "preventive measures" as measures that need to be taken after the occurrence of an incident in order to prevent damage from occurring, and "incident" in turn is defined as "occurrence or series of occurrences having the same origin that causes damage or creates a grave and imminent threat of causing damage".[57] Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies presents a different formulation of the concept. Consistent with its title and purpose, the Annex defines "environmental emergency". Accordingly, any accidental event that has occurred, and that results in, or imminently threatens, any significant and harmful impact on the Antarctic environment, constitutes an environmental emergency,[58] which entails on each Party an obligation to require its operators to take prompt and effective response action.[59]

50 Article 3.
51 Paragraph (c), Article 7.
52 Paragraph 1, Article 14.
53 Paragraph 1(c), Article 14.
54 Paragraph 1(d), Article 14.
55 Paragraph 1, Article 17.
56 Paragraph 4, Article 17.

57 See, for example, paragraph 2(h), Article 2, Basel Protocol. A similar approach has been adopted by UNEP in its "Guidelines for the development of domestic legislation on liability, response action and compensation for damage caused by activities dangerous to the environment", annex to decision SS.XI/5 B, *Proceedings of the Governing Council/Global Ministerial Environment Forum at its eleventh special session*, UN doc. UNEP/GCSS.XI/11 (3 March 2010). See paragraphs 5 and 6 of Guideline 3.
58 Paragraph (b), Article 2.
59 Paragraph 1, Article 5.

A number of other multilateral agreements that do not have liability as their primary focus also require taking preventive measures when there is reason to believe that the processes, activities or substances in question are likely to cause harm to the environment or components of the environment.[60] For example, under the United Nations Convention on the Law of the Sea, a state that becomes aware of cases in which the marine environment is in imminent danger of being damaged has an obligation to immediately notify other States it deems likely to be affected by such damage as well as the competent international organizations.[61]

The draft articles on the law of transboundary aquifers developed by the International Law Commission (ILC) contain a provision on emergency situations. "Emergency" is defined as "a situation, resulting suddenly from natural causes or from human conduct that affects a transboundary aquifer or aquifer system and poses an imminent threat of causing serious harm to aquifer States or other States".[62] In an emergency situation, the State from where the emergency originates has the duty to immediately notify other potentially affected States and competent international organizations, to take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate the harmful effect of the emergency.[63]

The ILC articles on the prevention of transboundary harm from hazardous activities[64] apply to activities which involve the risk of causing significant transboundary harm through their physical consequences.[65] The State of origin is required to take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof,[66] including providing the State likely to be affected with timely notification of the risk and the assessment as well as transmitting technical and all relevant information available, in the event assessment indicates a risk of causing significant damage.[67] There is a similar stipulation in the ILC principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities[68] of an obligation to promptly notify, consult with and seek cooperation of all States affected or likely to be affected upon the occurrence of an incident involving a hazardous activity which results or is likely to result in transboundary damage.[69]

Ultimately, the aim of the instruments that include the notion of "imminent threat of damage" or "imminent threat of causing damage" is to impose an obligation to take preventive measures that protect the environment, human life or property.

(ii) Regional approach

The fundamental principle of the European Union's Environmental Liability Directive with regard to prevention and remedying of environmental damage, as stated in the preamble of the Directive itself is "that an operator whose activity has caused the environmental damage or the imminent threat of such damage is to be held financially liable, in order to induce operators to adopt measures and develop practices to minimize the risks of environmental damage so that their exposure to financial liabilities is reduced".[70] The Directive defines "preventive measures" as "any measures taken in response to an event, act or omission that has created an imminent threat of environmental damage, with a view to preventing or minimizing that damage".[71] Operators are required to take preventive measures where there is an imminent threat of environmental damage.[72] The Directive further defines "imminent threat of

60 See for example, Article 3 of the 1996 *Protocol to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter*; paragraph 1(4), Article 1 of the United Nations Convention on the Law of the Sea; and Article 2 of the 1991 *Convention on Environmental Impact Assessment in a Transboundary Context.*

61 Article 198, Section 2, Part XII.

62 Paragraph 1, Article 17, "The law on transboundary aquifers" in *The law on transboundary aquifers*, GA Res. A/63/124, UN General Assembly, 63d sess. (adopted on 11 December 2008).

63 *Ibid*. at paragraph 2, Article 17.

64 "Prevention of transboundary harm from hazardous activities" in *Consideration of prevention of transboundary harm from hazardous activities and allocation of loss in the case of such harm*, GA Res. A/RES/62/68, UN General Assembly, 62d sess. (adopted on 6 December 2007).

65 *Ibid*. at Article 1.

66 *Ibid*. at Article 3.

67 *Ibid*. at Article 8.

68 "Principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities" in *Allocation of loss in the case of transboundary harm arising out of hazardous activities*, GA Res. A/RES/61/36, UN General Assembly, 61st sess. (adopted on 4 December 2006).

69 *Ibid*. at Principle 5.

70 Preambular paragraph 2.

71 Paragraph 10, Article 2.

72 Paragraph 1, Article 5.

damage" as "a sufficient likelihood that environmental damage will occur in the near future".[73]

As part of the implementation process of the Environmental Liability Directive, some Member States conducted public consultations and developed guidance documents to further the understanding of the requirements. For example, draft guidance prepared by the Scottish Government elaborates the concept by describing some of the circumstances that constitute imminent threat of damage as follows:

> "An 'imminent threat' of 'damage' means that there is a sufficient likelihood that 'damage' will occur in the near future. This may include circumstances where:
> - A damaging event has not yet occurred but is sufficiently likely to in the future and lead to 'damage' if action is not taken. For example, where a tank containing dangerous substances, which is situated near a major aquifer, is in very poor condition and is likely to leak without action to secure the tank.
> - An event has occurred and there is no damage yet but there is a sufficient likelihood that 'damage' will occur in the near future if action is not taken. Extending the tank example above, this is where the tank has already started to leak and the substances have entered the soil and are likely to migrate to the aquifer without action to contain the contamination.
> - Damage has occurred which is not yet 'damage' but is sufficiently likely to become 'damage' if action is not taken.[74] Further extending the tank example above, this is where the tank has leaked and the contamination has already started to enter the aquifer. The damage does not yet qualify as water damage but without action to control further migration of contamination into the aquifer the damage is likely to become water damage."[75]

73 Paragraph 9, Article 2.

74 The reference to damage in quotation marks seems to refer to damage as defined in the Environmental Liability Directive.

75 Item 5.3, Environmental Liability (Prevention and Remediation) (Scotland) Regulations 2008: Draft Guidance, online: http://www.scotland.gov.uk/Publications/2008/05/14161737/19.

(iii) Cases

In the *Gabčíkovo-Nagymaros case*, a dispute between Hungary and Slovakia over the construction of a dam on the River Danube, the ICJ found: (i) that Hungary had not proved that a real "grave" and "imminent" peril existed in 1989, the year Hungary unilaterally suspended its part of the construction at Nagymaros on the grounds of "ecological state of necessity", and (ii) that the measures taken by Hungary were the only response to the peril. The ICJ considered whether there was, in 1989, a state of necessity which would have permitted Hungary, without incurring international responsibility, to suspend and abandon works that it was committed to perform in accordance with the treaty that both parties signed in 1977 concerning the construction and operation of the Gabčíkovo-Nagymaros System of Locks and related instruments. For the purpose of evaluating the existence of a state of necessity, the Court examined, following agreement by both Parties, Article 33 of the draft articles on the international responsibility of States, which had at the time been adopted by the ILC on a first reading. The ILC draft article provided in part that "a state of necessity may not be invoked by a State as a ground for precluding the wrongfulness of an act of that State not in conformity with an international obligation of the State unless: (a) the act was the only means of safeguarding an essential interest of the State against a grave and imminent peril".[76]

The Court found that there were "uncertainties" concerning future harm to freshwater supplies and biodiversity as a result of the construction of the dam as Hungary argued in its pleadings. The Court, however, stated that:

> "Serious though these uncertainties might have been, they could not, alone, establish the objective existence of a 'peril' in the sense of a component element of a state of necessity. The word 'peril' certainly evokes the idea of risk; that is precisely what distinguishes 'peril' from material damage. But a state of necessity could not exist

76 *Supra* note 18 at paragraphs 49 and 50. As finally adopted, this became Article 25 of the draft articles on Responsibility of States for internationally wrongful acts, supra note 21.

> without a 'peril' duly established at the relevant point in time; the mere apprehension of a possible 'peril' could not suffice in that respect. It could moreover hardly be otherwise, when the 'peril' constituting the state of necessity has at the same time to be 'grave' and 'imminent'. 'Imminence' is synonymous with 'immediacy' or 'proximity' and goes far beyond the concept of 'possibility'. As the International Law Commission emphasized in its commentary, 'the extremely grave and imminent' peril must 'have been a threat to an interest at the actual time' (*Yearbook of International Law Commission*, 1980, Vol. II, Part 2, p. 49, para. 33). That does not exclude, in the view of the Court, that a 'peril' appearing in the long term might be held to be imminent as soon as it is established, at the relevant point in time, that the realization of that peril, however far off it might be, is not thereby any less certain and inevitable."[77]

The Court noted that it was not convinced by the Hungarian argument on the state of necessity "unless it was at least proven that a real, "grave" and "imminent" "peril" existed in 1989 and that the measures taken by Hungary were the only possible response to it."[78]

The European Court of Justice rejected by majority in *Balmer-Schafroth v. Switzerland* the applicants' claim that the failure of Switzerland to provide for administrative review of a decision extending the operation of a nuclear facility violated Article 6 of the 1950 *Convention for the Protection of Human Rights and Fundamental Freedoms*. The Court ruled that the applicants failed to:

> "Establish a direct link between the operating conditions of the power station… and their right to protection of physical integrity, as they failed to show that the operation of Mühleberg power station exposed them personally to a danger that was not only serious but also specific and, above all, imminent. In the absence of such a finding, the effects on the population of the measures which the Federal Council could have ordered to be taken in the instant case therefore remained hypothetical. Consequently, neither the danger nor remedies were established with a degree of probability that make the outcome of the proceedings directly decisive."[79]

6. Financial security to cover liability

Financial security includes insurance, bank guarantees, internal reserves, and industry pooling schemes among other mechanisms. This section focuses for the most part on information on insurance to cover liability resulting from transboundary movements of living modified organisms. The first part (sub-section 6.1) includes information on relevant concepts from the insurance industry. Sub-section 6.2 discusses different heads of damage and the availability of insurance for these different heads. Sub-section 6.3 discusses other options, namely compulsory insurance and compensation funds while sub-section 6.4 reviews a number of collective compensation arrangements.

6.1 CONCEPTS RELEVANT TO THE INSURANCE INDUSTRY

(a) Concepts pertaining to requirements for a risk to be insurable

In order for a risk of liability to be insurable, it must be possible to clearly calculate the risk for which the insurance is sought. The criteria on which the risk is evaluated are: the assessability of the risk, the randomness of the risk, the mutuality of the risk, and the economic efficiency of the risk.

For a risk of liability to be assessable, it must be possible to quantify both the probability that liability

77 *Supra* note 18 at para. 54.

78 *Ibid*. Sands observes that this was "not a precautionary language premised as it is on the need to establish the certainty and inevitability of serious harm. … It may be that the ICJ also had this in mind when it indicated later in the judgment that '[w]hat might have been correct application of the law in 1989 or 1992, if the case had been before the Court then, could be a miscarriage of justice if prescribed in 1997'", Philippe Sands, *Principles of International Law*, 2d ed. (Cambridge: Cambridge University Press, 2003) at p. 275.

79 *Ibid.* at p. 278.

for the damage will occur as well as the extent of the liability. Multiplying the probability by the extent gives the 'expected liability'. These calculations are necessary to determine the potential exposure of the insurer and the premium necessary to cover this exposure. It must also be possible to allocate damage to a particular insurance period.[80] The assessment of any particular type of risk for liability is based on actuarial statistics and information about legal requirements as well as the nature of the risk involved (e.g. for risk of liability for environmental damage, the nature of the risk would include the physical, chemical and/or biological characteristics of the substance that could cause the damage leading to liability).

The defining elements of liability thus influence the availability of insurance to cover the risk of the liability. These elements include the definitions of:

(i) Damage and/or loss;
(ii) The heads of damage (injury to persons or property, environmental damage, economic loss);
(iii) Acceptable impact (including thresholds);
(iv) Exemption from liability;
(v) Limitation periods;
(vi) Burden of proof;
(vii) Beneficiary;
(viii) Claimant.[81]

The standard of liability – either strict or fault-based – also plays an important role in the assessment of risk and thus the availability of insurance: "Fault-based liability solutions promote insurability. If strict liability is put in force, insurability requires at least: a) that the claimant bears the burden of proof of causality (no reversal); b) that the insured is allowed specific defences beyond Act of God ("force majeure"), in particular the state-of-the-art defence and the compliance-with-permit defence; c) that the limitation period is reasonably limited."[82]

Financial caps can also promote insurability as they help to quantify the risk to be insured. A number of international liability conventions place caps on the maximum amount any one injurer may be held liable – see, for example, the 1960 *Paris Convention on Third Party Liability in the Field of Nuclear Energy* (Paris Convention, as amended, Article 7), the CRTD (Article 9), the 1992 Civil Liability Convention (Article V), and the 2003 *Kiev Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters* (Kiev Protocol, Article 9 and annex II). The extent to which caps on liability encourage insurability may be limited, however, as insurance companies can also impose financial limits as part of the insurance policy. Caps may also lead to under-compensation of the victim and violate the polluter pays principle.

Ongoing changes in knowledge, however, introduce uncertainty into the assessment process: "Normally, such uncertainties are accounted for by adding a surcharge ("loading") to the premium; yet if a factor is new or unfamiliar – or when it represents a new category, such as ecological impairment – calculating its probability is more difficult, even if it is the result of a sudden or accidental event. In the past, such damage has just not been insured. Insurers have little or no experience – i.e. statistics – for this kind of loss and it is presently almost impossible to calculate an "adequate" premium".[83] These changes in knowledge can cause uncertainty in relation to both the probability of liability as well as the extent of liability.

Quantifying the scope of damage also requires an understanding of what the damage is or may be. For ecological damage, this could include tangible and/or intangible components. Swiss Re describes damage to biodiversity as "basically intangible, although the actual, underlying damage to flora and fauna are tangible."[84] The tangible component

80 Swiss Reinsurance Company, *The Insurability of Ecological Damage* (Zurich: Swiss Reinsurance Company, 2003) in "Financial Security to Cover Liability Resulting from Transboundary Movements of Living Modified Organisms", doc. UNEP/CBD/BS/WG-L&R/2/INF/7 (13 February 2006), online: http://www.cbd.int/doc/meetings/bs/bswglr-02/information/bswglr-02-inf-07-en.pdf at p. 66.

81 Letter from Swiss Reinsurance Company, "Availability of financial security to cover liability resulting from the transboundary movement of living modified organisms (LMOs) and the prices at which such financial security is available" in doc. UNEP/CBD/BS/WG-L&R/2/INF/7, *ibid*. at p. 116.

82 Thomas K. Epprecht, Swiss Reinsurance Company, "Cartagena Protocol on Biosafety: Insurance Industry and Art 27 (Liability and Redress) of the Cartagena Protocol" in doc. UNEP/CBD/BS/WG-L&R/2/INF/7, *ibid*. at p. 99.

83 *Insurability of Ecological Damage, supra* note 80 at p. 66.

84 *Ibid*. at p. 72.

of ecological damage includes defined, quantifiable damage to public goods such as water, soil, air, and fauna and flora. The intangible component includes damage to intrinsic values such as a particular view, an area rich in biological diversity, or quality of life – damage that is much more difficult to quantify. There are a number of different methods for quantifying damage including contingent valuation (which was used to assess intangible damage in the *Exxon Valdez* case), the travel cost method, hedonic pricing, and restoration or replacement cost. Insurance for liability for damage to tangible components is available through insurance for the traditional heads of damage (damage to persons, property, or economic losses) or environmental damage; insurance for liability for the intangible component is much more difficult.

For a risk to be random, the time at which an insured event occurs (i.e. an event creating liability for damage) must not be predictable and its occurrence must be independent of the will of the insured. Many insurers still require a polluting event to be sudden and so will not insure against liability for damage from gradual pollution. Insuring against liability for damage from gradual pollution exposes the insurer to a "potentially powerful loss generator."[85] The liability could include both historical activities that prove to cause damage and current and future activities that lead to damage (or the recognition of damage) well into the future. Furthermore, insurance is not available for systemic risks, such as a stock market meltdown, that affect everyone at the same time. Risks must be stochastically independent to exclude systemic risks and be eligible for insurability.

For a risk to be mutual, "[a] large number of endangered parties must join together to carry the hazard jointly."[86] The relative success of the international agreements pertaining to liability for damage relating to oil pollution is due at least in part to the 'mutuality' or homogeneity of the interests of the oil industry. Creating international liability regimes for damage caused by substances other than oil or nuclear energy can be difficult because of the diversity of interests.

Finally for a risk to be economically efficient, it must be possible for the insurer to charge a premium that covers the risk (as required by law) and for the insurer to earn a profit through the conduct of its business. Without these conditions, an insurance company could incur claims beyond what it is able to cover and risk bankruptcy, potentially leaving many victims uncompensated for the damage they have suffered.

(b) Concepts pertaining to problems associated with insuring risks

There are two standard problems associated with insuring risks: moral hazard and adverse selection. With moral hazard, the incentive for the potential injurer to take care is removed at the same time as the same potential injurer's exposure to risk is removed by an insurance policy. For example, automobile insurance reduces the costs to insured people who have accidents, making people less cautious when they drive compared to how they would drive if they paid 100 percent of the damages they caused in an accident.

Insurance policies can be designed to minimize moral hazard by monitoring the insured through control of the insured and adaptation of the premium, and by partially exposing the insured to risk. Control of the insured and adaptation of the premium can be done either *ex ante* by charging a higher premium for certain high risk groups, or *ex post* by increasing the premium and changing the conditions of the policy based on past behaviour.[87] Exposing the insured to risk can be done by charging a deductible whereby the initial costs of damage are paid by the injurer rather than being covered by the insurance policy, or by capping the insurance policy at a certain level so that any costs beyond this level are again paid by the injurer rather than the insurer. Usually, control of the insured and adaptation of the premium are used in combination with exposing the insured to risk in order to control moral hazard.

85 *Ibid*. at p. 78.
86 *Ibid*. at p. 66.

87 Michael G. Faure & David Grimeaud, *Financial Assurance Issues of Environmental Liability* (Maastricht University, METRO & European Centre for Tort and Insurance Law, 2000) at p. 121.

Insurance is most appealing to those who are most likely to need it – the so-called 'bad risks' – creating the problem of adverse selection. Insuring bad risks raises premiums leading to a situation where good risks will often prefer to go uninsured. If adverse selection becomes a serious problem, insurance companies may be reluctant to offer insurance for the risk in the first place, either leaving everyone uninsured or leading to such high premiums that only the wealthiest can afford them. One remedy for adverse selection is risk differentiation. Risk differentiation is related to control of the insured and adaptation of the premium in that it requires differentiation among risks in order to define a risk pool as narrowly as possible so that the premium can be set at a level that reflects the risk of the average member of that pool.[88] If risks are well-differentiated, premiums should not be so high as to encourage good risks to leave the pool. Adverse selection can also be countered by including deductibles in an insurance policy or by making insurance compulsory. There is further discussion on compulsory insurance in sub-section 6.3 (a) below.

6.2 INSURANCE FOR DIFFERENT HEADS OF LOSSES

(a) Heads of Losses

To a certain extent, the availability of financial security to cover liability resulting from transboundary movements of living modified organisms depends on the type of liability in question. Insurance for liability from the traditional heads of damage – damage to persons or property and economic loss – is generally available, although sometimes claims for damage to persons or property or economic losses that arise from substances released into the environment are excluded from insurance policies. Insurance for liability for environmental damage or ecological damage may be more limited.

It should also be noted, however, that civil law and common law systems differ in their treatment of economic losses. In civil law, economic loss includes losses resulting from both physical damage to property and where there is no physical damage. In common law, there is a distinction "between economic loss which is a consequence of physical loss or damage to property ("consequential damage") and loss of profit or earning sustained otherwise than as a result of physical loss or damage to property ("pure economic loss")."[89] Insurance for pure economic loss is not as widely available although it is covered in some new environmental policies, "usually containing various requirements as to the professional activity of the injured persons."[90] Furthermore, liability for pure economic loss in common law is rare.

Insurance for liability for environmental damage depends, furthermore, on the definition of environmental damage. Where environmental damage means damage to persons or property or economic damages, liability for this type of damage may be covered by the insurance schemes for traditional heads of damage, as discussed above. Environmental damage, or, perhaps more accurately, environmental liability, can also include the costs of preventative measures or response actions as well as clean-up and restoration costs. Liability for clean-up and restoration costs are insured to the extent that they fall within any of the traditional heads of damage covered by a policy. Preventative measures or response actions can include measures taken after an incident to prevent or minimize further damage as well as measures taken to avert the imminent danger of damage.[91] The costs of preventative measures or response actions are covered by insurance policies available in some countries.

According to Swiss Re, "[e]cological damage is *primary* environmental damage done directly to the water, air, soil, flora or fauna."[92] Ecological damage involves damage to ecological goods, which are public goods belonging to no one, or damage to the environment *per se*. As such, civil liability often does not apply although some States and international agreements give public authorities and/or public interest groups standing to sue to protect public ecological goods. To date, it has been very difficult for insur-

88 *Ibid*. at p. 123.

89 Maja Seršić, "The Impact of Multilateral Insurance and Compensation Funds on Liability for Environmental Harm" in Michael Bothe & Peter H. Sand, eds. *La politique de l'environnement : de la réglementation aux instruments économiques* (The Hague: Martinus Nijhoff, 2003) 583 at p. 587.

90 *Ibid*. at p. 588.

91 John H. Wansink, "Environmental Liability Insurance: Tour d'Horizon in Europe" in Ralph P. Kröner, *Transnational Environmental Liability and Insurance* (London: Graham & Trotman, 1993) 1 at p. 14-15.

92 *Insurability of Ecological Damage, supra* note 80 at p. 44.

ers to calculate either the losses involved in ecological damage or the probability that they will occur so the availability of insurance to cover liability for ecological damage is very limited, if it is available at all. It should also be noted that the definitions of environmental and ecological damage are not necessarily universally accepted and the distinction between the two is not always maintained. Furthermore, neither 'ecological damage' nor 'environmental damage' necessarily encompasses the full scope of 'biodiversity damage' as this is understood in the context of the definition of 'biological diversity' in Article 2 of the Convention on Biological Diversity.

(b) Availability of Insurance

In France, all liability claims from environmental damage are insured by the French environmental insurance pool "ASSURPOL" as conventional liability in the country usually excludes such claims. The pool covers claims for damage to persons or property and some kinds of economic loss but it does not cover ecological damage.

In the Netherlands, liability policies for businesses exclude all claims arising from environmental damage except for bodily injury. Companies can purchase a separate environmental damage policy which covers clean-up costs for soil on contaminated sites or bodies of water. Ecological damage is explicitly excluded from the policy.

In the U.S., commercial general liability insurance policies absolutely exclude environmental damage. Complementary coverage is available but is limited to claims following a sudden, accidental event. Special coverage for liability exposure under the 1980 *Comprehensive Environmental Response, Compensation and Liability Act* is difficult to obtain as it sets strict insurability requirements, exclusions from coverage and high premiums. These special policies focus on bodily injury, damage to property and site cleanup.

6.3 OTHER OPTIONS

(a) Compulsory Insurance

Some international liability regimes – such as Article 8 of the 1977 *Convention on Civil Liability for Oil Pollution Damage resulting from the Exploration for and Exploitation of Seabed Mineral Resources*, Article 11 of the Kiev Protocol, and Article VII of the 1963 *Vienna Convention on Civil Liability for Nuclear Damage* (Vienna Convention) – require the industry or activity being regulated to carry insurance or some other form of financial security. Indeed, the provisions on the minimum amount of financial securities in the Kiev Protocol were agreed to by the insurance sector making them "realistic and appropriate."[93] There are two common rationales behind compulsory insurance. The first is an economic argument that compulsory insurance will remove the risk from risk-averse persons and increase their utility as investors.[94] The second is a legal argument that compulsory insurance will increase the likelihood of compensation in case damage occurs, particularly in cases where the author of the damage is insolvent or becomes insolvent by virtue of a large award for damages.

There are also two common arguments against compulsory insurance. The first is that the provision of insurance by insurance companies is or should be based on the "willingness to insure" of the financial and insurance markets. Simply mandating that an industry carry insurance will not automatically lead to the provision of such insurance by insurance companies. There are always gaps between risks and possible legal liability on the one hand, and the insurance available to cover these on the other. A second argument against compulsory insurance is that it may put the insurance companies in the position of enforcer, which is not their role: "the exercise of a particular activity should not depend solely – or even mainly – on having insurance cover … Hazardous activities should not be approved only because the activity is insured."[95] At the same time, compulsory insurance may exacerbate the moral hazard problem if the compulsory insurance provisions do not allow exposing the insured to any degree of risk.[96] On the other hand, insurers acting to control moral hazard can also be understood as a form of enforcement. If an insurer requires the insured to meet a standard that rules out negligence in order to be covered by an

93 "Civil Liability", online: http://www.unece.org/env/civil-liability/welcome.html.
94 Faure & Grimeaud, *supra* note 87 at p. 147.
95 *Insurability of Ecological Damage, supra* note 80 at p. 70.
96 Faure & Grimeaud, *supra* note 87 at p. 150-151.

insurance policy, the insurer is enforcing a standard. Furthermore, compulsory insurance may be effective to prevent adverse selection.

Germany has enacted compulsory insurance requirements for environmental damage. Under §19 of the German *Environmental Liability Act* of 1990, the operators of facilities listed in an appendix must ensure that they are able to provide compensation for damage to persons or property that arise from an environmental impact of the facility. The coverage to be provided may be in the form of liability insurance, or an indemnity agreement or guarantee made by the federal government or a credit institution. It was suggested that there were difficulties in implementing this provision, which have prevented the necessary implementing decree from being established.[97]

Sweden has also enacted a form of compulsory insurance system. In 1989, a new insurance scheme came into force that requires companies conducting environmentally hazardous activities to contribute to the scheme. The fund then provides direct coverage to natural persons who suffer pollution damage but only where the actual polluter is insolvent or cannot be identified or the right to indemnity under the *Environmental Damage Act* is statute-barred. According to Wansink, the impact of the scheme has been disappointing due at least in part to its very restrictive coverage.[98]

Amendments to the *Austrian Law on Genetic Engineering* have introduced provisions on liability including requirements for financial security. The notifier of a contained use or deliberate release of a living modified organism must take adequate measures, such as the purchase of insurance, to settle claims for damages from the living modified organism. The Act sets minimum amounts of liability insurance for contained use in biosafety level 3 (large scale), and biosafety level 4 and deliberate release (large scale).[99]

97 European Commission, *White Paper on Environmental Liability*, COM(2000) 66 final, 9 February 2000 at p. 24.

98 Wansink, *supra* note 91 at p. 20.

99 "Liability and Redress (Article 27) Compilation of Information on National, Regional and International Measures and Agreements in the Field of Liability and Redress for Damage Resulting from the Transboundary Movements of Living Modified Organism", doc. UNEP/CBD/ICCP/3/INF/1 (2 April 2002), online: http://www.cbd.int/doc/meetings/bs/iccp-03/information/iccp-03-inf-01-en.pdf at p. 4.

(b) Compensation Funds

Another form of financial security against legal liability is the creation of compensation funds. These can either supplement or act instead of awards for damages. Compensation funds function by bringing together a group of potential polluters (or, more broadly, potential authors of damage) who pay into the fund based on the risk they create. When damage occurs, compensation is paid by the compensation fund thus spreading the individual risk and liability of any one potential author of damage over the larger group. The main objective of compensation funds, therefore, is to improve the position of the injured parties. As with insurance, compensation funds work best if a relatively homogenous group of interests can be brought together to share the risk.

The following section reviews the objective and establishment, scope of damage covered, modes of contributions, and strengths and weaknesses, of collective compensation arrangements in international environment-related liability instruments. Many of the international instruments introduced below are discussed in more detail in Section II.

6.4 COLLECTIVE COMPENSATION ARRANGEMENTS IN INTERNATIONAL ENVIRONMENT-RELATED LIABILITY INSTRUMENTS

(a) Establishment and objective

Under some international environmental liability regimes, there is a practice of creating collective compensation arrangements in order to provide alternative or supplementary compensation for victims. Collective compensation arrangements are, to a large extent, the result of efforts that have been made over time to overcome the limitations of insurance as a means of compensation payment guarantee.

Collective compensation arrangements are established and operated in conjunction with a strict civil liability regime that channels liability to a specific person or persons and puts limits on the extent of the liability. These arrangements can have their basis in a treaty, a voluntary contract, or in a decision of parties to a relevant treaty. The arrangements could be governed by the same liability regime that

necessitated the creation of such arrangements or by a separate international legal instrument.

(i) Collective compensation arrangements for nuclear damage

A number of treaties in the field of nuclear energy create mechanisms to compensate for nuclear damage. The Paris Convention and its 1963 *Supplementary Convention on Third Party Liability in the Field of Nuclear Energy* (Brussels Supplementary Convention) were amended in 2004.[100] The most important feature of the revised Brussels Supplementary Convention is a substantial increase in the three tiers (see figure 1) of compensation under the Convention. The first tier, corresponding to the minimum liability requirement under the Paris Convention, rose from 5 million Special Drawing Rights (SDRs) to a minimum of €700 million[101] and continues to be provided by the operator's financial security, failing which it must be provided by the Installation State from public funds.

The second tier rose from a maximum of 175 million SDRs to a new high of €500 million and continues to be provided from public funds made available by the Installation State which may either require the operator to establish financial security for an amount up to €1.2 billion and/or by some other means. The third tier rises from a maximum of 125 million SDRs to €300 million and continues to come from public funds provided by all Contracting Parties after a nuclear incident. Total compensation available under the revised Paris-Brussels regime is now €1.5 billion, compared to the previous amount of 300 million SDRs (approximately €350 million).

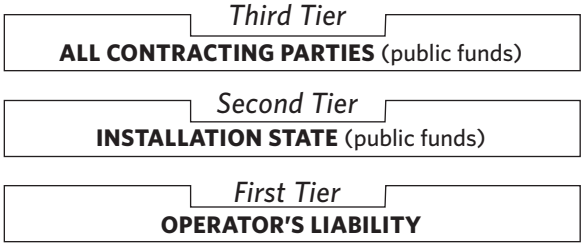

FIGURE 1: Tiered compensation arrangements for nuclear damage under the revised Brussels Supplementary Convention

In 1997, the member States of the International Atomic Energy Agency (IAEA) adopted the Convention on Supplementary Compensation for Nuclear Damage (CSC). According to its Article II, the purpose of the CSC is to supplement the system of compensation provided pursuant to national law. The Convention establishes a regime to supplement and enhance measures in the Vienna and Paris Conventions, with a view to increasing the amount of compensation available for transboundary nuclear damage.

The CSC establishes a tiered structure of funding for compensation (see figure 2).[102] The first tier is provided by the Installation State through national legislation whereas the second tier comprises the "supplementary fund" and is provided by collective contributions of Contracting Parties. Each Installation State is required to ensure the availability of 300 million SDRs, or a greater amount that it may have specified to the Depositary at any time prior to the nuclear incident or a transitional amount for a maximum of 10 years from the date of the opening for signature of the Convention of at least 150 million SDRs.[103] The funds made available under this provision constitute the "minimum national compensation amount" that makes up the first tier of compensation available in the event of a nuclear incident in a State Party to the CSC.

The first tier of compensation may further be broken into two layers if the Installation State decides to limit the liability of the operator.[104] The Installation State is allowed to limit the liability of its operators

100 Unless otherwise indicated, descriptions of the Paris Convention and the Brussels Supplementary Convention in this publication refer to the versions of these treaties as amended in 2004.

101 "The unit of account changed to the Euro to avoid fluctuations in the value of the SDR which could seriously affect the level of corresponding national currencies for most Contracting Parties." Nuclear Energy Agency, Background information note for the press communiqué on the revision of the Paris Convention on Nuclear Third Party Liability and of the Brussels Supplementary Convention, 10 February 2004, online: http://www.nea.fr/html/general/press/2004/2004-01-note.html.

102 Chapter II.

103 Paragraph 1(a), Article III.

104 Article 4, Annex.

to an amount not less than 150 million SDRs per incident if public funds are available to make up the difference between that amount and 300 million SDRs.

When the compensation exceeds the amount provided by the Installation State (the first tier), then the Supplementary Fund (the second tier) comes in. Paragraph l (b) of Article III of the CSC establishes the obligation on all Contracting Parties to the Convention to make available public funds in cases after a nuclear accident. These contributions make up the international supplementary fund that constitutes the second tier of compensation.

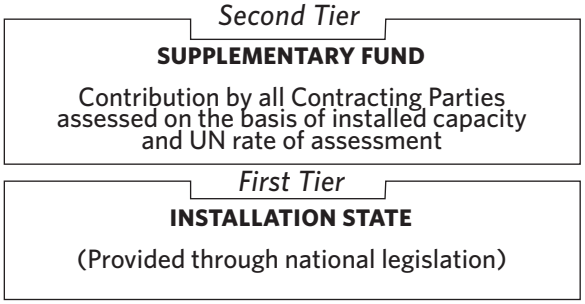

FIGURE 2: Tiered compensation arrangements for nuclear damage under the Convention on Supplementary Compensation

(ii) Collective compensation arrangements for oil pollution damage

The 1992 Civil Liability Convention provides for the perimeters of a civil liability regime, while the 1992 *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage* (1992 Fund Convention) actually specifies the terms of the collective compensation arrangement (the 1992 Fund) created to supplement the civil liability regime. The 1992 Fund Convention establishes a system for compensating victims when the compensation available under the 1992 Civil Liability Convention is insufficient. The 1992 Fund pays compensation to any person suffering pollution damage if such person has been unable to obtain full and adequate compensation for the damage under the terms of the 1992 Civil Liability Convention because: (i) no liability for damage arises under the 1992 Civil Liability Convention; (ii) the owner liable for the damage under the 1992 Civil Liability Convention is financially incapable of meeting his obligations in full and any financial security that may have been provided does not cover or is insufficient to satisfy the claims of compensation; or (iii) the damage exceeds the owner's liability under the 1992 Civil Liability Convention. These two conventions replaced two earlier conventions, the 1969 *International Convention on Civil Liability for Oil Pollution Damage* (Oil Pollution Convention) and the 1971 *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution* (Oil Fund Convention).

The 1992 Civil Liability Convention provides for a limited liability of ship owners linked to the tonnage of their ships. The compensation payable by the 1992 Fund in respect of an incident is limited to an aggregate amount of 203 million SDRs, including the sum amount of compensation paid under the 1992 Civil Liability Convention.[105]

In 2003, a protocol[106] establishing an International Oil Pollution Compensation Supplementary Fund was adopted (Supplementary Fund Protocol). The objective of establishing the Fund is to supplement the compensation available under the 1992 Civil Liability and Fund Conventions with an additional, third tier of compensation (see figure 3 below).

Under the Supplementary Fund Protocol, the total amount of compensation payable for any one incident will be limited to a combined total of 750 million SDRs, including the amount of compensation paid under the 1992 Civil Liability Convention and the 1992 Fund Convention.[107] The Supplementary Fund regime will only be invoked if the 1992 Fund Assembly has considered that the total amount of the established claims exceeds, or is likely to exceed, the aggregate amount of compensation available under the 1992 Fund Convention in respect of any one incident.[108]

105 Article 4, 1992 Fund Convention.

106 *Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992* (Supplementary Fund Protocol).

107 Article 4.

108 Gwendoline Gonsaeles, "The impact of EC decision-making on the international regime for oil pollution damage: The Supplementary Fund example" in Frank Maes, ed. *Marine Resource Damage Assessment* (Dordrecht: Springer, 2005) at p. 120.

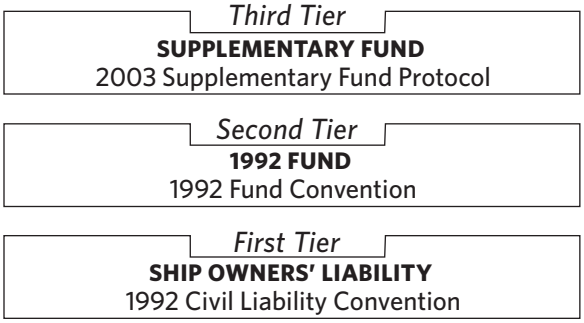

FIGURE 3: Tiered compensation arrangements for oil pollution damage[109]

Collective compensation arrangements can also be created as a result of voluntary schemes agreed upon by and among operators or participants in the relevant industry. They are established, for example, in the oil sector, by oil companies on the one hand, and tanker owners on the other. The International Group of P&I (Protection and Indemnity) Clubs agreed to indemnify: (a) the 1992 Fund, established by the 1992 Fund Convention, for damage caused by small tankers to the effect that the maximum amount of compensation payable by the owners of such ships would be 20 million SDRs; and (b) the 2003 Supplementary Fund, established by the 2003 Supplementary Fund Protocol to the 1992 Fund Convention, in respect of 50% of the amounts paid in compensation by that Fund. This offer was to be implemented by the conclusion of legally binding agreements. These agreements, i.e. the *Small Tanker Oil Pollution Indemnification Agreement* (STOPIA 2006) and the *Tanker Oil Pollution Indemnification Agreement* (TOPIA 2006), became operational on 20 February 2006.[110] STOPIA 2006 and TOPIA 2006 are not contracts between the Funds and the ship owners, but unilateral offers by ship owners which confer enforceable rights on the Funds.

STOPIA 2006 and TOPIA 2006 were preceded by other private industry schemes that remained in place as interim arrangements to ensure the availability of adequate compensation for damage caused by oil pollution until the international oil pollution conventions had worldwide application. These arrangements were known as the *Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution* (TOVALOP) and the *Contract Regarding an Interim Supplement of Tanker Liability for Oil Pollution* (CRISTAL).[111]

A private scheme – known as the *Offshore Pollution Liability Agreement* and similar to the ones in the field of oil pollution from ships – has also been established by the oil companies with regard to oil pollution damage caused by offshore oil exploration and exploitation.

(iii) Collective compensation arrangements for damage caused during the transport of dangerous goods and substances

The HNS Convention establishes a two tier scheme (see figure 4) for determining liability to pay compensation in the event of a marine incident involving hazardous and noxious substances (HNS), and ensures that a high level of compensation can be made available to the victims of an incident. The definition of "hazardous and noxious substances" in the Convention covers about 6,500 substances. These include chemicals, non-persistent petroleum products (such as petrol, diesel and aviation fuel), liquid natural gas and liquid petroleum gas.[112] The regime established by the HNS Convention is largely modelled on the existing regime for oil pollution damage. The HNS Convention provides for the establishment of an International Hazardous and Noxious Substances Fund (the HNS Fund), as a second tier for compensation (see figure 4).[113]

As with the 1992 Civil Liability and Fund Conventions, when an incident occurs where compensation is payable under the HNS Convention, compensation would first be sought from the ship owner, up to the maximum limit of 100 million SDRs.[114] In cases where (i) no liability for the damage arises for the ship owner;[115] (ii) the owner is finan-

109 *Ibid*., p. 118.

110 International Oil Pollution Compensation Funds, "STOPIA and TOPIA: Note by the Director", submitted to the 10th Extraordinary Session of the Assembly of the 1992 IOPC (doc. 92FUND/A.ES.10/13) and 2nd Extraordinary Session of the Assembly of the Supplementary Compensation Fund (doc. SUPPFUND/A/ES.2/7), 1 February 2006, online: http://documentservices.iopcfund.org/meeting-documents/download?docs[]=2745&lang=en.

111 Both TOVALOP and CRISTAL ended on 20 February 1997.

112 Paragraph 5, Article 1.

113 Paragraph 1(a), Article 13, Chapter III.

114 Paragraph 1, Article 9 Chapter II.

115 This could occur, for example, if the ship owner was not informed that a shipment contained HNS or if the accident resulted from an act of war.

cially incapable of meeting the obligations under the Convention in full and any financial security that may be provided does not cover or is insufficient to satisfy the claims for compensation for damage; or (iii) the damage exceeds the ship owner's liability limit of 100 million SDRs, compensation would be paid from the second tier, the HNS Fund, up to a maximum of 250 million SDRs (including compensation paid under the first tier).[116]

The HNS Fund will be established once the HNS Convention enters into force. States which ratify the 2010 HNS Protocol[117] will become Members of the HNS Fund.

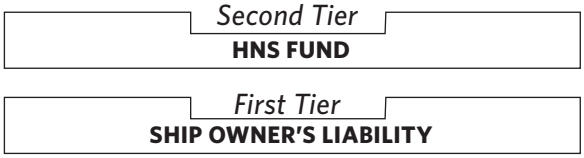

FIGURE 4: Tiered compensation arrangements under the 1996 HNS Convention

The 1989 *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* (Basel Convention) provides the basis for the establishment of a revolving fund for emergency response in the event of accidents involving hazardous wastes.[118] During the negotiations of the Basel Protocol, the idea of establishing a hazardous waste compensation fund was considered but not adopted. Parties to the Basel Protocol undertake to keep under review the need for and possibility of improving existing mechanisms or establishing a new mechanism to use as an additional or supplementary compensation arrangement.[119]

The Conference of the Parties to the Basel Convention decided, at its first meeting, to establish the Technical Cooperation Fund and, at its fifth meeting following the adoption of the Basel Protocol, to enlarge it, in order to make available funds for use by developing country parties and countries with economies in transition in case of an incident occurring during a transboundary movement of hazardous wastes and other wastes covered by the Basel Convention (discussed in more detail in sub-section (b)(iii) below).[120]

(iv) Arrangements under the Antarctic Treaty System

The Consultative Parties to the Antarctic Treaty adopted, in 1991, the *Protocol on Environmental Protection to the Antarctic Treaty*. Subsequently, in 2005, the Parties adopted an annex VI to the Protocol addressing Liability Arising from Environmental Emergencies. Under article 12 of annex VI, the Secretariat of the Antarctic Treaty is required to maintain and administer a fund.

Unlike the other collective compensation arrangements reviewed in the foregoing sections, the aim of the fund under the Antarctic Treaty is not to compensate victims. It rather provides incentives to a Party to take timely response measures in case of environmental emergencies in the Antarctic Treaty area.

(b) Types of damage covered

Collective compensation arrangements cover the same types of damage as envisaged by the corresponding civil liability regime.

(i) Nuclear damage

The 2004 amendments to the Paris Convention broadened the definition of "nuclear damage" to include environmental damage and economic costs.[121]

The 1997 CSC applies to nuclear damage for which an operator of a nuclear installation used for peaceful purposes in the territory of a Contracting Party is liable under either the 1960 Paris Convention or the 1963 Vienna Convention, or a national law. The Contracting Party whose courts have jurisdiction over a nuclear incident is required to inform other

116 Paragraph 5(a), Article 14, Chapter III.

117 *Protocol of 2010 to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996* (HNS Protocol).

118 Paragraph 2, Article 14, Basel Convention.

119 Paragraph 2, Article 15.

120 "Institutional and Financial Arrangements", decision I/7 (4 December 1992) and "Enlargement of the scope of the Technical Coo peration Trust Fund", decision V/32 (10 December 1999), Conference of the Parties to the Basel Convention.

121 Paragraph (a)(vii), Article 1, Paris Convention as amended.

Contracting Parties of such an incident as soon as it appears that the damage caused exceeds, or is likely to exceed, the amount of compensation that is supposed to be made available by the Installation State under the first tier of compensation.[122] Nuclear damage, for the purpose of the CSC, is: (i) loss of life or personal injury; (ii) loss of or damage to property; (iii) economic loss arising from loss or damage referred to in sub-paragraphs (i) and (ii); (iv) the costs of reinstatement of impaired environment, unless such impairment is insignificant; (v) loss of income deriving from an economic interest in any use or enjoyment of the environment; (vi) the costs of preventive measures, and further loss or damage caused by such measures; and (vii) any other economic loss, other than any caused by the impairment of the environment, if permitted by the general law of civil liability of the competent court.[123]

(ii) Oil pollution damage

Pollution damage as defined by the 1992 Civil Liability Convention is loss or damage caused outside the ship by contamination resulting from the escape or discharge of oil from the ship, and the costs of preventive measures and further loss or damage caused by preventive measures. Compensation for impairment of the environment other than loss of profit from such impairment is limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken.

(iii) Damage from the transport of dangerous goods and substances

For the purpose of the HNS Convention, damage means (i) loss of life or personal injury; (ii) loss of or damage to property outside the ship carrying the HNS; (iii) loss or damage by contamination of the environment caused by the HNS, provided that compensation for impairment is limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken; and (iv) the costs of preventive measures and further loss or damage caused by preventive measures.[124]

Under the Basel Convention, the Conference of the Parties decided, at its fifth meeting, that the Secretariat of the Convention could use the funds available in the enlarged Technical Cooperation Trust Fund, to assist a Party to the Convention which is a developing country or a country with economy in transition in case of an incident occurring during a transboundary movement of hazardous wastes and other wastes covered by the Basel Convention. The funds may be used for the purpose of: (i) estimating the magnitude of damage occurred or damage that may occur and the measures needed to prevent damage; (ii) taking appropriate emergency measures to prevent or mitigate the damage; and (iii) helping find those Parties and other entities in a position to give the assistance needed.[125] It was also decided that the funds could be used to provide compensation for damage covered by the Basel Protocol.[126] Damage is defined under the Basel Protocol as loss of life or personal injury, loss of or damage to property, loss of income directly deriving from an economic interest in any use of the environment, the costs of measures of reinstatement of the impaired environment, and costs of preventive measures.[127]

(iv) The Antarctic Treaty System

The fund maintained under the Antarctic Treaty System is intended to provide, *inter alia*, for reimbursement of reasonable and justified costs of response action when an operator has failed to take such measures.[128] "Response action" includes reasonable measures taken after an environmental emergency has occurred to avoid, minimise or contain the impact of that environmental emergency, including clean-up and determining the extent of that emergency and its impact.[129] In approving reimbursement claims, the Antarctic Treaty Consultative Meeting may seek advice from the Committee of Environmental Protection and is required to take into account special circumstances and criteria such as: (i) whether the responsible operator was an operator of the Party seeking reimbursement; (ii)

122 Article VI, CSC.
123 Paragraph (f), Article I, CSC.
124 Paragraph 6, Article 1.
125 Decision V/32, *supra* note 120 at para. 2. The fifth meeting also adopted the Basel Protocol.
126 *Ibid*. at paragraph 3.
127 Paragraph 2(c), Article 2.
128 Paragraph 1, Article 12, Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies.
129 *Ibid*. at paragraph (f), Article 2.

whether the responsible operator remains unknown or is not subject to the provisions of the annex; and (iii) unforeseen failure of the insurance company or financial institution.[130] In this regard, the fund is a substitute for the responsible operator who failed to take the appropriate response action rather than a supplementary arrangement.

(c) Contributions

Collective compensation arrangements function by bringing together a group of potential polluters (or, more broadly, potential authors of damage) who pay a contribution based on the risk they create. The payment of contributions may be compulsory or voluntary. Contributions may be collected on a regular basis irrespective of the occurrence of an accident causing damage or on an ad hoc basis following the occurrence of such an accident.

States may also be required or invited under such arrangements to pay contributions. Their contribution may be financed through fees charged under national licensing systems. The role of States may also be limited to the collection of contributions from the operators concerned and forwarding such contributions to a collective compensation arrangement.

(i) Contributions to collective compensation arrangements for nuclear damage

Contributions under the Brussels Supplementary Convention which form the public funds (third tier) that the Contracting Parties are to make available are determined with 35 per cent based on a ratio between gross domestic product (GDP) of each Contracting Party and the total GDPs of all Contracting Parties, and 65 per cent based on the ratio between the thermal power of the reactors situated in the territory of each Contracting Party and the total thermal power of reactors situated in the territories of all contracting Parties.[131] Previously, contributions were determined with 50 percent based on gross national product and 50 percent based on the level of thermal power. Furthermore, the revised Brussels Supplementary Convention allows the third tier of compensation to be increased pro rata according to the GDP and the nuclear installations brought into the existing amounts by a new Party.[132]

Under the CSC, it is the obligation of the Installation State to ensure compensation in respect of nuclear damage per nuclear incident as specified under the Convention (first tier of compensation).[133] Additional amounts of compensation need to be made available after a nuclear accident through contributions by the Contracting Parties collectively to the Supplementary Fund (second tier) to cover compensation beyond the amount made available by the Installation State (see figure 2 above).[134] Accordingly, contributions to this second tier collective compensation arrangement are determined on the basis of each Contracting Party's installed nuclear capacity multiplied by 300 SDRs per "unit of installed capacity", which is defined as one megawatt of thermal power, and an additional amount equal to 10 per cent of the amount assessed on the basis of the United Nations rate of assessment (UNRA) for that State for the year preceding the one in which the nuclear incident occurs.[135] The maximum contribution which may be charged per nuclear incident to any Contracting Party, other than the Installation State is, however, its UNRA expressed as a percentage plus 8 per cent. No Contracting Party is required to make available the public funds under the second tier if claims for compensation can be satisfied out of the first tier funds that need to be made available by the Installation State.

(ii) Contributions to collective compensation arrangements for oil pollution damage

Payments into the 1992 International Oil Pollution Compensation Fund are made by oil importers in the contracting states on the basis of the annual number of tons of oil received by sea. The 1992 Fund is financed by contributions levied by State Parties on any person who has received in one calendar year more than 150,000 tonnes of crude oil and heavy fuel oil (contributing oil) in a State Party to the 1992 Fund Convention after sea

130 *Ibid*. at paragraph 3, Article 12.
131 Article 12, Brussels Supplementary Convention.
132 *Ibid*. at Article 12bis.
133 Paragraph 1(a), Article III.
134 Paragraph 1(b), Article III.
135 Paragraph 1, Article IV.

transport. However, for the purposes of the 2003 Supplementary Compensation Protocol, there is a minimum aggregate receipt of 1,000,000 tons of contributing oil in each Contracting State. Annual contributions are levied to meet the anticipated payments of compensation and administrative expenses during the coming year. Each contributor pays a specified amount per tonne of contributing oil received. Contracting States are required to communicate every year to the 1992 Fund the name and address of any person in that State who is liable to contribute, as well as the quantity of contributing oil received by any such person.[136] This applies whether the receiver of oil is a Government authority, a State-owned company or a private company.

(iii) Contributions to collective compensation arrangements for damage caused by HNS

In the case of the HNS Fund, contributions to the second tier (i.e. the HNS Fund) will be collected by Contracting Parties from persons who receive a certain minimum quantity of HNS cargo during a calendar year in a Contracting Party. The tier will consist of one general account and three separate accounts for oil, liquefied natural gas and liquefied petroleum gas. The system with separate accounts has been seen as a way to avoid cross-subsidization between different HNS substances.

Whereas the total contributions to the general account will be divided amongst the sectors, according to the level of claims in each sector, the separate accounts will only meet claims resulting from incidents involving the respective cargoes, i.e. there will be no cross-subsidisation. As part of the changes agreed to in the HNS Protocol, packaged goods will no longer be considered as contributing cargo to the HNS Fund. However, compensation for incidents involving packaged HNS will continue to be covered under the general account.

The Technical Cooperation Trust Fund under the Basel Convention is part of the budget of the Convention. Parties to the Convention have been urged to make contributions to this Fund to support the activities in connection with damage resulting from incidents arising from transboundary movements of hazardous wastes and other wastes and their disposal. Contributions are thus made on a voluntary basis.

(iv) Contributions to the collective compensation arrangement under the Antarctic Treaty System

Any State or person may make voluntary contributions to the Fund under the Protocol on Environmental Protection to the Antarctic Treaty.[137]

(d) Advantages and drawbacks

The main objective of collective compensation arrangements is to improve the position of the injured parties by providing alternative and supplementary financial resources if liability is channelled and limited by a strict liability regime. Collective compensation arrangements allow injured parties to circumvent the limitations imposed by a financial ceiling or a floor established by civil liability regimes. This includes cases when, for example, the liable person is insolvent or the person causing the damage is exempted from liability, or liability of the operator has been limited in amount or in time. Compensation arrangements could also conveniently come into operation when a claim through a civil liability system is impossible. This includes cases where, for example, the polluter cannot be identified, or cases of ecological damage which is either not recoverable or no person with a clear legal interest exists to bring a claim. Such arrangements ensure that the financial burden of redressing environmental damage is spread among a large number of operators or among society at large in case of arrangements fully financed or supplemented by public funds. In this respect, the system is contributing to forging a balance between the need to continue with socially useful activities and the need to compensate damage resulting from such activities.

Collective compensation arrangements with their institutional structure could, in addition to paying out compensation, be well-suited to provide

136 "The International Oil Pollution Compensation Fund 1992: Explanatory note prepared by the 1992 Fund Secretariat", March 2005.

137 Paragraph 4, Article 12, Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising from Environmental Emergencies.

timely assistance in the case of environmental emergencies.[138]

The main drawbacks of collective compensation arrangements include unwillingness on the part of companies to participate in a scheme where they may be required to pay large sums to cover damages arising from other firms' pollution, particularly where these firms are their competitors. There is also a claim that collective compensation arrangements create an environment conducive for free riding. In this connection, it is argued that illegal operators may escape the purview of collective compensation arrangements as the latter depends on the provision of complete and accurate information from the participating operators that are duly registered and licensed by the competent national authorities. Furthermore, collective compensation arrangements may undermine the implementation of the polluter pays principle – and thus fail to create a disincentive to causing pollution or damage.

There is also lack of political will from public authorities to agree to commitments associated with collective compensation arrangements, and a strong reluctance to accept the establishment of an independent international arrangement and to impose levies on private operators or to contribute to a supplementary compensation arrangement.

As with insurance, collective compensation arrangements work best if a relatively homogenous group of interests can be brought together to share the risk. For example, a lack of homogeneity has been identified as one of the obstacles to participation in the HNS Convention. The substances covered by the HNS Convention are not only numerous but also pose different degrees of risk to the environment, persons and property.[139] As a result, the industries concerned with the carriage of these diverse substances have little in common, making their participation and their contributions to the HNS Fund difficult to arrange.

High administrative and operational costs are also considered to be some of the drawbacks of collective compensation arrangements.

138 Katharina Kummer, *International Management of Hazardous Wastes: The Basel Convention and Related Legal Rules* (Oxford: Clarendon Press, 1995) at p. 257.

139 This was also seen as a heavy burden on States, requiring them to report the vast range of packaged substances received by them. The remedy adopted in the 2010 amendments to the HNS Convention was to differentiate between bulk and packaged HNS goods by excluding packaged goods from the definition of contributing cargo, and exempting receiving States from the obligation to make contributions to the HNS Fund for them. See the overview on the 2010 HNS Convention online: http://www.hnsconvention.org/Documents/HNS%20Overview.pdf.

Section II: Survey of Some International Agreements and Practices in the Field of Liability and Redress

The majority of the existing international agreements that provide for liability and redress rules and procedures are sector- or activity-specific and concentrate on one of a few areas such as: nuclear damage, oil pollution, transport of dangerous goods and substances, and space objects. Only one treaty – the Lugano Convention – endeavours to provide for a civil liability regime that applies to all activities that are considered to be dangerous to the environment.

The central objective of all these treaties is to secure compensation for loss of life or personal injury; loss of or damage to property; and damage to or impairment of the environment. The earlier instruments, such as the oil pollution and nuclear damage treaties, conceived of damage only in terms of injury to persons or property. Liability for transboundary environmental damage is a fairly recent development, being superimposed on these regimes through amendments. Even then, compensation for environmental damage *per se*, that is, besides loss of profits arising from any impairment of the environment, is largely restricted to the costs of measures of reinstatement actually undertaken or to be undertaken. The instruments are largely silent on the issue of compensation in situations where such reinstatement is not feasible.

The majority of the instruments create a civil liability regime; a few, in addition, impose subsidiary State liability; and only one establishes original State liability. States have been reluctant to establish international rules of strict State liability for transboundary damage arising from otherwise lawful activities. Thus, in general, liability is tied to the conduct of a dangerous activity and is generally channelled to the entity that undertakes the activity. Liability is not predicated on the legality of the activity or the fault of the "operator" but on the causal link between the activity and the resultant transboundary damage. A criminal liability regime has been established by the *Convention on the Protection of the Environment through Criminal Law* adopted by the Council of Europe in 1998.

Certain aspects of these international liability and redress instruments have been referred to in the preceding section. This section attempts to present a more comprehensive overview of the terms of these agreements, arrangements or practices.

1. The nuclear-liability treaties

The existing international legal framework relating to civil liability for nuclear damage consists of three inter-related conventions. These are:

- the Paris Convention adopted under the auspices of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development (OECD/NEA);
- the Vienna Convention adopted under the auspices of the IAEA; and
- the 1971 *Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material*

(1971 Brussels Convention) adopted under the auspices of IAEA, OECD and the International Maritime Organization (IMO).

The Paris Convention was supplemented in 1963 by the Brussels Supplementary Convention and amended by additional protocols adopted in 1964, 1982 and 2004.

In 1997, the Vienna Convention was amended by the *Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage* (Vienna Amending Protocol) and supplemented by the CSC.[140]

In 1988, at the initiative of both the IAEA and OECD/NEA, the Paris and Vienna Conventions were linked by the *Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention* (Joint Protocol). Prior to this time, the Paris and Vienna Conventions operated independently of each other and benefited only their respective Parties. No State is a Party to both regimes due to potential conflicts involved in their simultaneous application. The Joint Protocol provides a link between the two instruments and thereby establishes an expanded liability regime. Parties to the Joint Protocol are treated as though they were Parties to both Conventions and a choice of law rule is provided to determine which regime should apply in respect of an incident.

The regimes of the Paris and Vienna Conventions have several common elements: (a) both instruments establish a regime of strict liability for nuclear damage[141] and provide for a limited number of exemptions from liability;[142] (b) the definition of "nuclear damage" has been expanded;[143] (c) liability is channelled exclusively to the operator of the nuclear installation;[144] (d) liability is limited;[145] (e) limitations are imposed on the period within which claims for compensation can be brought;[146] (f) Contracting Parties are required to ensure that operators maintain insurance or other financial security corresponding to their liability under the two instruments; (g) the geographical scope of the application of both instruments is limited;[147] and (h) there is unity of jurisdiction and joint recognition and enforcement of judgments.[148] A final judgment entered by a court of competent jurisdiction is recognizable and enforceable in the territories of all contracting States.

The IAEA has also adopted Explanatory Texts[149] on the Vienna Convention, the Vienna Amending Protocol and the Brussels Supplementary Convention. The Explanatory Texts are believed to assist in the understanding and authoritative interpretation of the nuclear liability regime. The document explains, among other things, the origin of the international civil liability regime for damage caused by nuclear incidents, the purpose of the conventions and the general principles of liability upon which the regime is based, i.e., (a) absolute liability (liability without fault); (b) exclusive liability of the

140 For further information on the provisions of the CSC, see Section I above at sub-section 6.4.

141 Thus, no proof of fault is required as a condition precedent for liability.

142 These are where the incident is due to an act of armed conflict, hostilities, civil war or insurrection, or a grave natural disaster of an exceptional character.

143 Article 2, Vienna Amending Protocol and Paragraph B, 2004 Protocol to amend the Paris Convention. The same definition at paragraph (f), Article 1 was similarly amended in the CSC.

144 Article 1. Operator is the person designated or otherwise recognized, in advance, by the relevant national authorities as the person who would be liable, should an accident occur at a particular installation or in the course of transport to or from that installation. The operator is liable even with regard to accidents occurring during the course of transportation of the nuclear material.

145 The instruments impose a ceiling on the total amount of compensation that can be paid in respect of damage caused by one single nuclear incident.

146 Under both the Paris and Vienna Conventions, actions for compensation must be brought within ten years from the date of the nuclear incident. In addition, Contracting Parties may place time limits on an operator's liability of no less than two years (Paris Convention) and three years (Vienna Convention) from the time the damage or the operator liable became known or ought reasonably to have become known to the person suffering damage.

147 Article 2, Paris Convention as amended and Article 2 Brussels Supplementary Convention as amended.

148 Jurisdiction over actions under both conventions lies with the courts of the Contracting Party in whose territory the nuclear incident occurred. Where the nuclear incident occurs outside the jurisdiction of any Contracting Party, or where the place of the incident cannot be determined with any certainty, jurisdiction shall lie with the courts of the Installation State of the operator.

149 International Atomic Energy Agency, *The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage – Explanatory Texts*, IAEA International Law Series No. 3 (Vienna: IAEA, 2007), online: http://www-pub.iaea.org/MTCD/publications/PDF/Pub1279_web.pdf. The Explanatory Texts were approved by the IAEA Board of Governors and the IAEA General Conference in 2004.

operator of the nuclear installation; (c) limitation of liability in amount and/or limitation of liability cover by insurance or other financial security; and (d) limitation of liability in time.

The Explanatory Texts clarify that, in view of the difficulties involved in the monetary evaluation of environmental damage, it was decided in the Protocol to limit compensation to the costs of measures of reinstatement of impaired environment and as long as such impairment is significant. It is further explained that while the question of what is a significant impairment is left to the competent court, there is an explicit instruction in the Protocol that damage is to be compensated under this head only in so far as it is not already included in the concept of property damage under the applicable substantive law. For example, measures taken by a farmer whose land has been contaminated would, in most cases, fall under the concept of property damage, whereas the case of damage resulting from impairment of the environment is mainly designed to cover measures taken in respect of areas owned by the general public.[150]

2. The oil pollution liability instruments

The oil pollution liability and redress regime was originally provided by the 1969 Oil Pollution Convention and the 1971 Oil Fund Convention. The IMO adopted two protocols in 1992 amending these two conventions. The amended Conventions are known as the 1992 Civil Liability Convention and the 1992 Fund Convention. Other agreements in the field of liability for oil pollution include the Convention on Civil Liability for Oil Pollution Damage resulting from Exploration for and Exploitation of Seabed Mineral Resources, the International Convention on Civil Liability for Bunker Oil Pollution Damage and two voluntary agreements by the International Group of P&I Clubs. The objective of these instruments is to ensure that adequate compensation is available to persons who suffer damage resulting from the escape or discharge of oil from ships.[151]

2.1 1992 CIVIL LIABILITY CONVENTION

The 1992 Civil Liability Convention places liability on the owner of the ship at the time of the pollution incident. The regime is one of strict liability, admitting only a limited number of exemptions. The owner is not liable if he can prove, *inter alia*, that the damage was as a result of an act of war, hostilities, civil war, insurrection, or "a natural phenomenon of an exceptional, inevitable and irresistible character". Liability is, however, limited. According to the 1992 Civil Liability Convention, the owner's liability for any single incident is limited on the basis of the tonnage of the ship. The owner is required to maintain insurance or other financial security to cover his liability under the Convention. Liability is also limited in time: actions for compensation must be brought within three years of the occurrence of the incident, but in no case shall an action be brought after six years from the date of the incident.[152]

The original 1969 Oil Pollution Convention restricted its territorial application to pollution damage caused in the territory of a contracting party, including its territorial sea.[153] This jurisdictional scope was extended in the 1992 Civil Liability Convention to cover the exclusive economic zone of a contracting party.[154] With regard to preventive measures, the amended Convention does not impose any territorial limits.[155] Similarly, although the definition of "pollution damage" is restricted in the 1969 Convention to "loss or damage…by contamination resulting from escape or discharge of oil" including costs of preventive measures, the 1992 Civil Liability Convention has clarified this as including impairment of the environment and loss of profits arising from such impairment.[156] However, compensation for the impairment of the environment is limited to "costs of reasonable measures of reinstatement actually undertaken or to be undertaken taken."[157] Jurisdiction over actions for compensation lies with the courts of the contracting party in whose territory the pollution incident has occurred. The Convention provides for

150 *Ibid*. at p. 39-40.

151 The Secretariat of the International Oil Pollution Compensation Funds has prepared an Explanatory Note regarding the International Regime for Compensation for Oil Pollution Damage (March 2012). It is available online at: http://www.iopcfund.org/npdf/genE.pdf.

152 Article VIII.

153 Article 2, 1969 Oil Pollution Convention.

154 Paragraph (a)(ii), Article II.

155 Paragraph (b), Article II.

156 Paragraph (6), Article I.

157 *Ibid*.

mutual recognition and enforcement of judgments in the territories of all contracting parties.[158]

2.2 1992 FUND CONVENTION

The 1992 Fund Convention has a double objective. In the first instance, it endeavours to provide compensation to the victims of oil pollution damage in cases where the regime established by the 1992 Civil Liability Convention does not afford full protection.[159] Secondly, it seeks to alleviate the financial burden imposed on the shipping industry by the 1992 Civil Liability Convention by shifting part of the financial responsibility to the oil cargo interests.[160] For these purposes, it establishes the International Oil Pollution Compensation Fund 1992.[161] The Fund is under obligation to pay compensation in cases where a victim is unable to obtain full and adequate compensation under the terms of the 1992 Civil Liability Convention because either: (a) no liability arises under the 1992 Civil Liability Convention; (b) the owner liable under the 1992 Civil Liability Convention is financially incapable of meeting his obligations in full; or (c) the damage exceeds the owner's liability under the 1992 Civil Liability Convention.[162] The Fund may also provide assistance to a Contracting Party in the form of personnel, material or services to enable such Party to take measures to prevent or mitigate pollution damage for which the Fund may be called upon to pay compensation.[163]

The Fund's obligation to pay compensation is limited. Contributions to the Fund are made by all persons receiving oil by sea in Contracting States. A list of contributors from each Contracting State is maintained by the Director of the Fund. However, a Contracting State may at the time of becoming a Party declare that it assumes itself directly the obligation to make such contributions.

As described in sub-section 6.4 of section I above, the Supplementary Fund Protocol to the 1992 Fund Convention was adopted in May 2003. It provides a third tier of compensation by establishing an International Oil Pollution Compensation Supplementary Fund, 2003 (Supplementary Fund). The Supplementary Fund entered into force on 3 March 2005 and applies to incidents occurring on or after that date.

2.3 INTERNATIONAL CONVENTION ON CIVIL LIABILITY FOR BUNKER OIL POLLUTION DAMAGE

The Bunker Oil Convention provides that, with certain exceptions, the ship owner at the time of an incident is to be liable for pollution damage caused by any bunker oil on board or originating from the ship. It allows the ship owner or the insurer or provider of other financial security to limit liability "under any applicable national or international regime, such as the Convention on Limitation of Liability for Maritime Claims, 1976, as amended".[164] The registered owner of a ship having a gross tonnage greater than 1,000 registered in a State Party is required to maintain insurance or other financial security to cover the liability of the registered owner for pollution damage in an amount equal to the limits of liability under the applicable national or international limitation regime. In all cases, this insurance or other financial security is not to exceed an amount calculated in accordance with the *Convention on Limitation of Liability for Maritime Claims, 1976*, as amended. Each State Party has an obligation to ensure that, under its national law, insurance or other security to the extent specified in the Convention, is in force in respect of any ship having a gross tonnage greater than 1,000, wherever registered, entering or leaving a port in its territory, or arriving at or leaving an offshore facility in its territorial sea.[165]

2.4 AGREEMENTS BY THE INTERNATIONAL GROUP OF P&I CLUBS

Two agreements: the Small Tanker Oil Pollution Indemnification Agreement (STOPIA) and the Tanker Oil Pollution Indemnification Agreement (TOPIA) were voluntarily created in 2005 by the International Group of P&I Clubs. On 20 February 2006, revised versions of both STOPIA and TOPIA

158 Article X.
159 Paragraph 1(a), Article 2, 1992 Fund Convention.
160 Preambular paragraph 6.
161 Paragraph 1, Article 2.
162 Paragraph 1, Article 4.
163 Paragraph 7, Article 4.
164 Article 6.
165 Paragraph 12, Article 7, Bunker Oil Convention.

(known as STOPIA 2006 and TOPIA 2006, respectively) came into effect for incidents occurring on or after this date.

STOPIA 2006 is a legally binding agreement between the owners of small tankers (less than 29,548 tons) which are insured against oil pollution risks by the International Group of P&I Clubs. It is intended "to provide a mechanism for ship owners to pay an increased contribution to the funding of the international system of compensation for oil pollution from ships, as established by the 1992 Civil Liability Convention (CLC 92), the 1992 Fund Convention and the 2003 Supplementary Fund Protocol" and to ensure that the overall costs of claims falling under this system are shared approximately equally between ship owners and oil receivers.[166] The ship owners agreed to STOPIA 2006 in order to demonstrate support for the international compensation system. Under STOPIA 2006, owners of small tankers will indemnify the 1992 Fund in respect of the Fund's liability for the difference between the ship owner's limit of liability under the 1992 Civil Liability Convention and 20 million SDRs (Clause IV).

STOPIA 2006 does not affect the rights of victims of oil spills under the 1992 Fund and ship owners pay any indemnification to the 1992 Fund rather than to claimants directly. The 1992 Fund is not a party to STOPIA 2006 but the Agreement is intended to confer legally enforceable rights on the 1992 Fund and it provides that the 1992 Fund may bring proceedings in its own name in respect of any claim under STOPIA 2006 (Clause XI(A)). Insurers are not parties to the Agreement either but all Clubs (i.e. protection and indemnity associations in the International Group of P&I Clubs) have amended their rules to provide ship owners with cover against liability to pay indemnification under STOPIA 2006.[167] Clause XI(C) of STOPIA 2006 also authorizes Clubs to enter into ancillary arrangements enabling the 1992 Fund to enjoy a direct right of action against the relevant Club in respect of any claim under STOPIA 2006.

TOPIA 2006 has a similar object to that of STOPIA 2006, i.e. providing a mechanism for ship owners to pay an increased contribution to the funding of the international system of compensation for oil pollution from ships. TOPIA provides for ship owners to indemnify the Supplementary Fund (created by the 2003 Supplementary Fund Protocol) for 50 percent of the compensation paid by the Supplementary Fund for pollution damage caused by tankers in States party to the Protocol.

TOPIA 2006 is a legally binding agreement between the owners of tankers which are insured against oil pollution risks by the International Group of P&I Clubs. As with STOPIA 2006, TOPIA 2006 does not affect the rights of victims of oil spills under the 1992 Fund and the Supplementary Fund, and the ship owner pays any indemnification to the Supplementary Fund rather than directly to claimants. The Supplementary Fund is not a party to TOPIA 2006 but the Agreement is intended to confer legally enforceable rights on the Supplementary Fund. The latter may bring proceedings in its own name in respect of any claim under TOPIA 2006. Insurers are also not parties to TOPIA 2006 but all Clubs in the International Group of P&I Clubs have amended or agreed to amend their rules to provide ship owners with cover against liability to pay indemnification under TOPIA 2006. The Agreement also authorizes Clubs to enter into ancillary arrangements enabling the Supplementary Fund to enjoy a direct right of action against the relevant Club in respect of any claim under TOPIA 2006.[168]

2.5 CASES IN THE CONTEXT OF THE INTERNATIONAL OIL POLLUTION COMPENSATION FUNDS

In December 1999, the oil tanker *Erika* sank off the coast of France, spilling heavy fuel oil and polluting a large stretch of the French coastline. Under the 1992 Civil Liability Convention and 1992 Fund, compensation was available to any individual, business, private organization or public body that suffered pollution damage as a result of the oil pollution caused by the incident and for expenses actually incurred. By October 2011, over 7,000 claims for

166 "Explanatory Note" to STOPIA 2006 available in "STOPIA and TOPIA: Note by the Director", *supra* note 110.
167 *Ibid*.
168 "Explanatory Note" to TOPIA 2006 available in "STOPIA and TOPIA: Note by the Director", *supra* note 110.

compensation had been submitted for a total of €388.9 million while payments totalling €129.7 million had been made in respect of over 5,500 of the claims.[169] There were also questions about the amount of funds that would be paid to the French Government and the French oil company Total SA. The French Government claim was paid in full by Total SA.

As a result of the incident, legal proceedings were also launched by a large number of plaintiffs including environmental groups, fishermen, local associations and hotel owners against various defendants including the ship owner, the ship manager, the maritime certification company as well as Total SA – the owner of the cargo. The action included both criminal and civil proceedings.

On 16 January 2008, the Paris Criminal Court found the defendants guilty of maritime pollution and levied fines against them. The Court found the representative of the registered owner of the ship (Tevere Shipping), the president of the management company (Panship Management and Services Srl), the classification society (RINA) and Total SA to be criminally responsible for pollution and they were ordered to pay the maximum available fines.[170] It was the first time the French court had handed down a criminal conviction for damage to the environment.

The Court also found the four parties to be jointly and severally liable for a number of civil claims, namely economic loss, damage to the image of several regions and municipalities, moral damage and damage to the environment to be paid to the French Government, various regional governments and several environmental groups. The Court assessed the damages at €192.8 million, including €153.9 million for the French state.[171] The four parties appealed the judgment as did some of the civil parties (including the French Public Prosecutor) who initiated the claims. Total SA decided to pay the court-ordered compensation to the victims of pollution but also to appeal the court's ruling.[172]

The Court of Appeal handed down its ruling on 30 March 2010.[173] In its decision, the Court of Appeal confirmed the lower court's ruling of criminal responsibility. It found that Total SA had failed to apply precautionary rules and was imprudent in implementing its vessel vetting process. It ordered Total to pay a fine of €375,000. It also found the other actors criminally responsible and ordered them to pay the fines imposed.[174]

The Court of Appeal, however, exonerated Total for civil liability, deciding that it cannot be held as having deliberately taken a risk in chartering the vessel and therefore the claim was inadmissible under the 1992 Civil Liability Convention.[175] The ruling of civil liability against the other three defendants was upheld.

The Court increased the amount of compensation awarded to the civil plaintiffs, including the French Government, local authorities and other parties affected by the pollution caused by the *Erika*'s cargo, from €192 million to €200 million. Although Total is no longer obligated to pay compensation, it had already paid €170 million to the plaintiffs and will not be reimbursed. The remaining three actors must pay the €30 million still owing.

The ruling also upheld the legal notion that sees harm to the environment as a form of damage on a

169 International Oil Pollution Compensation Funds, *Incidents Involving the IOPC Funds 2011* (London: International Oil Pollution Compensation Funds, 2012), online: http://en.iopcfund.org/npdf/incidents2011_e.pdf at p. 7.

170 "Incidents Involving the 1992 Fund: *Erika*: Document submitted by France", Executive Committee of the International Oil Pollution Compensation Fund 1992, 40th sess., doc. 92FUND/EXC.40/4/1 (19 February 2008).

171 "Incidents Involving the 1992 Fund: *Erika*: Note by the Director", Executive Committee of the International Oil Pollution Compensation Fund 1992, 42d sess., doc. 92FUND/EXC.42/4 (1 October 2008) at para. 4.5.

172 "*Erika*: Total Compensates Third-Parties", Total Press Release (25 January 2008), online: http://www.total.com/en/press/press-releases/consultation-200524.html&idActu=1875.

173 The ruling is available (in French) at: http://coordination-maree-noire.eu/IMG/pdf_0802278A_-_.pdf.

174 The classification society (RINA) was fined €375,000 whereas the representative of the registered owner of the ship (Tevere Shipping) and the president of the management company (Panship Management and Services Srl) were fined €75,000 each. These, along with the fine imposed on Total, were the same amounts as the fines imposed by the Paris Criminal Court and are the maximum amounts available under French law.

175 Paragraph 4(c) of the 1992 Civil Liability Convention states that, "no claim for compensation for pollution damage under this Convention or otherwise may be made against … any charterer (howsoever described, including a bareboat charterer), manager or operator of the ship, … 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."

par with economic damage for which polluters must pay compensation to individuals and corporations.

RINA, Total SA and several coastline communities have appealed the decision to the *Cour de cassation* (the French Supreme Court) in 2010 and were still awaiting the final decision.[176]

3. Liability for damage resulting from the transport of dangerous goods and substances

There are three multilateral instruments in this category. These are the CRTD, the HNS Convention and the Basel Protocol.

3.1 CONVENTION ON CIVIL LIABILITY FOR DAMAGE CAUSED DURING CARRIAGE OF DANGEROUS GOODS BY ROAD, RAIL AND INLAND NAVIGATION VESSELS

The CRTD imposes strict liability on the "carrier" of dangerous goods for damage occasioned during the transport of such goods. Damage is defined to include: (a) loss of life or personal injury; (b) loss of or damage to property; (c) loss or damage by contamination of the environment; and (d) the costs of preventive measures. Compensation for the impairment of the environment is limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken. The Convention does not apply to damage caused by a nuclear substance if the operator of a nuclear installation is liable for such damage under either the Paris or Vienna Conventions. The application of the CRTD is also limited to damage sustained in the territory of a Contracting Party and to preventive measures wherever taken. The carrier is exempted from liability where the damage resulted from an act of war, hostilities, civil war, insurrection or a natural phenomenon of an exceptional, inevitable and irresistible character; the damage is wholly caused by an act or omission of a third party; or the consignor of the goods or any other person failed to meet his obligation to inform the carrier of the dangerous nature of the goods. Where no liability attaches to the carrier in the latter instance, the consignor or the other person shall be deemed to be the carrier for the purposes of the Convention.

The liability of the road or rail carrier or the carrier by inland navigation vessel is limited. The carrier is required to maintain insurance or other financial security to cover his liability under the Convention.

Actions for compensation are to be instituted within three years from the date at which the victim knew or ought reasonably to have known of the incident causing damage, but in any case no action can be brought after 10 years. Jurisdiction over claims lie with the courts of a State Party where either the damage was sustained, the incident occurred, preventive measures were taken, or the carrier has its habitual residence. The Convention provides for mutual recognition and enforcement of judgments in the territories of all Contracting States.

3.2 INTERNATIONAL CONVENTION ON LIABILITY AND COMPENSATION FOR DAMAGE IN CONNECTION WITH THE CARRIAGE OF HAZARDOUS AND NOXIOUS SUBSTANCES BY SEA

The HNS Convention deals with the transport of defined hazardous and noxious substances.[177] It imposes strict liability against the ship owner for damage caused by hazardous and noxious substances in connection with their carriage by sea on board a ship. The Convention does not apply to pollution damage as defined in the 1969 Oil Pollution Convention. Liability is with respect to loss of life or personal injury; loss or damage to property; loss or damage by contamination of the environment; and the costs of preventive measures. Compensation for impairment of the environment, other than loss of profit from such impairment, is again, like in the previous cases, limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken.

As regards territorial limits of application, the Convention has interesting departures from the instruments previously examined. It applies to any damage caused in the territory, including the territorial sea, of a State Party; to damage by contamination of the environment caused in the exclusive economic

176 *Incidents Involving the IOPC Funds 2011, supra* note 169 at p. 9.

177 Article 1.

zone, or its equivalent, of a State Party; to damage, other than damage by contamination of the environment, caused outside the territory of any State Party, if the damage is caused by a substance carried on board a ship registered in a State Party or, if unregistered, by a ship entitled to fly the flag of a State Party; and to preventive measures wherever taken. Damage to persons or property caused outside the limits of national jurisdiction can be compensated as long as the subject ship is registered in a State Party or is entitled to fly the flag of a State Party. However, environmental damage in areas outside the limits of national jurisdiction is not covered by the Convention. Nevertheless, as is the case with many other instruments, measures to prevent or mitigate damage, including environmental damage, outside national jurisdiction would fall within the ambit of the Convention.

Exemptions from liability include an act of war, hostilities, civil war, insurrection or a natural phenomenon of an exceptional, inevitable and irresistible character; act or omission of a third party; negligence or other wrongful act of any Government or other authority responsible for the maintenance of lights or other navigational aids; the failure of the consignor or any other person to furnish information concerning the hazardous nature of the substance being shipped. Liability of the ship owner is limited according to the tonnage of the ship.[178] The ship owner is required to maintain insurance or other financial security regarding his liability under the Convention.

The Assembly of the 1992 Fund decided, at its twelfth session held in 2007, to establish the HNS Focus Group with the aim of facilitating the rapid entry into force of the HNS Convention.[179] The primary task in the terms of reference of the Group was to identify and develop a draft protocol to the HNS Convention that addresses the issues that have been identified as inhibiting the entry into force of the HNS Convention, namely: (i) contributions to the LNG (liquefied natural gases) Account, (ii) the concept of "receiver", (iii) non-submission of contributing cargo reports on ratification of the Convention and annually thereafter, as well as administrative or "house-keeping" issues that would facilitate the operation of the Convention. The process culminated in the adoption of the HNS Protocol to the HNS Convention at an International Diplomatic Conference held in London from 26 to 30 April 2010.

3.3 BASEL PROTOCOL ON LIABILITY AND COMPENSATION FOR DAMAGE RESULTING FROM TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL

The Basel Protocol was adopted on 10 December 1999 at the fifth meeting of the Conference of the Parties to the Basel Convention. The objective of the Protocol is to provide a comprehensive liability regime as well as a mechanism to ensure adequate and prompt compensation for damage resulting from the transboundary movement of hazardous wastes and other wastes, including incidents occurring because of illegal traffic in such wastes. In contrast to all the other international instruments dealing with liability and redress, the Basel Protocol establishes both a strict and fault-based liability regime.

Liability under the Protocol is with regard to loss of life or personal injury; loss or damage to property; loss of income directly deriving from an economic interest in any use of the environment, incurred as a result of impairment of the environment; the costs of measures of reinstatement of the impaired environment, limited to the costs of measures actually undertaken or to be undertaken; and the costs of preventive measures. The Protocol defines what constitutes "measures of reinstatement" of an impaired environment. These are any reasonable measures aiming to assess, reinstate or restore damaged or destroyed components of the environment.[180]

The Protocol imposes strict liability on a series of persons regarding damage resulting from the transboundary movement of hazardous wastes reflecting the complex nature of the relationships arising from such movement and the specificities of the provisions of the Basel Convention.[181] Thus, liability is imposed variously on the notifier, disposer, exporter, importer and re-importer. The notifier of a transboundary movement is liable for damage until the disposer takes possession of the wastes; thereafter the disposer

178 Article 9, HNS Convention.

179 *Record of Decisions of the Twelfth Session of the Assembly*, doc. 92FUND/A.12/28 (19 October 2007) at para. 27.16.

180 Paragraph 2 (d), Article 2.

181 Article 4.

is liable. The exporter is liable where either the State of export is the notifier or no notification has taken place in terms of the provisions of the Convention. The importer is liable with respect to wastes under Article 1, paragraph 1 (b) of the Convention that have been notified as hazardous by the State of import in accordance with article 3 of the Convention but not by the State of export. A number of exemptions apply with respect to the liability imposed under Article 4. These are where the damage is a result of an act of armed conflict, hostilities, civil war or insurrection; a natural phenomenon of exceptional, inevitable, unforeseeable and irresistible character; compliance with a compulsory measure of a public authority of the State where the damage occurred; or the wrongful intentional conduct of a third party. As regards fault-based liability, Article 5 contains an omnibus provision imposing liability on "any person…for damage caused or contributed to by his lack of compliance with the provisions implementing the Convention or by his wrongful intentional, reckless or negligent acts or omissions".

In the case of strict liability, the liability of the notifier, exporter, importer and disposer for any one incident is limited in accordance with the tonnage of the shipment.[182] The persons liable under the strict-liability regime are required to establish and maintain, during the time limit of the period of liability, insurance, bonds or other financial guarantees covering such liability. There are no financial limits with respect to fault-based liability. The Protocol provides that where available compensation is not sufficient to cover the damage, "additional and supplementary measures aimed at ensuring adequate and prompt compensation may be taken using existing mechanisms" (Article 15). It would seem that where compensation under the Protocol is inadequate resort may be had to the financial mechanisms established under Article 14 of the Basel Convention. The possibility of the Meeting of the Parties to the Protocol improving such existing mechanisms or establishing new ones to better serve its objectives is expressly contemplated. Liability is also limited in time. Actions for compensation must be instituted within five years from the date the claimant knew or ought reasonably to have known of the damage; but in any case no action shall be instituted after ten years from the date of the incident causing damage. Jurisdiction over actions for compensation lie with the courts of the contracting party where the damage was suffered; or the incident occurred; or the defendant has his habitual residence or principal place of business. The Protocol provides for mutual recognition and enforcement of judgments in the territories of all contracting parties.[183]

The jurisdictional application of the Protocol is circumscribed in a number of respects. As a general rule, the Protocol applies to damage due to an incident occurring during a transboundary movement of hazardous wastes and other wastes and their disposal, including illegal traffic, from the point where the wastes are loaded on the means of transport in an area under the national jurisdiction of a State of export[184]. The application of the Protocol is regulated in accordance with the various operations specified in annex IV to the Convention. Nevertheless, the Protocol applies, with two notable exceptions, only to damage suffered in an area under the national jurisdiction of a contracting party.[185] These exceptions are: (a) as regards damage to person or property or the costs of preventive measures, the Protocol's application is extended to areas beyond any national jurisdiction; and (b) the Protocol applies to all categories of damage suffered in an area under the jurisdiction of a State of transit which is not a party provided that such State appears in annex A (largely composed of small island developing States) and has acceded to a multilateral or regional agreement concerning transboundary movements of hazardous wastes.[186]

The Conference of the Parties to the Basel Convention has taken some decisions with the aim to expediting entry into force of the Protocol. Parties are called upon to continue to consult at the national and regional levels with a view to determining possible means of overcoming perceived obstacles to ratification of the Protocol, including in respect of the requirement for insurance, bonds or other financial guarantees under Article 14 of the Protocol.[187]

182 Article 12 and annex B.

183 Article 21.

184 Paragraph (1), Article 3.

185 Paragraph (3)(a), Article 3.

186 Paragraphs (3)(c) and (d), Article 3.

187 "Report of the Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal on its ninth meeting", doc. UNEP/CHW.9/39 (27 June 2008) at 49-50.

4. Convention on the Protection of the Environment through Criminal Law

The Convention on the Protection of the Environment through Criminal Law requires contracting parties to adopt appropriate measures to establish criminal offences under domestic law for various activities that cause or are likely to cause injury or damage to person, property or the environment. Such activities include the intentional discharge of a quantity of substances or ionising radiation into air, water or soil; the unlawful disposal, treatment, storage, transport, export or import of hazardous waste; the unlawful causing of changes detrimental to natural components of a national park, nature reserve, water conservation area or other protected areas; and the unlawful possession, taking, damaging, killing or trading of or in protected wild flora and fauna species. The term "unlawful" is defined as "infringing a law, an administrative regulation or a decision taken by a competent authority aiming at the protection of the environment". Corporations can be held criminally liable for acts committed by members, organs or representatives.

The Convention requires the establishment by Parties of criminal sanctions for environmental offences, which take into consideration the serious nature of the offences. These may include imprisonment, fines, reinstatement of the environment, and confiscation of instrumentalities and proceeds. Parties are required to afford each other the widest measure of cooperation in investigations and judicial proceedings relating to criminal offences established in accordance with the Convention.

5. Convention on Civil Liability for Damage Resulting From Activities Dangerous to the Environment

The Lugano Convention, adopted under the auspices of the Council of Europe, is the most elaborate treaty to date dealing with liability and redress for environmental damage. This Convention deals with environmental damage regardless of whether it has a transboundary dimension. However, the Convention leaves considerable flexibility to national legal systems with respect to its implementation and also allows them to establish provisions, which go much further than those of the Convention in terms of environmental protection and the protection of victims of environmental damage.

The stated objective of the Convention is to ensure adequate compensation for damage resulting from activities dangerous to the environment and also to provide for means of prevention and reinstatement. It is worth noting that the definition of "dangerous activity" includes the production, storage, use, disposal or release of genetically modified organisms; the operation of an installation for the disposal and treatment of wastes as specified in an annex to the Convention; and the production, use or discharge of dangerous substances. An activity is deemed dangerous if it poses "a significant risk for man, the environment or property" (Article 2). "Damage" includes damage to person or property; loss or damage by impairment of the environment; and the costs of preventive measures and any loss or damage caused by preventive measures. However, compensation for impairment of the environment, other than loss from such impairment, is limited to the costs of measures of reinstatement actually undertaken or to be undertaken. The definition of the term "environment" is broad, encompassing "natural resources both abiotic and biotic, such as air, water, soil, fauna and flora and the interaction between the same factors; property which forms part of the cultural heritage; and the characteristic aspects of the landscape".[188]

Liability under the Convention is strict and is imposed on the "operator" of the activity causing damage. This is the person who has the operational control of the dangerous activity. Most of the exemptions from liability are similar to those in other international legal instruments.[189] However, there are three important departures: the operator is not liable if he proves that the damage resulted necessarily from compliance with a specific order or compulsory measure of a public authority; was caused by pollution at tolerable levels under relevant local circumstances; or was caused by a dangerous activity taken lawfully in the interests of the person who suffered damage.

188 Article 2.
189 Article 8.

The Convention does not apply to damage arising from carriage or damage caused by a nuclear substance. This is precisely because these issues are already regulated by specific international treaties. As regards jurisdictional scope, the Convention shall apply when the incident occurs in the territory of a contracting party or when the incident occurs outside the territory of a party but the conflict of law rules lead to the application of the law in force in a contracting party.

Each party is enjoined to ensure that operators in its territory are required to participate in a financial security scheme or to maintain a financial guarantee up to a certain limit under terms specified by national legislation to cover their liability under the Convention.

Actions for compensation have to be brought within three years from the date the claimant ought to have known of the damage and the identity of the operator. In any case, however, no action can be brought after 10 years from the date of the incident causing damage. Such actions may be brought within a party at the court of the place where: (a) the damage was suffered; (b) the dangerous activity was conducted; or (c) the defendant has his habitual residence. Where proceedings involving the same cause of action and between the same parties are brought in the courts of different parties, any court other than the court first seized shall stay its proceedings until such time as the jurisdiction of the court first seized is established. Once such jurisdiction is established, any other court shall decline jurisdiction on the issue. The Convention provides for mutual recognition and enforcement of judgments in the territories of all parties.

6. Convention on Liability for Damage Caused by Space Objects

The objective of the Convention on Liability for Damage Caused by Space Objects is to establish effective international rules and procedures concerning liability for damage caused by space objects and to ensure prompt payment of full and equitable compensation to victims of such damage. It is the only international legal instrument that imposes absolute liability. A launching State is absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight. Exoneration from such liability is contemplated only in cases of contributory negligence on the part of a claimant State or of the victims it represents.

Moreover, the Convention is the only instrument that establishes original State liability. Most other liability instruments either establish third-party liability regimes or, in addition, provide for some form of subsidiary State liability. Under this Convention, it is the "launching State", defined as a State that launches or procures the launching of a space object or from whose territory such an object is launched, that bears responsibility for the damage caused by the space object.

Damage under the Convention does not include environmental damage. It is restricted to loss of life, personal injury or other impairment of health, or loss of or damage to property.

Claims for compensation are to be presented by the State that suffers damage, or whose nationals suffer damage, to the launching State through either diplomatic channels or the Secretary-General of the United Nations. Such claims must be made within one year following the occurrence of the damage or the identification of the liable launching State. If no settlement is reached through diplomatic negotiations within one year of presentation, the parties concerned are required to establish a Claims Commission. The decision of the Commission shall be final and binding if the parties have so agreed. Otherwise, the Commission shall render a final and recommendatory award, which the parties are enjoined to consider in good faith.

The amount of compensation payable is to be determined in accordance with international law and the principles of justice and equity with a view "to provide such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred".[190]

190 Article XII, Convention on Liability for Damage Caused by Space Objects.

7. 2009 Conventions on compensation to third parties for damage involving aircraft

In 2001, the International Civil Aviation Organization (ICAO) launched a study on the modernization of the 1952 *Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface* (Rome Convention). The study was a response to the decision taken by the Legal Committee of ICAO, at its thirty-first session held from 28 August to 8 September 2000, to include in its programme of work the modernization of the Convention. Though the Rome Convention entered into force on 4 February 1958, it had failed to generate wide support. Over time, its provisions such as those on the limits of liability became outdated and the scope of damage and other standards failed to meet developments in concepts and standards. Among those few States that were once Parties to the Convention, some began to withdraw.[191]

After several years of negotiations, two conventions: (a) the *Convention on Compensation for Damage to Third Parties, Resulting from Acts of Unlawful Interference Involving Aircraft* (Unlawful Interference Compensation Convention), and (ii) the *Convention on Compensation for Damage Caused by Aircraft to Third Parties* (General Risks Convention) were adopted on 2 May 2009 at the International Conference on Air Law, convened at the ICAO Headquarters in Montreal. The Conventions enter into force once they are ratified by at least 35 participating countries, all of which are required to have had at least 750 million passengers depart from the country in the previous year.

7.1 CONVENTION ON COMPENSATION FOR DAMAGE TO THIRD PARTIES, RESULTING FROM ACTS OF UNLAWFUL INTERFERENCE INVOLVING AIRCRAFT

The Unlawful Interference Compensation Convention applies to damage to third parties which occurs in a territory of a State Party caused by an aircraft on an international flight as a result of unlawful interference. In certain cases it can also apply to such damage that occurs in a State non-Party. There is a possibility for application in essentially domestic situations.

The liability of the operator to compensate is strict as long as the damage was caused by an aircraft in flight. There is no need for the claimant to prove fault. The operator's liability is limited or capped, based on the weight of the aircraft, ranging from 750,000 SDRs for the smallest aircraft to 700,000,000 SDRs for the largest aircraft (Article 4). It is envisaged to create an organization called the International Civil Aviation Compensation Fund for the purpose of paying compensation to persons suffering damage, providing financial support where an operator from a State Party causes damage in a State non-Party, and deciding whether to provide supplementary compensation to passengers on board an aircraft involved in an event.

The operator pays up to the level of its cap, and the Fund will pay additional compensation above and beyond the level of the cap. If insurance is unavailable, or is available at a cost incompatible with the continued operation of air transport, the Fund may pay the damages. The maximum amount of compensation that would be available from the Fund is set at 3 billion SDRs for each event. Contributions to the Fund are mandatory amounts collected in respect of each passenger and each tonne of cargo departing on an international commercial flight from an airport in a State Party.

Any action for compensation under the Convention can only be brought against the operator or the Fund subject to the conditions and limits of liability in the Convention. The operator has the right of recourse against any person who has committed, organized or financed the act of unlawful interference, and also against any other person. There is no right of recourse against an owner, lessor or financier of the aircraft which is not an operator, or against a manufacturer in certain circumstances.

Actions may only be brought in a single forum – before the courts of the State Party where the damage occurred. Judgements shall, when they are enforceable in the State Party of that court, be enforceable in any other State Party, although recognition and enforcement of a judgement may be refused under certain circumstances.

191 Canada, Austria and Nigeria deposited instruments of denunciation with ICAO in 1976, 2000 and 2002, respectively.

7.2 CONVENTION ON COMPENSATION FOR DAMAGE CAUSED BY AIRCRAFT TO THIRD PARTIES

The General Risks Convention applies to damage to third parties which occurs in a territory of a State Party caused by an aircraft on an international flight other than as a result of unlawful interference. It is possible for a State to declare that the Convention applies to its domestic flights too.

The operator is liable for damage sustained by third parties as long as the damage is caused by an aircraft in flight. Liability is strict and fault-based. The operator is liable for each event based on the weight of the aircraft, ranging from 750,000 SDRs for the smallest aircraft to 700,000,000 SDRs for the largest aircraft. These limits only apply if the operator proves that it was not negligent or the damage was caused solely due to the negligence of another person. Any action against the operator for compensation for damage to third parties can only be brought subject to the conditions in the Convention.

The owner, lessor or financier of an aircraft, not being an operator, is not liable under the Convention or under the domestic law of States Parties. Actions for compensation may be brought in a single forum only, i.e. before the courts of the State Party where the damage occurred. Judgements shall, when they are enforceable in the State Party of that court, be enforceable in any other State Party, although recognition and enforcement of a judgement may be refused under certain circumstances.

8. Liability under the 1991 Protocol on Environmental Protection to the Antarctic Treaty

The success of the first multinational research programme known as the International Geophysical Year (IGY) in 1957-1958 led twelve nations that were active in Antarctica in the IGY[192] to negotiate and adopt an international agreement, known as the *Antarctic Treaty*, that sanctions the use of the Antarctic for peaceful and research purposes. The Antarctic Treaty was signed on 1 December 1959 in Washington. The Antarctic Treaty System comprises the Treaty itself and several other related agreements including the Protocol on Environmental Protection to the Antarctic Treaty.

Article 16 of the 1991 Protocol provides that Parties undertake to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by the Protocol. In view of this provision, negotiations for a liability annex to the Protocol took place for several years, culminating in the adoption of annex VI to the Protocol at the XXVIII Antarctic Treaty Consultative Meeting (ATCM) in June 2005. The Annex addresses "Liability arising from Environmental Emergencies" and it is attached to Measure 1 (2005) from the XXVIII ATCM.

The preamble to the annex notes that the elaboration of an annex on the liability aspects of environmental emergencies is one step towards the establishment of a liability regime in accordance with Article 16 of the Protocol. The scope of the annex is set out in Article 1 as follows:

> "This annex shall apply to environmental emergencies in the Antarctic Treaty area which relate to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistical support activities. Measures and plans for preventing and responding to such emergencies are also included in this annex. It shall apply to all tourist vessels that enter the Antarctic Treaty area. It shall also apply to environmental emergencies in the Antarctic Treaty area which relate to other vessels and activities as may be decided in accordance with Article 13."

Under the annex, Parties are to require their operators to: undertake reasonable preventative measures designed to reduce the risk of environmental emergencies and minimize their potential impact; establish contingency plans for responses to incidents with potential adverse impacts on the

192 Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States and the Union of Soviet Socialist Republics.

Antarctic environment or dependent and associated ecosystems and to cooperate in the formulation and implementation of these plans; and take prompt and effective response action to environmental emergencies arising from the activities of that operator (Articles 3 to 5). In the event that an operator does not take prompt and effective response action, the Party of the operator and other Parties are encouraged to take such action.

Article 6 addresses liability. The annex does not create liability for damage (and so no definition of damage is included in the text); rather, it creates liability for the costs of a response action. In addition, the approach to liability under the Protocol cannot be categorized as State responsibility, State liability or civil liability.

Two forms of liability are created. First, under Article 6 (1), an operator that fails to take prompt and effective response action to environmental emergencies arising from its activities is liable for the costs of response action taken by Parties and these costs are to be paid to the Parties. Article 6 (2) distinguishes between State and non-State operators. Under Article 6 (2) (a), "[w]hen a State operator should have taken prompt and effective response action but did not, and no response action was taken by any Party, the State operator shall be liable to pay the costs of the response action which should have been undertaken, into the fund referred to in Article 12". Under Article 6 (2) (b), when the same conditions arise in relation to a non-State operator, "the non-State operator shall be liable to pay an amount of money that reflects as much as possible the costs of the response action that should have been taken". The money is to be paid either to the fund created under Article 12 or to the Party of the operator or to the Party that enforces the enforcement mechanism it is obligated to create under Article 7 (3). Furthermore, a Party that receives funds under this provision is to make best efforts to make a contribution to the Article 12 fund that at least equals the money received from the operator.

Article 7 allows both national and international proceedings for establishing liability in different situations. Paragraph 1 of Article 7 allows a Party to bring an action against a non-State operator for liability and includes rules on the jurisdiction where the action may be brought and the limitation periods within which the action must be brought. Paragraphs 4 and 5 of Article 7 provide that the liability of a State operator may only be resolved through an enquiry procedure, through the provisions on dispute settlement in the Protocol, the Schedule to the Protocol on arbitration, or by the Antarctic Treaty Consultative Meeting. It should be noted that only States can be applicants under these proceedings.

Liability under Article 6 is strict, subject to the limited number of defences contained in Article 8. These defences are: (a) an act or omission necessary to protect human life or safety; (b) an event constituting in the circumstances of Antarctica a natural disaster of an exceptional character, which could not have been reasonably foreseen, either generally or in the particular case, provided all reasonable preventative measures have been taken that are designed to reduce the risk of environmental emergencies and their potential adverse impact; (c) an act of terrorism; or (d) an act of belligerency against the activities of the operator.

Furthermore, an environmental emergency that results from response action taken by a Party or agents or operators it has so authorized does not create liability to the extent that the response action was reasonable in all the circumstances.

Article 9 creates financial limits to liability, which are three million SDRs or, for environmental emergencies involving ships, are calculated according to the tonnage of the ship. Article 11 requires Parties to require their operators to maintain adequate financial security to cover liability up to the relevant limits set in Article 9. In addition, Article 12 creates the fund mentioned above "to provide, *inter alia*, for the reimbursement of the reasonable and justified costs incurred by a Party or Parties in taking response action …". The fund can be funded through voluntary contributions by States or persons in addition to the mechanisms described above.

9. United Nations Compensation Commission

The United Nations Compensation Commission (UNCC) is a subsidiary organ of the United Nations Security Council. It was established by the Council

in 1991 to process claims and pay compensation for losses resulting from Iraq's invasion and occupation of Kuwait. The Security Council established Iraq's legal responsibility in resolution 687 of 3 April 1991 in which it stated that "Iraq…is liable under international law for any direct loss, damage, including environmental damage and the depletion of natural resources, or injury to foreign Governments, nationals and corporations, as a result of Iraq's unlawful invasion and occupation of Kuwait".[193] The resolution was adopted under chapter VII of the Charter of the United Nations, which concerns action with respect to the peace, breaches of the peace and acts of aggression.

Compensation is payable to successful claimants from a special fund that receives a percentage of the proceeds from sales of Iraqi oil. The fund was created by the Security Council in section E of resolution 687, which also directed the Secretary-General to develop and present recommendations for setting up the fund as well as a commission to administer it. The Secretary-General recommended that the Commission should function under the authority of the Security Council and that it should be comprised of a Governing Council, panels of commissioners and a secretariat. By resolution 692 of 20 May 1991, the Security Council established the Commission and the United Nations Compensation Fund in accordance with the Secretary-General's report and decided to locate the Commission at the United Nations Office in Geneva. It should be noted that the Commission is not a court or an arbitral tribunal before which parties appear. It is a political organ that performs an essentially fact-finding function of examining claims, verifying their validity, evaluating losses, assessing payments and resolving disputed claims.

The Commission accepted for filing claims of individuals, corporations and Governments, submitted by Governments, as well as those submitted by international organisations for individuals who were not in a position to have their claims filed by a Government. Between 1991 and 2005 (when the Commission concluded the claims-processing exercise), the Commission received approximately 2.6 million claims seeking compensation in excess of US$ 300 billion. The Governing Council of the Commission identified six categories of claims. Claims for damage to the environment were part of Category "F" claims and were known as "F4"claims. They fell into two broad groups. The first group comprised claims for environmental damage and depletion of natural resources in the Persian Gulf region including those resulting from oil-well fires and the discharge of oil into the sea. The Commission received 30 such claims, seeking a total of US$ 40 billion in compensation. The second group of environmental claims related to the costs of clean-up measures undertaken by Governments that provided assistance to affected countries in the region in order to alleviate damage caused by oil-well fires and oil pollution. The Commission received 17 such claims seeking a total of US$ 23 million in compensation.

In order to provide guidance for the submission of claims, the UNCC Governing Council adopted decision 7 which includes information on the categories of environmental claims to be covered.[194] Accordingly, direct environmental damage and depletion of natural resources as a result of Iraq's unlawful invasion and occupation of Kuwait which the Council found to constitute compensable losses or expenses include losses or expenses resulting from:

(i) Abatement and prevention of environmental damage, including expenses directly relating to fighting oil fires and stemming the flow of oil in coastal and international waters;

(ii) Reasonable measures already taken to clean and restore the environment or future measures which can be documented as reasonably necessary to clean and restore the environment;

(iii) Reasonable monitoring and assessment of the environmental damage for the purposes of evaluating and abating the harm and restoring the environment;

193 Resolution 687 (1991), Security Council, 2981st meeting, doc. S/RES/687 (adopted on 3 April 1991) at paragraph 16.

194 "Decision taken by the Governing Council of the United Nations Compensation Commission during its third session, at the 18th meeting, held on 28 November 1991, as revised at the 24th meeting held on 16 March 1992: Criteria for additional Categories of Claims", doc. S/AC.26/1991/7/rev.1 (17 March 1992), online: http://www.uncc.ch/decision/dec_07r.pdf.

(iv) Reasonable monitoring of public health and performing medical screenings for the purposes of investigation and combating increased health risks as a result of the environmental damage;

(v) Depletion of or damage to natural resources.[195]

The UNCC Governing Council has adopted a number of decisions since 2001 based on the recommendations of the panel of Commissioners, and awarded payment of compensation for several F4 claims. The claims related to expenses incurred for measures to abate and prevent environmental damage, to clean and restore the environment, to monitor and assess environmental damage and public health risks alleged to have resulted from Iraq's invasion and occupation of Kuwait.

The panels of Commissioners addressed a number of issues relating to causation in order to determine Iraq's liability and the eligibility of each particular claim for compensation. In one instance, for example, the panel made it clear that although the mere fact that the contribution of other factors (as parallel or concurrent causes) to any loss or damage may not necessarily exonerate Iraq from liability, the evidence submitted by the claimant must provide a sufficient basis for determining what proportion of the damage could reasonably be attributed directly to Iraq's invasion and occupation of Kuwait. The panel of Commissioners also considered whether claims for damage to natural resources without commercial value were compensable. The panel found that such claims are within the scope of Security Council resolution 687 (1991).

In June 2005, the Governing Council of the UNCC approved the last reports and recommendations of the panels of Commissioners.[196] This completed the processing of claims and brought to a conclusion the work of the panels of Commissioners. Awards of approximately US$ 52.5 billion were approved in respect of approximately 1.5 million of the over 2.6 million claims that were received.

Various decisions of the Governing Council also established a tracking and reporting programme for environmental awards to ensure that the funds disbursed are being used for environmental monitoring and assessment activities.[197]

10. Guidelines of the United Nations Environment Programme

In 1994, the United Nations Environment Programme (UNEP) established the Working Group on Liability and Compensation for Environmental Damage Arising from Military Activities within the framework of the UNEP long-term Programme for the Development and Periodic Review of Environmental Law for the 1990s (Montevideo Programme II) adopted by the Governing Council in 1993. Programme area "S" identified liability and compensation for environmental damage as a subject where action by the appropriate international bodies to develop international responses may be appropriate during the decade. The establishment of the Working Group followed the creation by the United Nations Security Council of the UNCC to receive claims for, *inter alia*, environmental damage and depletion of natural resources resulting from Iraq's unlawful invasion and occupation of Kuwait. While Security Council resolution 687 (1991) reaffirmed that Iraq was liable for, among other things, the environmental damage and the depletion of natural resources that occurred as a result of its unlawful invasion and occupation of Kuwait, the resolution did not define environmental damage or the depletion of natural resources, nor did it provide any guidance to UNCC as to how environmental claims should be assessed for purposes of reparation or compensation.

In furtherance of the Montevideo Programme II and in order to provide a practical contribution to the

195 Ibid. at paragraph 35. See "Report and Recommendations made by the Panel of Commissioners concerning the Second Instalment of "F4" Claims", doc. S/AC.26/2002/26 (3 October 2002), online: http://www.uncc.ch/reports/r02-26.pdf at paragraph 22 for thoughts regarding the non-exhaustive nature of the list of specific losses and expenses under paragraph 35 of decision 7 of the UNCC Governing Council.

196 Report and Recommendations made by the Panel of Commissioners Concerning the Fifth Instalment of "F4" Claims, supra note 39.

197 See, for example, "Decision concerning follow-up programme for environmental claims awards taken by the Governing Council of the United Nations Compensation Commission at its 150th meeting, on 8 December 2005", doc. S/AC.26/Dec.258 (2005), online: http://www.uncc.ch/decision/dec_258.pdf.

work of UNCC, the Working Group was given the following mandate:

To define the concepts of "environmental damage" and "depletion of natural resources";

To recommend criteria for determining the reasonableness of measures taken to clean and restore the environment or future measures to be undertaken to clean and restore the environment;

To recommend the criteria for valuing "environmental damage" and "depletion of natural resources";

To consider issues related to the appropriate level of financial reparation; and

To examine the legal interest and capacity of States and international organizations in bringing claims to UNCC.

In accordance with its mandate, the Working Group focused on issues of international law concerning liability and compensation for environmental damage, in particular, as they related to the work of UNCC. The Working Group adopted its report in May 1996. Some of the major conclusions of the Working Group are summarized in its report as follows:

(i) Any State may bring a claim for damage which has occurred in or to the land within its boundaries; internal waters; territorial sea; airspace above its land; and exclusive economic zone and continental shelf to the extent that damage occurred to resources over which it has jurisdiction or sovereign rights in accordance with international law. The possibility that a State may bring a claim in relation to damage to areas beyond national jurisdiction should not be excluded, provided a clear legal interest can be demonstrated;

(ii) The term "natural resources" refers to components of the environment that primarily have a commercial value, while "environmental damage" encompasses damage to components of the environment whose primary value is non-commercial. "Environment" includes abiotic and biotic components, including air, water, soil, flora, fauna and the ecosystem formed by their interaction, and may also include cultural heritage, features of the landscape and environmental amenity. "Environmental damage" refers to the impairment of the environment, that is to say, a change that has a measurable impact on the quality of a particular environment or any of its components (including its use and non-use values) and its ability to support and sustain an acceptable quality of life and a viable ecological balance;

(iii) Where compensation is due for damage caused by a wrongful act, the basis for that compensation under international law is reflected in the approach of the Permanent Court of International Justice in the *Chorzow Factory Case*. That approach relates to the standard of compensation but does not provide guidance as to how to value the damage which has occurred. The reasonableness of measures that are the subject of a compensation claim must be determined on a case by case basis, and will depend on balancing the benefit to be achieved with the cost incurred taking into account several factors;

(iv) The methodology for determining the amount of compensation regarding measures undertaken to prevent and abate environmental damage would be the costs actually incurred in taking such measures. The environmental as well as the economic costs of clean-up measures should be considered, in accordance with the basic requirement of mitigation or avoidance of damage. The basic aim of restoration should be to reinstate the ecologically significant functions of injured resources and the associated public uses and amenities supported by such functions.

The Programme for the Development and Periodic Review of Environmental Law for the First Decade of the Twenty-first Century (Montevideo III), adopted

by the UNEP Governing Council in February 2001, establishes a programme area entitled "Prevention and mitigation of environmental damage" with the objective to strengthen measures to prevent environmental damage, and to mitigate such damage when it occurs. The strategy to achieve this has been to promote the development and application of policies and measures to prevent environmental damage and to mitigate such damage by means, *inter alia*, of restoration or redress, including compensation, where appropriate.

As a continuation of work under this programme, in 2007, UNEP undertook the preparation of guidelines on liability and compensation for environmental damage through different advisory expert groups and consultative and intergovernmental meetings. At its eleventh special session in February 2010, UNEP's Governing Council/ Global Ministerial Environment Forum adopted "Guidelines for the development of domestic legislation on liability, response action and compensation for damage caused by activities dangerous to the environment".[198] The Governing Council affirmed that the guidelines were voluntary and did not set a precedent for the development of international law.

The Guidelines state that their objective is to provide "guidance to States regarding domestic rules on liability, response action and compensation for damage, taking into account the "polluter pays" principle." (Guideline 1)

The term "damage" is defined to mean loss of life or personal injury and loss of or damage to property "arising from environmental damage" (paragraphs 2 (a) and (b), Guideline 3). It also includes pure economic loss, costs of reinstatement measures, costs of preventive measures and environmental damage itself. "Environmental damage", in turn, means an adverse or negative effect on the environment that is measurable and significant. The Guidelines include factors to assist in determining whether an effect is significant. Paragraph 4 of Guideline 3 defines "operator" to mean "any person or persons, entity or entities in command or control of the activity, or any part thereof at the time of the incident."

Guideline 4 would require the operator to take prompt and effective response action should an incident arising during an activity dangerous to the environment. The term "response action" is defined in Guideline 3 to mean "preventive measures and reinstatement measures", both of which are also defined terms. Furthermore, the definition of "incident" includes an occurrence that causes damage or "creates a grave and imminent threat of damage" (paragraph 5, Guideline 3).

Guideline 4 also enables the competent public authority to order the operator to take specific response actions that it deems necessary. The competent public authority may also take such action itself or authorize a third party to take such action and recover the costs from the operator where the operator fails to take response action or such action is unlikely to be effective or timely.

The Guidelines propose that liability should be channelled to the operator and the standard of liability for damage caused by activities dangerous to the environment should be strict (Guideline 5). The Guidelines also suggest possible grounds on which an operator may be exonerated from liability. Two such possible grounds are where the activity was authorized or where the damage was caused by an activity "which was not likely to cause damage according to the state of scientific and technical knowledge at the time that the activity was carried out." (paragraphs 2(a) and (b), Guideline 6)

Claims for compensation for loss of life or personal injury, loss of or damage to property and pure economic loss arising as a result of damage caused by activities dangerous to the environment in addition to, where appropriate, the reimbursement of the costs of preventive measures and reinstatement measures may be brought by any person or group of persons, including public authorities (Guideline 8). Furthermore, paragraph 2 of Guideline 8 suggests that domestic law may allow claims for compensation for environmental damage. Guideline 9 also recognizes the right of any person or group of persons with a sufficient interest to seek response action by public authorities if either the operator or the concerned public authorities fail to take prompt and effective measures to redress the environmental damage.

198 *Supra* note 57.

Guidelines 10 and 12 indicate that countries may wish to provide for financial and time limits in their domestic law. In the event where a choice of applicable law becomes an issue, Guideline 13 proposes that any claim for compensation be decided in accordance with the law of the place where the damage occurred, unless the claimant prefers the law of the country in which the event giving rise to the damage occurred.

Guideline 11 suggests that the operator should be encouraged or required to cover liability, taking into account the availability of financial guarantees. In this regard, Guideline 14 suggests that domestic law "should provide for lists of hazardous substances and their threshold quantities, activities or installations dangerous to the environment, to make apparent the nature and scope of operators' risk of environmental liability and thereby strengthen the insurability of the risk of damage." It also suggests that such lists should be exhaustive rather than indicative to enhance their effectiveness.

The similarities between some of the guidelines and the provisions of the Nagoya – Kuala Lumpur Supplementary Protocol are noticeable.

11. Guidelines for the Determination of Liability and Compensation for Damage resulting from Pollution of the Marine Environment in the Mediterranean Sea Area

In Barcelona in February 1976, the Conference of Plenipotentiaries of the Coastal States of the Mediterranean Region on the Protection of the Mediterranean Sea adopted the *Convention for the Protection of the Mediterranean Sea against Pollution*. The 21 countries plus the European Union that participate in the Mediterranean Action Plan (MAP) are parties to the Convention.

The Convention was revised in Barcelona in June 1995 and re-named the *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean* (Barcelona Convention). In the revised text, Article 16 addresses liability and compensation and reads as follows: "The Contracting Parties undertake to cooperate in the formulation and adoption of appropriate rules and procedures for the determination of liability and compensation for damage resulting from pollution of the marine environment in the Mediterranean Sea Area."[199]

A number of meetings and consultations were held with a view to fulfilling the requirement of Article 16 of the Convention. At their 15th Meeting, held in January 2008, the Contracting Parties to the Barcelona Convention adopted decision IG 17/4 on "Guidelines for the Determination of Liability and Compensation for Damage resulting from Pollution of the Marine Environment in the Mediterranean Sea Area".[200]

The stated purpose of the Guidelines was to further the "polluter pays" principle. The Guidelines do not have a binding character *per se* but "are intended to strengthen cooperation among the Contracting Parties for the development of a regime of liability and compensation for damage resulting from pollution of the marine environment in the Mediterranean Sea Area and to facilitate the adoption by Contracting Parties of relevant legislation".[201]

Paragraph 4 of the section on purpose states that the Guidelines apply to the activities to which the Barcelona Convention or any of its Protocols applies. This includes the 1995 *Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean* which, in Article 13, provides that:

> The Parties shall take all appropriate measures to regulate the intentional or accidental introduction of non-indigenous or genetically modified species to the wild and prohibit those that may have harmful

199 Reference might also be made to Article 14 of the 1996 *Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal* (Hazardous Wastes Protocol) and Article 27 of the 1994 P*rotocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil* (Offshore Protocol). Both articles call for, *inter alia*, cooperation in the development of rules and procedures on liability and compensation under the respective protocols.

200 The Guidelines are available in Annex V of the "Report of the 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", doc. UNEP(DEPI)/MED IG.17/10 (18 January 2008), online: http://195.97.36.231/acrobatfiles/08IG17_10_Ann5_Decisions_eng.pdf at p. 135-140.

201 *Ibid*. at paragraph. 3, Section A.

impacts on the ecosystems, habitats or species in the area to which this Protocol applies.

The Parties shall endeavour to implement all possible measures to eradicate species that have already been introduced when, after scientific assessment, it appears that such species cause or are likely to cause damage to ecosystems, habitats or species in the area to which this Protocol applies.

Section B of the Guidelines speaks to their relationship with other regimes. The Guidelines are without prejudice to existing global and regional environmental liability and compensation regimes, "which are either in force or may enter into force, as indicatively listed in the Appendix to these Guidelines, bearing in mind the need to ensure their effective implementation in the Mediterranean Sea Area".[202] According to the explanatory text to the Guidelines, this provision should be understood as meaning that other international instruments are applicable within the framework of the Guidelines.[203] Paragraph 6 of the Guidelines states that the guidelines are without prejudice to the rules of international law on State responsibility for internationally wrongful acts.

Section C of the Guidelines addresses their geographical scope. It states that the Guidelines apply to the Mediterranean Sea Area as defined in Article 1(1) of the Barcelona Convention including such other areas as the seabed, the coastal area and the hydrologic basin as are covered by relevant Protocols to the Barcelona Convention. Three Protocols in addition to the Barcelona Convention have the Mediterranean Sea Area as their scope[204] while three other Protocols extend their application beyond the Mediterranean Sea Area.[205] The explanatory text points out that a question remains as to whether the geographic scope of the Guidelines should relate to the damage, incident, activity and/or installation where the activity is carried out. It comments that it would be advisable for the Contracting Parties to the Barcelona Convention to seek to harmonize this point but it does not suggest an answer to the question.[206]

Section D of the Guidelines covers damage. Paragraph 8 reads: "The legislation of Contracting Parties should include provisions to compensate both environmental damage and traditional damage resulting from pollution of the marine environment in the Mediterranean Sea Area." Paragraph 9 defines environmental damage as meaning "a measurable adverse change in a natural or biological resource or measurable impairment of a natural or biological resource service which may occur directly or indirectly." The explanatory text states that this wording finds its origins in Article 2(2) of the EU's Environmental Liability Directive.

The subsequent paragraph sets out the types of compensation that should be included for environmental damage: (a) costs of activities and studies to assess the damage; (b) costs of preventive measures; (c) costs of measures undertaken or to be undertaken to clean up, restore and reinstate the impaired environment; (d) diminution in value of natural or biological resources pending restoration; and (e) compensation by equivalent if the impaired environment cannot return to its previous condition. Paragraph 12 states that the measures referred to in (b) and (c) should be reasonable, i.e. "appropriate, practicable, proportionate and based on the availability of objective criteria and information" while paragraph 13 provides that when compensation is granted for damage referred to in (d) and

202 *Ibid*. at paragraph 5, Section B.

203 "Explanatory Text to Draft Guidelines on Liability and Compensation for Damage Resulting from Pollution of the Marine Environment in the Mediterranean Sea Area", doc. UNEP(DEPI)/MED IG.17.Inf.11 (14 December 2007) prepared for the 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, 15-18 January 2008, online: http://195.97.36.231/acrobatfiles/08IG17_Inf11_eng.pdf at p. 22-23. The Explanatory Text applies to the text of the Draft Guidelines adopted at the Second meeting of the open-ended working group of Legal and Technical Experts to propose Appropriate Rules and Procedures for the Determination of Liability and Compensation for Damage Resulting from Pollution of the Marine Environment in the Mediterranean Sea Area, *infra* note 208. The Draft Guidelines were subsequently modified before they were adopted by the 15th Meeting of the Contracting Parties.

204 The 1995 *Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea*; the 2002 *Protocol concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea*; and the Hazardous Wastes Protocol.

205 The 1996 P*rotocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities*; the 1995 *Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean*; and the Offshore Protocol.

206 Explanatory Text, *supra* note 203 at p. 31.

(e), it should be earmarked for intervention in the environmental field in the Mediterranean Sea Area. At earlier meetings, participants had also discussed using the terms 'ecological damage' or 'damage to biodiversity' but this language has not been included in the Guidelines.[207]

Paragraph 14 goes on to define traditional damage as meaning:

(a) loss of life or personal injury;

(b) loss of or damage to property other than property held by the person liable;

(c) loss of income directly deriving from an impairment of a legally protected interest in any use of the marine environment for economic purposes, incurred as a result of impairment of the environment, taking into account savings and costs;

(d) any loss or damage caused by preventive measures taken to avoid damage referred to under sub-paragraphs (a), (b) and (c).

Finally in this section, paragraph 15 states that the Guidelines will apply to damage caused by pollution of a diffuse character so long as it is possible to establish a causal link between the damage and the activities of individual operators. According to the report from the Second meeting of the open-ended working group of Legal and Technical Experts to propose Appropriate Rules and Procedures for the Determination of Liability and Compensation for Damage Resulting from Pollution of the Marine Environment in the Mediterranean Sea Area, held in June 2007, the thinking behind this provision was to exclude joint and several liability "as individual operators should not be called upon to pay for the damage caused by other operators."[208] The view was also expressed, however, "that the concept of "joint and several liability", such as in the case of the dissemination and cultivation of GMOs [genetically modified organisms], should not necessarily be excluded from the liability and compensation regime."[209]

Section F concerns the channelling of liability and paragraph 17 provides that liability for damage covered by the Guidelines is to be imposed on the liable operator. Paragraph 18 defines 'operator' as meaning "any natural or juridical person, whether private or public, who exercises the *de jure* or *de facto* control over an activity covered by these Guidelines".

Section G considers the standard of liability. It provides for a mixed strict- and fault-based liability system. Paragraph 19 provides that the basic standard of liability should be strict but, under paragraph 20, fault-based liability could be applied for cases of damage resulting from activities not covered by any of the Protocols to the Barcelona Convention. Paragraph 21 covers multi-party causation whereby "liability will be apportioned among the various operators on the basis of an equitable assessment of their contribution to the damage."

Section H covers exemptions of liability and paragraph 23 provides exemptions from liability for damage caused by acts of war, hostilities, civil war, insurrection, terrorism or *force majeure*.

Limitation of liability is covered in section I and paragraph 24 states that financial limits on liability may be established where strict liability applies on the basis of international treaties or relevant domestic legislation. In paragraph 25, the Contracting Parties are invited to regularly re-evaluate the appropriate extent of the amounts of financial limits, taking into account such things as the potential risks posed on the environment by the activities covered by the Guidelines.

Section J speaks to time limits and paragraph 26 provides for a two-tier system of time limits: a shorter period (e.g. three years) from the date of knowledge

207 For 'ecological damage' see, for example, "Report of the Second Consultation Meeting of Legal Experts on Liability and Compensation", doc. UNEP(DEC)/MED WG.280/3 (30 August 2005) at paragraph 51; for damage to biodiversity see, for example, "Report: First Meeting of Government-Designated Legal and Technical Experts on the Preparation of Appropriate Rules and Procedures for the Determination of Liability and Compensation for Damage Resulting from Pollution of the Marine Environment in the Mediterranean Sea Area", doc. UNEP(OCA)/MED WG.117/4 (7 October 1997) at part II, para. 2(d) of Annex.

208 "Draft Report of the Second meeting of the open-ended working group of Legal and Technical Experts to propose Appropriate Rules and Procedures for the Determination of Liability and Compensation for Damage Resulting from Pollution of the Marine Environment in the Mediterranean Sea Area", doc. UNEP(DEPI)/MED WG.319/4 (5 September 2007) at para. 32.

209 *Ibid.* at para. 33.

of the damage or the identification of a liable operator, whichever is later, and a longer period from the date of the incident (e.g. 30 years).

Section K addresses the financial and security scheme. Paragraph 28 states that "Contracting Parties, after a period of five years from the adoption of these Guidelines, may, on the basis of the products available on the insurance market, envisage the establishment of a compulsory insurance regime."

Paragraph 29 in section L concerns a Mediterranean Compensation Fund. It provides that the Contracting Parties should explore the possibility of establishing such a fund "to ensure compensation where the damage exceeds the operator's liability, where the operator is unknown, where the operator is incapable of meeting the cost of damage and is not covered by a financial security or where the State takes preventive measures in emergency situations and is not reimbursed for the cost thereof."

Section N covers action for compensation. Paragraph 31 states that the legislation of Contracting Parties should ensure that actions for compensation in respect of environmental damage are as widely accessible to the public as possible. Paragraph 32 states that the legislation of Contracting Parties should also ensure that natural and juridical persons that are victims of traditional damage can bring actions for compensation in the widest manner possible.

12. The International Law Commission's work on international liability for injurious consequences arising out of acts not prohibited by international law

In 1978, at its thirtieth session, the ILC decided to include in its programme of work the topic "International liability for injurious consequences arising out of acts not prohibited by international law". In due course, two issues, namely "prevention" and "international liability" became distinct and prominent in the work of the Commission under this topic. At its forty-fourth session, in 1992, the Commission decided, based on the recommendation of its own working group, to continue the work on this topic in stages, dealing first with the issue of "prevention of transboundary damage from hazardous activities".

At its fifty-third session, in 2001, the Commission adopted the final text of the draft articles on prevention of transboundary harm from hazardous activities as well as commentaries to the draft articles.[210] The General Assembly commended the articles to the attention of Governments in its resolution 62/68.[211] The articles are described in the sub-section on 'imminent threat of damage' in section I above.

At its fifty-fourth session, in 2002, the Commission resumed its consideration of the second part of the topic, namely international liability in case of loss from transboundary harm arising out of hazardous activities. The Commission adopted, during its fifty-eighth session in 2006, the text of the draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities along with commentaries to the draft principles.[212] The General Assembly noted the principles and commended them to the attention of Governments.[213] This marked the completion of the Commission's two-part work on the topic "International liability for injurious consequences arising out of acts not prohibited by international law".

The preamble to the draft principles places them in the context of the 1992 Rio Declaration on Environment and Development and the ILC's earlier draft articles on the Prevention of Transboundary Harm from Hazardous Activities. The scope of application as provided in draft principle 1 states that they apply to transboundary damage caused by hazardous activities not prohibited by international law. The commentary accompanying draft principle 1 elaborates on the distinction between hazardous and non-hazardous activities: "The combined effect of the probability of occurrence of an accident and the magnitude of its injurious impact separates such [hazardous] activities from any other activities."[214]

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210 *Report of the International Law Commission: Fifty-third session, supra* note 21 at paragraphs 97 and 98 of chapter V.

211 GA Res. A/RES/62/68, *supra* note 64 at paragraph 3.

212 *Report on the International Law Commission: Fifty-eighth session (1 May-9 June and 3 July-11 August 2006)*, UN General Assembly Official Records 61st sess., Supplement No. 10, doc. A/61/10 (2006) at chapter V.

213 *Supra* note 68 at paragraph 2.

214 *Supra* note 212 at paragraph 2, p. 117.

Thus, both activities carrying a low risk of causing disastrous transboundary harm as well as those carrying a high risk of causing significant transboundary harm are encompassed by the principles.

Draft principle 2 on "Use of terms" defines some of the key terms used in the text. "Damage" is defined to mean:

> "Significant damage caused to persons, property or the environment; and includes:
>
> (i) Loss of life or personal injury;
>
> (ii) Loss of, or damage to, property, including property which forms part of the cultural heritage;
>
> (iii) Loss or damage by impairment of the environment;
>
> (iv) The costs of reasonable measures of reinstatement of the property, or environment, including natural resources;
>
> (v) The costs of reasonable response measures[.]"

The commentary states that damage must reach a certain threshold in order to be eligible for compensation. The draft principles use the term 'significant' to designate the threshold of damage they cover (principle 2, para. (c)), where "'significant' is understood to refer to something more than 'detectable' but need not be at the level of 'serious' or 'substantial'".[215] The commentary also states that the harm must lead to real detrimental effects and these effects "must be susceptible of being measured by factual and objective standards."[216] In relation to this, it is pointed out that the determination of 'significant damage' also includes a value determination, which depends on the circumstances of a particular case and the time when the damage occurs. Changes in understanding mean that damage may not be considered significant when it occurs at one period of time but may be so considered at a later period of time.

The commentary describes the meaning of property loss or damage in paragraph (a)(ii) of draft principle 2: "It embraces a wide range of aspects, including monuments, buildings and sites, while natural heritage denotes natural features and sites and geological and physical formations. Their value cannot easily be quantifiable in monetary terms but lies in their historical, artistic, scientific, aesthetic, ethnological, or anthropological importance or in their conservation or natural beauty."[217] Concerning the meaning of 'loss or damage by impairment of the environment' in subparagraph (iii), the commentary states that this may include "loss of income directly deriving from an economic interest in any use of the environment, incurred as a result of impairment of the environment".[218]

'Environment' is defined in draft principle 2 to include "natural resources, both abiotic and biotic, such as air, water, soil, fauna and flora and the interaction between the same factors, and the characteristic aspects of the landscape". The commentary explains that the Commission chose to include environmental values in the definition and that these encompass non-service values such as aesthetic aspects of landscapes, and "the enjoyment of nature because of its natural beauty and its recreational attributes and opportunities associated with it. This broader approach is justified by the general and residual character of the present draft principles."[219] The commentary makes reference to the definition of 'ecosystem' in the Convention on Biological Diversity.

The draft principles define "operator" to mean "any person in command or control of the activity at the time the incident causing transboundary damage occurs" (principle 2, para. (g)). The commentary cites with favour the notion that 'operator' means one in actual, legal or economic control of the polluting activity. The term "control" is, in turn, described as denoting "power or authority to manage, direct, regulate, administer or oversee. This could cover the person to whom decisive power over the technical functioning of an activity has been delegated, including the holder of a permit or authorization for such an activity or the person registering or notifying such an activity. It may also include a parent company or other

215 *Supra* note 212 at paragraph 2, p. 123.
216 *Ibid.*
217 *Supra* note 212 at paragraph 9, p. 126.
218 *Supra* note 212 at paragraph 13, p. 129.
219 *Supra* note 212 at paragraph 20, p. 133.

related entity, whether corporate or not, particularly if that entity has actual control of the operation."[220]

Draft principle 3 states that the purposes of the draft principles are:

(a) To ensure prompt and adequate compensation to victims of transboundary damage; and

(b) To preserve and protect the environment in the event of transboundary damage, especially with respect to mitigation of damage to the environment and its restoration or reinstatement.

The commentary describes paragraph (b) as emphasizing "the more recent concern of the international community to recognize protection of the environment *per se* as a value by itself without having to be seen only in the context of damage to persons and property."[221] With regard to the 'restoration or reinstatement' element of paragraph (b), the commentary states that "[t]he aim is not to restore or return the environment to its original state but to enable it to maintain its permanent functions. … Where restoration or reinstatement of the environment is not possible, it is reasonable to introduce the equivalent of those components into the environment."[222]

In addition to the two purposes formalized in the draft principles, the commentary adds that

> "The draft principles serve or imply the serving of other objectives, including: (a) providing incentives to the operator and other relevant persons or entities to prevent transboundary damage from hazardous activities; (b) resolving disputes among States concerning transboundary damage in a peaceful manner that promotes friendly relations among States; (c) preserving and promoting the viability of economic activities that are important to the welfare of States and peoples; (d) and providing compensation in a manner that is predictable, equitable, expeditious and cost effective. Wherever possible, the draft principles should be interpreted and applied so as to further all these objectives."[223]

Draft principle 4 concerns 'Prompt and adequate compensation'. Paragraph 1 says that States should take all necessary measures to ensure that prompt and adequate compensation is available while paragraph 2 states that "[t]hese measures should include the imposition of liability on the operator or, where appropriate, other person or entity. Such liability should not require proof of fault. Any conditions, limitations or exceptions to such liability shall be consistent with draft principle 3." In addition to the discussion of the term 'operator' in the context of draft principle 2, the commentary states that "The real underlying principle is not that "operators" are always liable, but that the party with the most effective control of the risk at the time of the accident or has the ability to provide compensation is made primarily liable."[224] The commentary also explains the rationale for adopting strict liability:

> "Hazardous and ultrahazardous activities, the subject of the present draft principles, involve complex operations and carry with them certain inherent risks of causing significant harm. In such matters, it is widely recognized that it would be unjust and inappropriate to make the claimant shoulder a heavy burden of proof of fault or negligence in respect of highly complex technological activities whose risks and operation the concerned industry closely guards as a secret. Strict liability is recognized in many jurisdictions, when assigning liability for inherently dangerous or hazardous activities. The case for strict liability for ultrahazardous or abnormally dangerous activities was held to be the most proper technique both under common and civil law to enable victims of dangerous and ultrahazardous activities to recover compensation without having to establish proof of fault on the basis of what is often detailed technical evidence, which, in turn, would require on the part

220 *Supra* note 212 at paragraph 33, p. 139-140.
221 *Supra* note 212 at paragraph 6, p. 142.
222 *Supra* note 212 at paragraph 7, p. 142-143.
223 *Supra* note 212 at paragraph 10, p. 144.
224 *Supra* note 212 at paragraph 10, p. 154-155.

> of victims a complete understanding of the complicated and complex operation or activity. The case for strict liability is strengthened when the risk has been introduced unilaterally by the defendant.[225]

Draft principle 5 addresses 'Response measures'. It requires, *inter alia,* that the State ensure that appropriate response measures to an incident involving a hazardous activity, which results or is likely to result in transboundary damage are taken. The commentary elaborates that "[s]uch response measures should include not only clean-up and restoration measures within the jurisdiction of the State of origin but also extend to contain the geographical range of the damage to prevent it from becoming transboundary damage, if it had already not become one."[226]

Draft principle 6 is titled 'International and domestic remedies' and it addresses access to justice and access to information. Paragraph 5 provides that "States should guarantee appropriate access to information relevant for the pursuance of remedies, including claims for compensation." The commentary elaborates that elements of information include: "the precise nature of risk, the standards of safety required, financial base of the activity, provisions concerning insurance or financial guarantees the operator is required to maintain, applicable laws and regulations and institutions designated to deal with complaints including complaints about non-compliance with the required safety standards and redress of grievances."[227]

Draft principle 7 on the 'Development of specific international regimes' urges the development of specific international agreements in respect of particular categories of hazardous activities where such agreements would be effective. It also states that such agreements "should, as appropriate, include arrangements for industry and/or State funds to provide supplementary compensation in the event that the financial resources of the operator, including financial security measures, are insufficient to cover the damage suffered as a result of an incident" (para. 2).

225 *Supra* note 212 at paragraph 13, p. 156.
226 *Supra* note 212 at paragraph 1, p. 167.
227 *Supra* note 212 at paragraph 13, p. 179.

13. The Environmental Liability Directive of the European Union

In February 2004, the Council of the European Union and the European Parliament approved a directive on environmental liability.[228] The Environmental Liability Directive entered into force on 30 April 2004. Member States had three years to transpose the Directive into domestic law. Transposition by the last Member State was effected in July 2010.[229]

The Environmental Liability Directive (ELD) introduces a system of public liability for environmental damage without prejudice to domestic civil liability regimes for environmental damage. "Environmental damage" is defined in the ELD as (a) damage that has significant adverse effects on reaching or maintaining the conservation status of protected species and natural habitats; (b) water damage, i.e. damage that significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential of waters; and (c) land damage, i.e. land contamination that creates a significant risk of human health being adversely affected.[230] The Directive also defines "damage" as a measurable adverse change in a natural resource or measurable impairment of a natural resource service, which may occur directly or indirectly.[231]

According to the ELD, operators shall bear the cost of prevention and clean-up or remediation measures.[232] The Member State concerned may cover those costs but only as a means of last resort. The limitation period for the recovery of costs is five years from the date on which those measures have been completed or the liable operator, or third party, has been identified, whichever is the later. The standard of liability is strict for defined hazardous activities and fault-based for other activities.

Member States are not restricted from maintaining or adopting more stringent provisions.[233] The ELD requires member States to report to the Commission

228 *Supra* note 42.
229 European Commission, "Environmental Liability", online: http://ec.europa.eu/environment/legal/liability/index.htm.
230 *Supra* note 42 at paragraph 1, Article 2.
231 *Supra* note 42 at paragraph 2, Article 2.
232 *Supra* note 42 at paragraph 1, Article 8.
233 *Supra* note 42 at paragraph 1, Article 16.

on the experience gained in the application of the Directive by 30 April 2013 at the latest. Such reports shall include "a review of the application of the directive to environmental damage caused by genetically modified organisms (GMOs), particularly in the light of experience gained within relevant international fora and Conventions, such as the Convention on Biological Diversity and the Cartagena Protocol on Biosafety, as well as the results of any incidents of environmental damage caused by GMOs".[234]

The ELD also required the European Commission, before 30 April 2010, to "present a report on the effectiveness of the Directive in terms of actual remediation of environmental damage, on the availability at reasonable costs and on conditions of insurance and other types of financial security for the activities covered by Annex III."[235] To this end, a first exploratory study on "Financial Security in [the] Environmental Liability Directive" was carried out in 2008.

The exploratory study included, amongst other things, an overview of some of the existing insurance products available in Europe to cover the new environmental liabilities introduced by the Directive. Of the 26 insurance companies/products that are described in the study, at least ten exclude damage from or activities related to GMOs from the scope of their coverage.[236] The study states that insurers usually exclude some of the activities in Annex III of the Directive from their policies, particularly those activities for which less information is available on the frequency and severity of losses. The study noted that GMOs and waste management were often quoted as being excluded from product coverage.[237]

Following the 2008 exploratory study, a second more comprehensive study was published in November 2009.[238] The study was part of the preparatory work for the Commission's report that was due in 2010 on the effectiveness of the ELD. The study explored further certain issues on the implementation efficiency of the Directive in EU Member States by identifying and collecting available information on ELD case studies and running questionnaires targeting the authorities in the Member States and operators potentially affected by the ELD. The study also examined the availability of products that respond to the need for financial security as required under the Directive.

The study confirmed the findings of the previous exploratory study regarding the exclusion, either implicit or explicit, of damage from or activities related to GMOs from the scope of coverage by insurance companies. However, the study stated that "the lack of insurance coverage was partially offset by the limited number of companies that carry out activities involving GMOs in the European Union and the large size of a substantial proportion of these companies".[239] According to the study, these companies should therefore be able to obtain other evidence of financial security such as letters of credit and trust funds.

The study also pointed out that many Member States and operators are unaware of the alternatives to insurance to cover ELD-related liabilities. It states that many of these instruments already exist and would not need to be developed specifically to cover these risks.[240] The study further provides an overview of the different instruments.

The instruments that were frequently identified by stakeholder groups of the study as pertinent alternatives to insurance included: (i) financial test and corporate guarantee (which enables a company with a large parent or affiliated company to provide evidence of the financial strength of its parent or affiliated company on its behalf); (ii) trust funds (fund administered by a trustee on behalf of a beneficiary, which, in case of environmental liabilities, is a governmental entity); (iii) letters of credit/bank guarantees (an agreement by the financial institution that issues it to pay money from it to the governmental entity when requested to do so by the entity); (iv) surety bonds (instruments under which banks and other financial institutions, including insurance companies, agree to pay a certain amount in case a regulated company or other person, does not or is not in the position to pay itself); (v) escrow agreements (where deposits are made with a third party,

234 *Supra* note 42 at paragraph 3(b), Article 18.
235 *Supra* note 42 at paragraph 2, Article 14.
236 Bio Intelligence Service, "Financial Security in Environmental Liability Directive: Final Report" (August 2008), online: http://ec.europa.eu/environment/legal/liability/pdf/eld_report.pdf at p. 42-43 & 127-130.
237 *Ibid*. at p. 48.
238 "Study on the Implementation Effectiveness of the Environmental Liability Directive (ELD) and Related Financial Security Issues" (November of 2009), online: http://ec.europa.eu/environment/enveco/others/pdf/implementation_efficiency.pdf.
239 *Ibid*. at p. 59.
240 *Ibid*. at p. 68.

such as a bank, that can only be released under conditions pre-determined in the agreement); and (vi) governmental schemes (legislation requiring financial security for environmental liabilities may, in some cases, establish or enable a scheme by which regulated companies may meet the requirements if commercial financial security mechanisms are generally unavailable—for example, a fund could be established into which taxes levied on the regulated companies themselves or other persons are paid).[241]

Following the comprehensive study, the European Commission adopted, on 12 October 2010, the report on the effectiveness of the EU Environmental Liability Directive in terms of remediation of environmental damage and on the availability of financial security to cover environmental liability.[242] The report suggests that all mandatory financial security schemes should employ a form of gradual approach, provide for the exclusion of low-risk activities, and include ceilings for financial guarantees.

241 *Ibid*. at p. 69-71.

242 European Commission, "Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions under Article 14(2) of Directive 2004/35/CE on the environmental liability with regard to the prevention and remedying of environmental damage" (Brussels, 12 November 2010) doc. COM(2010) 581 final, online: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0581:EN:NOT.

Appendix I: Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety

The Parties to this Supplementary Protocol,

Being Parties to the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, hereinafter referred to as "the Protocol",

Taking into account Principle 13 of the Rio Declaration on Environment and Development,

Reaffirming the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development,

Recognizing the need to provide for appropriate response measures where there is damage or sufficient likelihood of damage, consistent with the Protocol,

Recalling Article 27 of the Protocol,

Have agreed as follows:

ARTICLE 1
Objective

The objective of this Supplementary Protocol is to contribute to the conservation and sustainable use of biological diversity, taking also into account risks to human health, by providing international rules and procedures in the field of liability and redress relating to living modified organisms.

ARTICLE 2
Use of terms

1. The terms used in Article 2 of the Convention on Biological Diversity, hereinafter referred to as "the Convention", and Article 3 of the Protocol shall apply to this Supplementary Protocol.

2. In addition, for the purposes of this Supplementary Protocol:

   (a) "Conference of the Parties serving as the meeting of the Parties to the Protocol" means the Conference of the Parties to the Convention serving as the meeting of the Parties to the Protocol;

(b) "Damage" means an adverse effect on the conservation and sustainable use of biological diversity, taking also into account risks to human health, that:

(i) Is measurable or otherwise observable taking into account, wherever available, scientifically-established baselines recognized by a competent authority that takes into account any other human induced variation and natural variation; and

(ii) Is significant as set out in paragraph 3 below;

(c) "Operator" means any person in direct or indirect control of the living modified organism which could, as appropriate and as determined by domestic law, include, *inter alia*, the permit holder, person who placed the living modified organism on the market, developer, producer, notifier, exporter, importer, carrier or supplier;

(d) "Response measures" means reasonable actions to:

(i) Prevent, minimize, contain, mitigate, or otherwise avoid damage, as appropriate;

(ii) Restore biological diversity through actions to be undertaken in the following order of preference:

a. Restoration of biological diversity to the condition that existed before the damage occurred, or its nearest equivalent; and where the competent authority determines this is not possible;

b. Restoration by, *inter alia*, replacing the loss of biological diversity with other components of biological diversity for the same, or for another type of use either at the same or, as appropriate, at an alternative location.

3. A "significant" adverse effect is to be determined on the basis of factors, such as:

(a) The long-term or permanent change, to be understood as change that will not be redressed through natural recovery within a reasonable period of time;

(b) The extent of the qualitative or quantitative changes that adversely affect the components of biological diversity;

(c) The reduction of the ability of components of biological diversity to provide goods and services;

(d) The extent of any adverse effects on human health in the context of the Protocol.

ARTICLE 3
Scope

1. This Supplementary Protocol applies to damage resulting from living modified organisms which find their origin in a transboundary movement. The living modified organisms referred to are those:

(a) Intended for direct use as food or feed, or for processing;
(b) Destined for contained use;
(c) Intended for intentional introduction into the environment.

2. With respect to intentional transboundary movements, this Supplementary Protocol applies to damage resulting from any authorized use of the living modified organisms referred to in paragraph 1 above.

3. This Supplementary Protocol also applies to damage resulting from unintentional transboundary movements as referred to in Article 17 of the Protocol as well as damage resulting from illegal transboundary movements as referred to in Article 25 of the Protocol.

4. This Supplementary Protocol applies to damage resulting from a transboundary movement of living modified organisms that started after the entry into force of this Supplementary Protocol for the Party into whose jurisdiction the transboundary movement was made.

5. This Supplementary Protocol applies to damage that occurred in areas within the limits of the national jurisdiction of Parties.

6. Parties may use criteria set out in their domestic law to address damage that occurs within the limits of their national jurisdiction.

7. Domestic law implementing this Supplementary Protocol shall also apply to damage resulting from transboundary movements of living modified organisms from non-Parties.

ARTICLE 4
Causation

A causal link shall be established between the damage and the living modified organism in question in accordance with domestic law.

ARTICLE 5
Response measures

1. Parties shall require the appropriate operator or operators, in the event of damage, subject to any requirements of the competent authority, to:

(a) Immediately inform the competent authority;

(b) Evaluate the damage; and

(c) Take appropriate response measures.

2. The competent authority shall:

(a) Identify the operator which has caused the damage;

(b) Evaluate the damage; and

(c) Determine which response measures should be taken by the operator.

3. Where relevant information, including available scientific information or information available in the Biosafety Clearing-House, indicates that there is a sufficient likelihood that damage will result if timely

response measures are not taken, the operator shall be required to take appropriate response measures so as to avoid such damage.

4. The competent authority may implement appropriate response measures, including, in particular, when the operator has failed to do so.

5. The competent authority has the right to recover from the operator the costs and expenses of, and incidental to, the evaluation of the damage and the implementation of any such appropriate response measures. Parties may provide, in their domestic law, for other situations in which the operator may not be required to bear the costs and expenses.

6. Decisions of the competent authority requiring the operator to take response measures should be reasoned. Such decisions should be notified to the operator. Domestic law shall provide for remedies, including the opportunity for administrative or judicial review of such decisions. The competent authority shall, in accordance with domestic law, also inform the operator of the available remedies. Recourse to such remedies shall not impede the competent authority from taking response measures in appropriate circumstances, unless otherwise provided by domestic law.

7. In implementing this Article and with a view to defining the specific response measures to be required or taken by the competent authority, Parties may, as appropriate, assess whether response measures are already addressed by their domestic law on civil liability.

8. Response measures shall be implemented in accordance with domestic law.

ARTICLE 6
Exemptions

1. Parties may provide, in their domestic law, for the following exemptions:

(a) Act of God or *force majeure*; and
(b) Act of war or civil unrest.

2. Parties may provide, in their domestic law, for any other exemptions or mitigations as they may deem fit.

ARTICLE 7
Time limits

Parties may provide, in their domestic law, for:

(a) Relative and/or absolute time limits including for actions related to response measures; and
(b) The commencement of the period to which a time limit applies.

ARTICLE 8
Financial limits

Parties may provide, in their domestic law, for financial limits for the recovery of costs and expenses related to response measures.

ARTICLE 9
Right of recourse

This Supplementary Protocol shall not limit or restrict any right of recourse or indemnity that an operator may have against any other person.

ARTICLE 10
Financial security

1. Parties retain the right to provide, in their domestic law, for financial security.

2. Parties shall exercise the right referred to in paragraph 1 above in a manner consistent with their rights and obligations under international law, taking into account the final three preambular paragraphs of the Protocol.

3. The first meeting of the Conference of the Parties serving as the meeting of the Parties to the Protocol after the entry into force of the Supplementary Protocol shall request the Secretariat to undertake a comprehensive study which shall address, *inter alia*:

(a) The modalities of financial security mechanisms;
(b) An assessment of the environmental, economic and social impacts of such mechanisms, in particular on developing countries; and
(c) An identification of the appropriate entities to provide financial security.

ARTICLE 11
Responsibility of States for internationally wrongful acts

This Supplementary Protocol shall not affect the rights and obligations of States under the rules of general international law with respect to the responsibility of States for internationally wrongful acts.

ARTICLE 12
Implementation and relation to civil liability

1. Parties shall provide, in their domestic law, for rules and procedures that address damage. To implement this obligation, Parties shall provide for response measures in accordance with this Supplementary Protocol and may, as appropriate:

(a) Apply their existing domestic law, including, where applicable, general rules and procedures on civil liability;
(b) Apply or develop civil liability rules and procedures specifically for this purpose; or
(c) Apply or develop a combination of both.

2. Parties shall, with the aim of providing adequate rules and procedures in their domestic law on civil liability for material or personal damage associated with the damage as defined in Article 2, paragraph 2 (b):

(a) Continue to apply their existing general law on civil liability;
(b) Develop and apply or continue to apply civil liability law specifically for that purpose; or
(c) Develop and apply or continue to apply a combination of both.

3. When developing civil liability law as referred to in subparagraphs (b) or (c) of paragraphs 1 or 2 above, Parties shall, as appropriate, address, *inter alia*, the following elements:

(a) Damage;
(b) Standard of liability including strict or fault-based liability;
(c) Channelling of liability, where appropriate;
(d) Right to bring claims.

ARTICLE 13
Assessment and review

The Conference of the Parties serving as the meeting of the Parties to the Protocol shall undertake a review of the effectiveness of this Supplementary Protocol five years after its entry into force and every five years thereafter, provided information requiring such a review has been made available by Parties. The review shall be undertaken in the context of the assessment and review of the Protocol as specified in Article 35 of the Protocol, unless otherwise decided by the Parties to this Supplementary Protocol. The first review shall include a review of the effectiveness of Articles 10 and 12.

ARTICLE 14
Conference of the Parties serving as the meeting of the Parties to the Protocol

1. Subject to paragraph 2 of Article 32 of the Convention, the Conference of the Parties serving as the meeting of the Parties to the Protocol shall serve as the meeting of the Parties to this Supplementary Protocol.

2. The Conference of the Parties serving as the meeting of the Parties to the Protocol shall keep under regular review the implementation of this Supplementary Protocol and shall make, within its mandate, the decisions necessary to promote its effective implementation. It shall perform the functions assigned to it by this Supplementary Protocol and, *mutatis mutandis*, the functions assigned to it by paragraphs 4 (a) and (f) of Article 29 of the Protocol.

ARTICLE 15
Secretariat

The Secretariat established by Article 24 of the Convention shall serve as the secretariat to this Supplementary Protocol.

ARTICLE 16
Relationship with the Convention and the Protocol

1. This Supplementary Protocol shall supplement the Protocol and shall neither modify nor amend the Protocol.

2. This Supplementary Protocol shall not affect the rights and obligations of the Parties to this Supplementary Protocol under the Convention and the Protocol.

3. Except as otherwise provided in this Supplementary Protocol, the provisions of the Convention and the Protocol shall apply, *mutatis mutandis*, to this Supplementary Protocol.

4. Without prejudice to paragraph 3 above, this Supplementary Protocol shall not affect the rights and obligations of a Party under international law.

ARTICLE 17
Signature

This Supplementary Protocol shall be open for signature by Parties to the Protocol at the United Nations Headquarters in New York from 7 March 2011 to 6 March 2012.

ARTICLE 18
Entry into force

1. This Supplementary Protocol shall enter into force on the ninetieth day after the date of deposit of the fortieth instrument of ratification, acceptance, approval or accession by States or regional economic integration organizations that are Parties to the Protocol.

2. This Supplementary Protocol shall enter into force for a State or regional economic integration organization that ratifies, accepts or approves it or accedes thereto after the deposit of the fortieth instrument as referred to in paragraph 1 above, on the ninetieth day after the date on which that State or regional economic integration organization deposits its instrument of ratification, acceptance, approval, or accession, or on the date on which the Protocol enters into force for that State or regional economic integration organization, whichever shall be the later.

3. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.

ARTICLE 19
Reservations

No reservations may be made to this Supplementary Protocol.

ARTICLE 20
Withdrawal

1. At any time after two years from the date on which this Supplementary Protocol has entered into force for a Party, that Party may withdraw from this Supplementary Protocol by giving written notification to the Depositary.

2. Any such withdrawal shall take place upon expiry of one year after the date of its receipt by the Depositary, or on such later date as may be specified in the notification of the withdrawal.

3. Any Party which withdraws from the Protocol in accordance with Article 39 of the Protocol shall be considered as also having withdrawn from this Supplementary Protocol.

ARTICLE 21
Authentic texts

The original of this Supplementary Protocol, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Supplementary Protocol.

DONE at Nagoya on this fifteenth day of October two thousand and ten.

Appendix II: Exercises to further understanding of the Nagoya – Kuala Lumpur Supplementary Protocol

These exercises were used during a series of workshops convened by the Secretariat of the Convention on Biological Diversity in 2011 and 2012. They were designed to encourage discussion and analysis of some of the aspects of the Supplementary Protocol.

Case No. 1

Cocoaland is a major cocoa producing country in the world. About 70 percent of its population depends for their living on the cultivation and selling of cocoa. Cocoaland earns, on average, $2 billion, one-third of its annual gross domestic product, from the export of cocoa every year. Almost 80 percent of the annual export of cocoa ends in Checolatia, a major cocoa importing country that controls a large share of the chocolate production and marketing of the world.

Five years ago, a private agri-business company in Checolatia developed a genetically engineered plant that produces the flavour and other properties that are essential to manufacturing chocolate. The GE plant was approved by Checolatia two years ago for cultivation and commercialization. Last year, Checolatia's cocoa import from Cocoaland dropped by 90 percent. Cocoa farmers in Cocoaland suffered a huge economic loss, as a result. Cocoa farmers were told that there were no buyers of their cocoa any more.

Cocoa plantations were abandoned. Farmers left their farm lands. They were forced to migrate to nearby towns. Some families even needed food aid.

Discuss whether Cocoaland and its farmers have suffered any damage as defined in the Supplementary Protocol. Do you see any liability case here? Why?

Case No. 2

The Republic of Apples is known to be one of the countries of origin for different varieties of apples. Wild apple trees are everywhere in the mountain areas of the Republic. Apple export is a major source of revenue.

The Republic of Apples suffers from frequent drought that often results in the decline of apple harvest and, therefore, loss of much needed export revenue. In order to overcome the situation and prevent drought-related consequences, the government of the Republic decided to introduce a drought-resistant genetically modified apple variety. The genetically modified drought-resistant variety was developed by the Agricultural Research Institute of the country.

The genetically modified apple variety was distributed to farmers. Since then apple yields in the country has remained steady even during severe drought seasons. A few years later since the cultivation of the genetically modified drought-resistant variety started, a well-known environmental

non-governmental organization (NGO), known as Apple Peace, reported that the new variety had risks to human health. The NGO claimed that according to information it received from a local hospital about a dozen people fell ill after eating the new apples. No laboratory test results were presented in the report. The hospital confirmed that there was no laboratory data supporting the claim except the allegations by the patients themselves.

Immediately after the publication of the report, several countries banned all imports of apples coming from the Republic of Apples. Such trade disruption began to cost the country enormously. The economic damage has been well over 30 percent of the GDP, the first year only, and it is expected to be so as long as the import ban by the apple importing countries remains in place.

Discuss whether this case falls under the scope of the Supplementary Protocol. Do you think the Republic of Apples has suffered any damage as defined in the Supplementary Protocol? Do you see any liability case here? Why?

Case No. 3

The Democratic Republic of Butterflies is rich in different species of butterflies that are not found elsewhere in the world. Thousands of tourists flock to the country every year to watch the butterflies. Butterfly tourism is a major source of revenue for the Republic. The country is also a well-known destination for Lepidopterists, scientists who study butterflies.

The number and variety of butterflies has been declining over the past ten years. Studies indicated that the decline coincided with the introduction of a pest-resistant genetically modified rose flower in large parts of the neighbouring country, Flower-Coast. Flower Coast is famous for vastly growing a variety of flowers.

The genetically modified rose flowers were introduced into Flower Coast by a local company known as Ultimate Rose. The company imported the seedlings from Rose-tech, a transnational florist company based in the country known as Yugostan.

After years of studies and trials, it was confirmed that the genetically modified roses grown in Flower Coast have cross-bred, through natural gene flow, with the rose flowers grown in the neighbouring country, the Republic of Butterflies. The pest resistant trait of the genetically modified roses introduced and grown by Flower Coast has passed to the flowers in the Republic of Butterflies. It was found out that the trait has targeted the larvae of the butterflies in the Republic of Butterflies and as a result the population of butterflies has declined dramatically and certain endemic species were also lost forever.

Discuss whether the Democratic Republic of Butterflies has suffered any damage as defined in the Supplementary Protocol. Do you see any liability case here? Why? What response measures do you envisage? Who do you think is the operator that the competent authority in the Republic of Butterflies may require to take the response measures?

Case No. 4

Mr. Bean is a coffee farmer in Bunnakia, a country known for its organic coffee export at the international market. Mr. Bean was looking for an improved variety of coffee seeds that could withstand a perennial disease that has been attacking his coffee plants. He finally came across information that a genetically modified coffee variety that is resistant to the disease was available in Nicotine Republic, a country known for its specialization in developing different varieties of coffee seeds.

Mr. Bean obtained an import permit from the Ministry of Trade of Bunnakia. He bought the coffee seeds online through 'Amazon.com' and the seeds were delivered to him immediately. There is a label on the seed boxes indicating that the seeds were developed by Coffee-tech, a biotech company registered in the Nicotine Republic.

Mr. Bean's coffee plantation is located in the coffee growing region of Bunnakia where almost all coffee harvest comes from coffee plants growing in the wild. Mr. Bean started cultivating the imported seeds on his plantation. After few years, neighbouring farmers started complaining that their coffee plants are no

more producing the normal size of beans they used to harvest. The coffee beans that they are currently harvesting are smaller in size. Scientific researchers eventually found that the wild varieties of the coffee plants in the vicinity of Mr. Bean's plantation contained transgenes. Further studies were conducted to determine the possible source of the transgenes and the causes of shrinking of the size of the coffee beans.

The studies confirmed that there has been gene flow from the genetically modified varieties grown by Mr. Bean to the natural varieties and also attributed the reduction in size of beans to the change in the genetic makeup of the indigenous coffee plants growing in the area. The incident was so extensive that it affected large areas and all the traditional coffee farming communities.

As soon as the studies were released and reported on the media, the demand for coffee beans harvested from the wild species of Bunnakia started to decline. Traditional farmers in the community whose income and livelihood used to depend on the sale of the indigenous coffee harvested from the wild had to look for alternative sources of income. They began to cut trees and clear the forest which once supported their wild varieties of coffee in order to make charcoal and firewood for sale to the nearby towns. Land and forest resources are public property in Bunnakia.

Discuss whether any damage has occurred as defined in the Supplementary Protocol. Do you see any liability case? Who do you think is the operator, if there is any liability case? Why? If you were the ministry of environment of Bunnakia, what steps would you take?

Case No. 5

Gellyland is a country with one of the largest lakes in the world, Lake Kirar. A 1980 study shows that Lake Kirar has abundant fishery resources. The study confirmed also that the lake is home for one rare fish species known as Jack Jelly.

In 1992, the Ministry of Environment and Fisheries of Gellyland issued, for the first time, fishing licences for five fishing companies with exclusive fishing rights on Lake Kirar for the next 20 years. Subsistence fishing by traditional fishermen was, however, still allowed.

In 2010, the Ministry started taking stock of the fishery in Lake Kirar as part of its preparation to issue or reissue the next licences. The experts of the Ministry learned that the fishery stock in the lake has dropped significantly. In fact, they found out that the population of Jack Jelly, the rare species, has collapsed reaching a critically endangered status and may soon become extinct

The Ministry issued moratorium on all fishing activities and launched a massive study into the causes of the significant decline of the fishery in Lake Kirar and in particular the extinction of Jack Jelly. The study was completed in 2011 and the report came out with disturbing findings.

The study revealed that the lake was contaminated with infectious bacteria that disrupted any breeding in the fish stocks. The bacteria contain a gene modified through genetic engineering. Every fish sample taken from the lake was tested positive to the bacteria containing the modified gene. All the fishing companies and traditional fishermen were investigated how the modified bacteria had been introduced into the lake. All of them confirmed that they have no activity involving any genetically modified organism. The experts expanded their investigation into the nearby settlements and operations. They identified a laboratory, known as Greylab, which has been conducting research on genetically modified microorganisms since 1985.

Greylab has no permit for its laboratory research activities involving GM microorganisms despite the requirement under the 1996 GMO Act of Gellyland. The laboratory was inspected and DNA traces of the same strain of fish-infecting bacteria and the modified gene were found. The manager of Greylab has also admitted that the laboratory had been dumping its waste, without any safety management aiming at destroying the GM microorganisms prior to disposal, into Lake Kirar until 1995.

The Environmental Protection Act of Gellyland was enacted in 1991. The Act prohibits, among other things, the discharge of any effluent into lakes and other water bodies of the country. The Act also has

a provision on liability. The provision states that any person who causes damage to the environment shall be liable for the payment of compensation up to a maximum of $5 million.

The Ministry of Environment and Fisheries initiated, in January 2012, an administrative action against Greylab. Accordingly, it issued an order to Greylab to pay, as penalties and compensation,: (i) $1 million for conducting GMO research without having the necessary permit in accordance with the 1996 GMO Act; (ii) $2 million for discharging waste into Lake Kirar in violation of the 1991 Environmental Protection Act; and (iii) $ 3 million for causing damage on the fisheries of Lake Kirar. Greylab has appealed to the High Court of Gellyland for review of the decision by the Ministry.

The High Court sustained the Ministry's decision. Gellyland is a Party to the Nagoya - Kuala Lumpur Supplementary Protocol. At the time of ratifying the Supplementary Protocol (assuming it entered into force in October 2010) the Government has reached the conclusion that its existing laws – the 1991 Environmental Protection Act and the 1996 GMO Act – fully address damage as defined in the Supplementary Protocol.

What possible legal and factual issues could arise in relation to this case? Discuss.

The issue of whether the Supplementary Protocol applies aside, do you think the payment of the penalties and/or the compensation addresses the damage that has occurred on Lake Kirar's fisheries in a way that meets the requirements of the Supplementary Protocol?