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# Biological diversity

## Introduction

The role of law in the conservation of biological diversity (biodiversity), which includes flora and fauna and the variety among living organisms and the ecological communities they inhabit, dates back to the creation of the Yosemite National Park in California as the world's first protected area.[1] Since then, legal rules have been adopted at the local, national, bilateral, regional and, relatively recently, the global levels to halt what is now considered by some members of the scientific community to be a crisis that leaves biodiversity more threatened than at any time in the past sixty-five million years.[2]

Biodiversity can be considered in relation to three hierarchical categories which describe different aspects of living systems measured in different ways: genetic diversity (the variation of genes within a species); species diversity (the variety of species within a region); and ecosystem diversity (the variety of ecosystems within a region). Other expressions of biodiversity include the relative abundance of species, the age structure of populations, the pattern of communities in a region, and changes in community composition and structure over time.

Threats to biodiversity come from several sources. Tropical deforestation is readily cited as the main issue, but serious threats are also posed by the destruction of temperate forests, wetland and coral reefs. Human activity contributes to the destruction of nature and the loss of biodiversity through direct activities (hunting, collection and persecution) and indirect activities (habitat destruction and modification from industrial, agricultural and other activities). The destruction and loss of habitats and species bring with them known and unknown ecological consequences: what is ultimately threatened is the ability of ecosystems to purify water, regenerate soil, protect watersheds, regulate temperature, recycle nutrients and waste, and maintain the atmosphere. The costs are not purely ecological, and extend to economic, medical and agricultural losses, and have profound moral and aesthetic implications. The reasons for conserving nature and biodiversity are essentially threefold. First, biodiversity

[1] World Resources Institute, *World Resources (1992–3)*, 127 at 136.
[2] *Ibid.*, 127.

provides an actual and potential source of biological resources (including food, pharmaceutical, and other material values which support fisheries, soil conditions, and parks). Secondly, biodiversity contributes to the maintenance of the biosphere in a condition which supports human and other life. Thirdly, biodiversity is worth maintaining for non-scientific reasons of ethical and aesthetic value.

The rate of species and habitat loss has not been precisely quantified. It has been estimated that continued loss at the current rate would destroy up to 15 per cent of the earth's species over the next twenty-five years, with twenty to seventy-five species per day being condemned by 2040.[3] The loss of habitat to farm land, rangelands and human and industrial settlement since pre-agricultural times appears to be equally dramatic. The United States has lost all of its grasslands and savannah, and New Zealand has lost more than 90 per cent.[4] In many developing countries, the picture is not markedly better: Madagascar has lost nearly 80 per cent of grasslands and savannah, and Botswana has lost more than 50 per cent. It has been estimated that most habitats have been reduced to less than half their pre-agricultural extent, and even the past two or three decades have led to serious loss: for example, 56 per cent of Europe's forest has already been lost.[5] Habitat loss is not the only threat to biodiversity. Other threats include: over-exploitation of plant and animal species; water, soil and air pollution; and industrial agriculture and forestry. Ozone depletion and climate change are expected to bring additional threats.

*World Resources (1992–3)* identified seven types of habitat which are particularly rich in species and highly threatened: tropical forests, temperate forests, coral reefs, Mediterranean climate areas, islands, freshwater lakes, and areas of high crop diversity. It also identified the root causes of biodiversity loss in these and other habitats as: (1) population growth and increasing resource consumption; (2) ignorance about species and ecosystems; (3) poorly conceived policies; (4) the effects of global trading systems; (5) inequity of resource distribution; and (6) failure to account fully for the value of biodiversity.[6] Legal efforts to address loss of biodiversity will therefore have to focus not only on the species and habitats which might be considered as requiring priority action, but also on these root causes if they are to have any long-term effects. Underlying these root causes are defective rules of national and international law, including modern land laws which are 'generally incompatible with the few remaining community property systems'; environmentally destructive subsidies; an international

[3] For an account of species loss, see World Conservation Monitoring Centre, *Global Biodiversity: Earth's Living Resources in the 21st Century* (2000), 91–5 and 117–25.

[4] World Resources Institute, *World Resources (1990–1)*, Table 20.4, 306–7.

[5] World Conservation Monitoring Centre, 'European Forests and Protected Areas: Gap Analysis 2000', www.unep-wcmc.org/forest/eu_gap/index.htm.

[6] World Resources Institute, *World Resources (1992–3)*, 134–5.

trading system which creates pressures to build national economies based on comparative advantage; and inadequate property rights which fail to provide incentives for conservation.[7] The international legal order does not lend itself to an approach which allows the totality of the earth's resources to be managed and used in a manner which is sustainable over the long term.[8]

## *International law*

S. Hayden, *The International Protection of Wildlife* (1942); C. de Klemm, 'Conservation of Species: The Need for a New Approach', 9 *Environmental Policy and Law* 117 (1982); S. Lyster, *International Wildlife Law* (1985); M. Bowman, 'The Protection of Animals under International Law', 4 *Connecticut Journal of International Law* 487 (1989); C. de Klemm, *Wild Plant Conservation and the Law* (1990); S. Bilderbeek (ed.), *Biodiversity and International Law: The Effectiveness of International Environmental Law* (1992); J. Doremus, 'Patching the Ark: Improving Legal Protection of Biological Diversity', 18 *Ecology Law Quarterly* 265 (1991); M. Maffei, *La Protezione Internazionale delle Specie Animali Minacciate* (1992); F. Burhenne-Guilmin and S. Casey-Lefkowitz, 'The New Law of Biodiversity', 3 *Yearbook of International Environmental Law* 43 (1992); C. de Klemm and C. Shine, *Biological Diversity Conservation and the Law* (1993); C. Joyner, 'Biodiversity in the Marine Environment: Resource Implications for the Law of the Sea', 28 *Vandefloilt Journal of Transnational Law* 635 (1995); M. Bowman and C. Redgwell (eds.), *International Law and the Conservation of Biological Diversity* (1996); T. Swanson, *Global Action for Biodiversity* (1997); P. Van Heijnsbergen, *International Legal Protection of Wild Fauna and Flora* (1997); L. Juda, 'Considerations in Developing a Functional Approach to the Governance of Large Marine Ecosystems', 30 *Ocean Development and International Law* 89 (1999); M. Austen and T. Richards (eds.), *International Animal Welfare Law* (2000).

International law for the conservation of biodiversity is relatively well developed.[9] There are now in place a large number of bilateral and regional treaties, incorporating new approaches recently reflected in the EC's 1992 Habitats Directive, the 1992 Biodiversity Convention and the 1995 Straddling Stocks Agreement. International biodiversity conservation policy has emerged from a variety of sources. The 1972 Stockholm Declaration called for flora and fauna to be safeguarded for the benefit of present and future generations through careful planning or management; for the maintenance of the earth's capacity to produce vital renewable resources; and for states to prevent pollution liable to harm living resources and marine life.[10] Principle 4 declared:

[7] *Ibid.* [8] See chapter 1, pp. 11–15 above.
[9] See chapter 2, pp. 26–30 above. [10] Principles 2, 3 and 7.

> Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, must therefore receive importance in planning for economic development.

The 1982 World Charter for Nature affirmed: that the genetic viability on earth shall not be compromised; that population levels of all life forms 'must be at least sufficient for their survival, and to this end necessary habitats shall be safeguarded'; and that special protection shall be given to unique areas, to representative samples of all different types of ecosystem, and to the habitats of rare or endangered species.[11] Chapter 15 of Agenda 21 addresses the conservation of biological diversity,[12] and has been reaffirmed by the 2002 WSSD Plan of Implementation.[13] Other initiatives contributing to the development of international law include the IUCN World Conservation Strategy (1980)[14] and the Action Plan for Biosphere Reserves (1984).[15]

Classifying and arranging biodiversity conservation agreements into a coherent structure provides something of a challenge, since species and habitats have an interdependent existence. Moreover, efforts at classification might suggest the existence of an ordered and structured legal approach to the conservation of biodiversity. The reality is otherwise: the rules of international law have developed in a piecemeal and *ad hoc* way, and their limited success is reflected in the continued loss of biodiversity. The interdependence of species, habitats and ecosystems necessarily means that each of the instruments addressed in this chapter and the rest of the book will have consequences for any particular habitat or species. Measures to protect the atmosphere, the marine environment and freshwater resources may also benefit biodiversity, as will those adopted to address hazardous substances and waste.

International law for the conservation of biodiversity may usefully be arranged in three categories.

1. The first category includes treaties which are potentially applicable to all species and habitats on the planet: there are only two such treaties, the 1973 Convention on International Trade in Endangered Species (CITES) and the 1992 Biodiversity Convention.
2. The second category includes obligations which are applicable to all species and habitats within a particular region.
3. The third category includes treaties and other international agreements which are applicable at the regional or global level but which have as their objective the conservation of particular habitat or species types; this third category thus includes: international regulatory efforts which promote conservation of the following species or habitats: wetlands; forests; plants; soil

[11] Paras. 2 and 3. [12] See below. [13] See below.
[14] Chapter 2, pp. 47–8 above. [15] UNEP/GC.13/L.6.

and land; marine living resources (which include whales and cetaceans, tuna, seals and other fisheries); birds; polar bears; and migratory species. Included in this category are the results of international efforts to address the protection of cultural and natural heritage, which can include certain natural resources as well as those which are man-made.

### *Regulatory techniques*

Across these three categories, different regulatory techniques have been used to promote conservation. The maintenance of biological diversity, that is to say, viable populations of species, can be carried out on-site (*in situ*) or off-site (*ex situ*),[16] and on a habitat or ecosystem basis, or on a species basis; it is only in respect of the latter that *ex situ* efforts are applicable. Comprehensive inventories of the global conservation status of plant and animal species are set out in the IUCN Red Lists, which use a set of criteria to evaluate the extinction risk of thousands of species and sub-species.[17] The Lists are compiled by the IUCN's Species Survival Commission, which is a network of some 7,000 species experts and partner organisations around the world. International regulatory techniques which are applied to support these efforts include:

1. the establishment of protected areas;
2. prohibitions and/or regulations on the taking of particular species;
3. the establishment of seasons or other periods in which the taking of species is permitted;
4. regulated taking or exploitation subject to compliance with general standards limiting utilisation to that which is 'rational', or 'optimal' or 'maximal';
5. prohibitions and/or regulation of international trade in species;
6. the establishment of quotas for the taking of species;
7. management of habitats;
8. management of ecosystems;
9. prohibition on methods or means of taking; and
10. prohibition on the introduction of new or alien species.

Of these, the most widely and long-used is the establishment of protected areas,[18] together with *ex situ* conservation in zoos, botanic gardens, gene banks and scientific aquaria. Between 1950 and 1994 the total number and extent of

[16] World Conservation Monitoring Centre, *Global Biodiversity* (2000), 220–2.

[17] The 2000 IUCN Red List contains assessments of more than 18,000 species of plants and animals, 11,000 of which are threatened. The Red List is now too large to publish as a book as was done in the past. Instead, it is available in electronic format at www.redlist.org.

[18] The definition of a protected area adopted by IUCN is: 'An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.'

protected areas increased by a factor of more than five, and by 1997 there were 30,350 protected areas around the planet, extending over a total of more than 13 million square kilometres.[19] Of this total, nearly 6 million square kilometres were *totally protected areas* which are maintained in a natural state and closed to all extractive uses according to Categories Ia, Ib, II and III of the IUCN management categories.[20] The remainder, some 7 million square kilometres, are *partially protected areas* which fall within IUCN Categories IV, V and VI and may be managed for specific uses, such as recreation or tourism, and for which some extractive use is allowed.[21] These protected areas were usually established to preserve species, vistas or geological formations, and historical or recreational sites, and to protect watersheds or reserve timber supplies. Only recently have they begun to be established expressly to preserve biodiversity generally.

Traditional efforts at custodial management have generally not been successful and the average rate of species extinction has continued to increase. Reasons cited for the lack of success include the fact that the boundaries of protected areas often follow a political rather than ecological course; that many such areas are too small to be effective; and that conflicts frequently arise with local communities who see the establishment of such areas as a limitation on their right to economic and other development. Other factors limiting the effectiveness of protected areas include the effects of activities taking place outside the protected areas, ineffective management and insufficient funding. The reasons may vary from region to region. For certain protected areas which are World Heritage Sites, one report suggested that in North America, Europe and Oceania the

[19] 17,892 (59 per cent) protected areas are less than 1,000 hectares in size and they account for a total area of 28,713 km$^2$, which is only 0.2 per cent of the global protected areas network. World Conservation Monitoring Centre, 'State of the World's Protected Areas at the End of the Twentieth Century', paper presented at IUCN World Commission on Protected Areas Symposium on 'Protected Areas in the 21st Century: From Islands to Networks', Albany, Australia, 24–29 November 1997, section 2.1.

[20] *Ibid.*, Table 3. Category Ia comprises scientific reserves and strict nature reserves with outstanding representative ecosystems with limited public access and used only for scientific and educational purposes. Category Ib comprises wilderness areas of unmodified or slightly modified land and/or sea, retaining their natural character and influence, without permanent or significant habitation, which are protected and managed so as to preserve their natural condition. Category II comprises national parks and provincial parks of national or international significance used by visitors for recreation and study. Category III comprises natural monuments and landmarks containing unique formations, special animals or plants, or unusual habitats: IUCN, *Guidelines for Protected Areas Management Categories* (1994).

[21] *Ibid.* Category IV comprises managed nature reserves and wildlife sanctuaries which are protected for specific purposes. Category V includes protected landscapes and seascapes which may be entirely natural or might include cultural landscapes. Category VI comprises managed resource protected areas managed mainly for the sustainable use of natural ecosystems: IUCN, *Guidelines for Protected Areas Management Categories* (1994).

greatest threat is industrial development; in Asia it is inadequate management; in Africa it is poaching; and in South America it is fire and natural threats.[22] The relative failure of international efforts is spurring new approaches to conservation techniques. These include the use of 'buffer zones' and 'biosphere reserves', first designated in 1976 by the Man and the Biosphere Programme of UNESCO and of which there are now 411,[23] and 'bio-regional management' which seeks to integrate economic, ecological, cultural and managerial considerations at the regional level. Examples of the latter include the Great Barrier Reef Marine Park in Australia and the Adirondack regional park in New York state.

Although some progress has been made, the rules of international law have a considerable way to go before these changes might be considered to have been fully, or even significantly, integrated.

## General instruments of global application

The 1973 CITES and the 1992 Biodiversity Convention are the only two conventions which are potentially applicable to all species in any habitat in the world. The conference of the parties of both Conventions have become important international fora for addressing conservation issues, and developing new regulations and instruments, such as the 2000 Biosafety Protocol.

### *Convention on International Trade in Endangered Species*

L. H. Kosloff and M. C. Trexler, 'The Convention on International Trade in Endangered Species: No Carrot, But Where's the Stick?', 17 *Environmental Law Review* 10,222 (1987); D. S. Favre, *International Trade in Endangered Species* (1989); P. Sands and A. Bedecarré, 'Convention on International Trade in Endangered Species: The Role of Public Interest Non-Governmental Organisations in Ensuring the Effective Enforcement of the Ivory Trade Ban', 17 *Boston College Environmental Affairs Law Review* 799 (1990); K. D. Hill, 'The Convention on International Trade in Endangered Species: Fifteen Years Later', 13 *Loyola of Los Angeles International and Comparative Law Journal* 231 (1990); V. Karno, 'Protection of Endangered Gorillas and Chimpanzées in International Trade: Can CITES Help?' 14 *Hastings International and Comparative Law Review* 989 (1991); W. Wijnstekers, *The Evolution of CITES* (1995, 4th edn); P. Sand, 'Whither CITES? The Evolution of a Treaty Regime on the Borderland of Trade and Environment', 8 JEL 29 (1997);

[22] World Resources Institute, *World Resources (1992–3)*, Table 20.3, 302–3. Other factors cited as limiting the effectiveness of protected areas include tourism, pollution and the introduction of plant and animal species.

[23] UNESCO, 'World Network of Biosphere Reserves: 411 Reserves in 94 Countries', Man and Biosphere Secretariat, SC/ECO/September 2001.

D. M. Ong, 'CITES: Implications of Recent Developments in International and EC Environmental Law', 10 JEL 291 (1998); M. Bowman, 'Conflict or Compatibility? The Trade, Conservation and Animal Welfare Dimension of CITES', 1 JIWLP 9 (1998); J. Baker, 'A Substantive Theory of the Relative Efficiency of Environmental Treaty Compliance: The Case of CITES', 2 JIWLP 9 (1999); S. M. Dansky, 'The CITES "Objective" Listing Criteria: Are They "Objective" Enough to Protect the African Elephant?' 73 *Tulane Law Review* 961 (1999); M. Bowman, 'CITES: Trade Conservation and Animal Welfare', 2 JIWLP 9 (1999).

In 1973, twenty-one countries signed the Convention on International Trade in Endangered Species (CITES), ten years after IUCN first called for an international convention to regulate trade in threatened species.[24] Tens of thousands of species of plants and animals are subject to its regulations, which are designed to protect endangered species of flora and fauna from over-exploitation by regulating or prohibiting their international trade and reducing their economic value. The adoption of CITES was the culmination of a process which began in 1960 at the Seventh General Assembly of the IUCN, a 1963 IUCN General Assembly resolution calling for an international convention, and a first draft of a treaty in 1964. In 1972, the Stockholm Conference adopted Recommendation 99.3 which led to the convening of a plenipotentiary conference in Washington DC in February and March 1973 and the adoption of the Convention.[25]

## Institutions

A permanent Secretariat located in Lausanne, Switzerland, oversees the application of the CITES system, although the day-to-day operation is a matter for the national authorities of the parties.[26] In addition to its general regulatory duties, the Secretariat convenes regular and extraordinary meetings of the conference of the parties.[27] The conference of the parties meets at least every two years to consider and adopt amendments to Appendices I and II, to review the progress of restoration and conservation of listed species, and to make recommendations for improving the effectiveness of the Convention.[28] To date, the conference of the parties has met twelve times, most recently in Santiago in November 2002. The conference of the parties has established committees, subcommittees and working groups and in 2000 consolidated arrangements into a Standing Committee of the conference of the parties, an Animals Committee, a Plants Committee, and a Nomenclature Committee.[29] The conference of the

[24] Washington, 3 March 1973, in force 1 July 1975, 993 UNTS 243; CITES has 162 parties. Amending Protocols were adopted in Bonn on 22 June 1979 (in force 13 April 1987) and in Gaborone on 30 April 1983 (not yet in force). For a detailed guide to the Convention and its history, see W. Wijnstekers, *The Evolution of CITES* (1995, 4th edn).

[25] *Ibid.*, 1. [26] Art. XII. [27] Arts. XI(2) and XII(2)(a) to (i).

[28] Art. XI(3)(b) to (c) and (e). The Conference also approves the CITES Secretariat's budget and considers any reports presented by the Secretariat or any party. Art. XI(3)(a) and (d).

[29] Res. Conf. 11.1 (2000, Establishment of Committees).

parties may establish additional committees and working groups as needed: a Panel of Experts on the African Elephant was established in 1989,[30] and the Working Group on Transport of Live Specimens is now a permanent working group.[31]

At the discretion of the CITES Secretary General, the Secretariat may seek assistance from 'suitable inter-governmental or non-governmental international or national agencies and bodies technically qualified in protection, conservation and management of wild fauna and flora'.[32] The IUCN Environmental Law Programme has been asked by the conference of the parties to prepare legal opinions on matters arising under CITES, and non-governmental organisations participate as observers in its meetings, although they cannot vote.[33]

## Preamble and definitions

The preamble recognises that 'wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the earth which must be protected for this and the generations to come', and indicates the primary purpose of the Convention as international co-operation to protect wild fauna and flora against over-exploitation through international trade. CITES operates by listing endangered species on one of its three Appendices, an approach drawn from some of the earliest environmental treaties.[34] A 'species' is any 'species, sub-species, or geographically separate population thereof';[35] a specimen is defined as:

> (i) any animal or plant, whether alive or dead;
> (ii) in the case of an animal: for species included in Appendices I and II, any readily recognisable part or derivative thereof; and for species included in Appendix III, any readily recognisable part or derivative thereof specified in Appendix III in relation to the species; and
> (iii) in the case of a plant: for species included in Appendix I, any readily recognisable part or derivative thereof; and for species included in Appendices II and III, any readily recognisable part or derivative thereof specified in Appendices II and III in relation to the species.[36]

[30] Res. Conf. 7.9 (1989). See also Res. Conf. 10.9 (1997, Consideration of Proposals for the Transfer of African Elephant Populations from Appendix I to Appendix II).
[31] Res. Conf. 7.13 (1989, Shipment of Live Animals).
[32] Art. XII(1).
[33] Art. XI(7) (NGOs may be refused admittance, however, upon the objection of at least one-third of the parties present).
[34] Chapter 2, pp. 26–30 above.
[35] Art. I(a); see Res. Conf. 2.20 (1979, Use of the Subspecies as a Taxonomic Unit in the Appendices).
[36] Art. I(b); see Res. Conf. 2.18 (1979, Parts and Derivatives of Animal Species Listed on Appendix III and of Plant Species Listed on Appendix II or III); Res. Conf. 4.24 (1983, Parts and Derivatives of Appendix II or III Plants and Appendix III Animals); Res. Conf. 4.8 (1983, Treatment of Export of Parts and Derivatives Without Permit from a Party to Another Which Deems Them Readily Recognisable); Res. Conf. 5.9 (1985, Control of

## Appendices I, II and III and international trade

The level of protection afforded to the species depends upon which Appendix, if any, a species is listed on. Parties are free to introduce stricter domestic measures.[37] Appendix I includes 'all species threatened with extinction which are or may be affected by trade'.[38] Except in very limited circumstances, CITES prohibits all trade in Appendix I species;[39] any trade must not be 'detrimental to the survival of the species', must not be for 'primarily commercial purposes', and cannot be in relation to a species obtained in contravention of the laws of the export state.[40] Dependent upon these and other inquiries, CITES requires the exporting and importing parties to issue permits for proposed trade in Appendix I specimens.[41] Certificates are also required for re-export of specimens and for any specimen introduced from the sea.[42]

Appendix II lists 'all species which although not necessarily threatened with extinction may become so unless trade in specimens is subject to strict regulation in order to avoid utilisation incompatible with their survival'.[43] Commercial trade in Appendix II specimens is allowed if it is not 'detrimental to the survival of that species' and the specimen was not obtained in contravention of the law of the exporting state.[44] No import permit is required, but the importer must present an export permit or re-export certificate before entry is allowed.[45] Otherwise, the conditions on trade in Appendix II specimens are similar to those for Appendix I specimens.

Appendix III includes 'all species which any party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the co-operation of other parties in the control

Readily Recognisable Parts and Derivatives); Res. Conf. 6.16(a) (1987, Trade in Worked Ivory from African Elephants); Res. Conf. 6.18 (1989, Additional Considerations for Plant Parts and Derivatives); Res. Conf. 8.17 (1992, Improving the Regulation of Trade in Plants); Res. Conf. 9.6 (Rev.) (1994, Trade in Readily Recognisable Parts and Derivatives).

[37] Art. XIV(1). Art. XIV(2)–(4) includes provisions on the relationship with other treaties or international agreements, including those relating to marine species.

[38] Art. II(1).

[39] Art. II(1). 'Trade' is defined as 'export, re-export, import and introduction from the sea': Art. I(c). For a detailed account of the rules governing trade in specimens of species in Appendix I, see Wijnstekers, *The Evolution of CITES*, 25–41.

[40] Art. III(2)(a) and (b) and (3)(c). The determination of these factors is made by a scientific authority in the state of export: *ibid.* According to Art. IX of CITES, each party must designate one or more 'Scientific Authorities' to determine the consequences of import/export transactions and one or more 'Management Authorities' to grant trade permits: Art. III(3)(c) (determination is made by the scientific or management authority of the importing state).

[41] Art. III(2) and (3). [42] Art. III(4) and (5).

[43] Art. II(2). Art. II(2)(b) provides that other species also must be subject to regulation if necessary to effectively regulate an Appendix II species.

[44] Art. IV(2)(a) and (b). For a detailed account of the rules regulating trade in specimens of species in Appendix II, see Wijnstekers, *The Evolution of CITES*, 43–50.

[45] Art. IV(4).

of trade'.[46] Appendix III allows parties to assist each other in enforcing their domestic wildlife legislation, and species originally listed in Appendix III often make their way into Appendix II.[47] The management authority of the exporting state must issue an export permit for Appendix III specimens based upon somewhat less stringent standards than those for Appendices I and II species.[48]

## Amendments

The most important task of the conference of the parties is to consider and adopt amendments to Appendices I and II.[49] Article XV sets out the basic principles and procedures for amending Appendices to include or remove species and to move species from one Appendix to another. Amendments at conferences of the parties are adopted by two-thirds majority of those present and voting and enter into force ninety days after that meeting for all parties which have not entered a reservation.[50] Amendments may also be adopted between meetings.[51] The first meeting of the conference of the parties adopted more detailed criteria for listing and de-listing species, known as the 'Berne criteria'.[52] These criteria were the source of some controversy, in part because of their perceived protectionist requirements for removing or downlisting species. For example, in the context of the attempts to uplist the African elephant to Appendix I in 1989, the opponents of such an amendment argued that the African elephant did not meet the Berne criteria for threatened extinction 'at the species level',[53] and the issue of elephants and ivory has continued to challenge the conference of the parties and the CITES system.[54]

[46] Art. II(3). [47] Art. V.

[48] Art. V(2). For an account of the rules regulating trade in specimens of species in Appendix III, see Wijnstekers, *The Evolution of CITES* (1992, 3rd edn), 51–3.

[49] Art. XI(3). [50] Art. XV(1). [51] Art. XV(2).

[52] Res. Conf. 1.1 (1976, Criteria for the Addition of Species and Other Taxa to Appendices I and II and for the Transfer of Species and Other Taxa from Appendix II to Appendix I).

[53] CITES Secretariat, 'Views of the CITES Secretariat on Potential Problems Raised by the Inclusion of the African Elephant on Appendix I', in *Proceedings of the Seventh Meeting of the Conference of the Parties* (1989). This argument relied on the existence of large, well-managed stocks of elephants in several southern African nations. Given that healthy herds of elephants exist in some places, so the argument went, it did not matter that the species might be extinguished elsewhere. The conference of the parties rejected this argument and voted to move the African elephant from Appendix II to Appendix I by a vote of seventy-six to eleven, with four abstentions; Doc. Plen. 7.4, in *Proceedings of the Seventh Meeting of the Conference of the Parties* (1989) (for subsequent events concerning reservations, see chapter 5, pp. 215–18 above).

[54] R. Martin, *African Elephants, CITES, and the Ivory Trade* (1986); E. Barbier, J. Burgess, T. Swanson and D. Pearce, *Elephants, Ivory and Economics* (1990); M. J. Glennon, 'Has International Law Failed the Elephant?', 84 AJIL 1 (1990); D. J. Harland, *Killing Game: International Law and the African Elephant* (1994); S. Hitch, 'Losing the Elephant Wars: CITES and the "Ivory Ban"', 27 *Georgia Journal of International and Comparative Law* 167 (1998); J. Anderson, 'Recent Events Affecting the International Ivory Trade', 11 *Colorado Journal of International Environmental Law and Policy* 71 (2000).

In 1992, the conference of the parties directed the Standing Committee to undertake a revision of the Berne criteria for consideration at the ninth meeting.[55] Revised criteria were adopted at the ninth meeting: these set forth new standards for judging amendment proposals, and require that when considering any proposal to amend Appendix I or II the parties 'shall apply the precautionary principle so that scientific uncertainty should not be used as a reason for failing to act in the best interest of the conservation of the species'.[56] Under the revised criteria, to qualify for Appendix I a species must be currently threatened with extinction, in the sense that it meets at least one of certain specified biological criteria. These include: species with a small population in the wild or one which has a restricted area or distribution; species which have experienced a decline in the number of individuals in the wild; or species whose status is such that they are likely to become threatened species within a period of five years.[57] Proposals to amend Appendix I should be based on the best information available, giving details of the species distribution, habitat availability, population status, population trends, geographic trends, ecosystem role and specific threats.[58] With regard to its trade status, a species which meets the biological criteria should be listed in Appendix I if it 'is or may be affected by trade'; this is defined broadly to include species probably in trade but for which conclusive evidence is lacking.

For Appendix II listing, the criteria provide that species need not currently be threatened with extinction but it is known, inferred or projected that they might become so. Other species which must be included in Appendix II are species which closely resemble listed species and any species which is a member of a taxon of which most of the species are included in Appendix II.[59]

Any species included in Appendix I for which sufficient data are available to demonstrate that it does not meet the biological criteria should be transferred to Appendix II only in accordance with certain precautionary measures listed in Annex 4. Similar precautionary measures must be observed in respect of any proposal to delete a species from Appendix II that does not meet the criteria for listing in that appendix.[60]

[55] Res. Conf. 8.20 (1992, Development of New Criteria for the Amendment of the Appendices).

[56] Res. Conf. 9.24 (1994, Criteria for Amendment of Appendices I and II); B. Dickinson, 'The Precautionary Principle in CITES: A Critical Assessment', 39 *Natural Resources Journal* 211 (1999).

[57] *Ibid.*, Annex 1. [58] *Ibid.*, Annex 6. [59] *Ibid.*, Annex 2a and 2b.

[60] Annex 4 precautionary measures, applicable in the case of uncertainty over the status of a species or the impact of trade, include the following: no species listed in Appendix I shall be removed from the Appendices unless it has been first transferred to Appendix II, with monitoring of any impact of trade on the species for at least two intervals between meetings of the conference of the parties; species which do not meet the biological criteria for Appendix I should be retained in that Appendix unless the species is not in demand for international trade, is subject to satisfactory management or an export quota or is the subject of a ranching proposal.

## Exemptions

CITES incorporates several provisions that allow parties to bypass the regulations applicable to particular species listed in the Appendices. First, the trade provisions do not apply to the transit or transhipment of species.[61] Secondly, subject to certain exceptions, the trade provisions do not apply to specimens that are personal or household effects.[62] Thirdly, Article VII(2) provides that, when the management authority of a state of export or re-export determines that a specimen was acquired before the provisions of CITES applied to that specimen, the restrictions of Articles III, IV and V do not apply; in these circumstances, the exporting state's Management Authority issues a 'pre-Convention specimen' certificate so that the specimen may be traded. This section exempts 'pre-Convention specimens' from the restrictions relating to a listing on Appendix I, II or III, notably regarding permits, and it has caused certain difficulties requiring consideration by the conference of the parties.[63] One of the objectives of Article VII(2) was to allow stockholders to trade their existing stocks before the Convention originally entered into force, and to trade in old or antique specimens other than personal effects. In practice, traders have abused this provision by stockpiling large quantities of specimens that are likely to be listed in the appendices or uplisted to a higher level of protection.

A fourth exemption applies to non-commercial trade between scientists or scientific institutions in certain specimens.[64] A fifth exemption may be applied in respect of certain specimens forming part of a travelling zoo, circus or other travelling exhibition.[65] Special provisions apply to trade in captive bred animals and artificially propagated plants.[66] Finally, CITES permits parties to make reservations to the Convention in respect of any species listed in Appendix I, II or III or any parts or derivatives specified in relation to an Appendix III species either at the time at which it becomes a party[67] or upon amendment to an

[61] Art. VII(1); see also recommendations of Res. Conf. 9.7 (1994).

[62] Art. VII(3). This has been one of the more complicated provisions to apply: see Wijnsteker, *The Evolution of CITES*, 79–83 and Res. Conf. 10.6 (1997, Control of Trade in Tourist Souvenir Specimens); Res. Conf. 6.8 (1987, Implementation with Regard to Personal and Household Effects); and Res. Conf. 10.20 (1997, Frequent Cross-Border Movements of Personally Owned Live Animals).

[63] See Res. Conf. 4.11 (1983, Interpretation of 'Pre-Convention Acquisition'), which was replaced by Res. Conf. 5.11 (1985, Definition of the Term 'Pre-Convention Specimen').

[64] Art. VII(6); Res. Conf. 11.15 (2000, Non-Commercial Loan, Donation or Exchange of Museum and Herbarium Specimens).

[65] Art. VII(7); Res. Conf. 8.16 (1992, Travelling Live Animal Exhibitions).

[66] Art. VII(4) and (5); see Wijnsteker, *The Evolution of CITES*, 89–90 and Res. Conf. 10.16 (Rev.) (1997, Specimens of Animal Species Bred in Captivity) and Res. Conf. 9.19 (1994, Guidelines for the Registration of Nurseries Exporting Artificially Propagated Specimens of Appendix I Species).

[67] Art. XXIII(2); see Res. Conf. 5.9 (1985, Control of Readily Recognisable Parts and Derivatives).

Appendix.[68] In the case of additions to Appendices I and II, a reserving party has ninety days after the amendment to register its reservation with Switzerland, the depository government,[69] whereas reservations to Appendix III listings may be taken at any time.[70] Reserving parties are treated as non-parties with regard to trade in the designated species or its parts or derivatives,[71] which allows them to trade with actual non-parties and other parties taking matching reservations unfettered by CITES requirements.[72]

The reservation clauses seem contradictory to the general goals of CITES, and there is little doubt that their operation has detrimental effects on listed endangered species. While noting that the drafters of CITES probably included the reservation clauses to encourage greater state participation, one commentator has suggested that the drafters envisioned that the reservations would be used infrequently. Neither the number of parties utilising the clauses nor the quantity of reservations taken have fulfilled that expectation.[73] Determining the effect of a reservation to an amendment uplisting a species from Appendix II to Appendix I has presented a persistent problem in CITES enforcement. On a literal reading of the Convention, a reserving party that was following the strict requirements applicable to trade in Appendix II specimens prior to an uplisting becomes almost completely unregulated after amendment. France embraced this interpretation in 1979 when it took reservations to the uplisting of most populations of saltwater crocodiles and stated that its trade in such specimens thereafter would be outside the scope of the Convention.[74] In response to this flaw in CITES regulation, the fourth meeting of the conference of the parties

[68] Arts. XV(3) (Appendix I and II species); Art. XVI(2) (Appendix III species); see Res. Conf. 4.25 (1983, Effect of Reservations) and Res. Conf. 6.3 (1987, Implementation of CITES, mentioning that reservations made by importing countries allow loopholes through which specimens illegally acquired in the countries of origin can find legal markets without any control).

[69] Art. XV(3). [70] Art. XVI(2). [71] Arts. XV(3), XVI(2) and XXIII(3).

[72] Art. X imposes requirements on trade between parties and non-parties such as 'comparable documentation issued by the competent authorities' in the non-party state, which 'substantially conforms' with CITES requirements. This provision also applies to trade between reserving parties and non-reserving parties for trade in Appendices II and III specimens; see also Res. Conf. 5.4 (1985, Periodic Reports); Res. Conf. 5.12(h) (1985, Trade in Ivory from African Elephants); Res. Conf. 5.16(j) (1985, Trade in Ranched Specimens); Res. Conf. 7.11 (1989, Trade in Ranched Specimens Between Parties, Non-Parties and Reserving Parties); and Res. Conf. 9.5 (1994, Trade with States Not Party to the Convention).

[73] S. Lyster, *International Wildlife Law* (1985), 262–4 (discussing French, Italian, Japanese and Indonesian reservations).

[74] S. Lyster, *International Wildlife Law* (1985), 264, pointing out that less-endangered crocodiles remained on Appendix II and France continued to follow those procedures. The 'absurd' result was that the more endangered crocodiles were not protected while the less endangered were; however, with effect from 1 January 1984, all EC member states were required to withdraw all CITES reservations pursuant to Commission Regulation (EEC) 3626/82, OJ L384, 12 December 1982, 1 (as amended).

recommended that parties taking reservations on transfers from Appendix II to Appendix I should continue to follow the requirements for trade in Appendix II specimens.[75]

## Marking, ranching and quotas

CITES includes provisions concerning the adoption of rules on the marking of specimens.[76] Other rules have emerged as practice under the Convention has developed. Thus, although the Convention does not mention ranching, which is defined as 'the rearing in a controlled environment of specimens taken from the wild',[77] rules have developed to allow ranching and trade in ranching products without the Convention having been amended. The rules take account of the fact that Article VII(4) of the Convention excludes commercial trade in any specimens of Appendix I species taken from the wild, including 'captive bred' specimens. Accordingly, in 1981 the conference of the parties adopted Resolution 3.15, which allowed parties to transfer a population of an Appendix I species to Appendix II for ranching, provided that certain conditions are fulfilled. Under the resolution, criteria are established which must be fulfilled before the ranching operations may be carried out.[78]

Similarly, although CITES does not contain express provisions on the establishment of quota systems, the conference of the parties has used its powers to adopt four quota systems.[79] The first governs trade in leopard skins. This was permitted according to a quota approved by the conference of the parties in 1983, and is now regulated by Resolution 10.14 adopted by the conference of the parties in 1997. It creates a quota of 2,085 leopard skins, divided between eleven African parties, and subject to certain conditions.[80] The second quota system

[75] Res. Conf. 4.25 (1983, Effects of Reservations). The 1983 Conference also requested that all types of reserving parties keep and report trading statistics for species under reservations so that the monitoring function of CITES at least could be maintained.

[76] Art. VI(7); see Wijnsteker, *The Evolution of CITES*, 65–74.

[77] Res. Conf. 3.15 (1981, Ranching); Res. Conf. 11.16 (2000, Ranching and Trade in Ranched Specimens of Species Transferred from Appendix I to Appendix II).

[78] The criteria are set out in Wijnsteker, *The Evolution of CITES*, 194–204; see also Res. Conf. 5.16 (1985, Trade in Ranched Specimens); Res. Conf. 6.22 (1987, Monitoring and Reporting Procedures for Ranching Operations); Res. Conf. 6.23 (1987, Guidelines for Evaluating Marine Turtle Ranching Proposals); Res. Conf. 7.11 (1989, Trade in Ranched Specimens Between Parties, Non-Parties and Reserving Parties); Res. Conf. 8.11 (1992, Stocks of Hair and Cloth of Vicuna); Res. Conf. 8.15 (1992, Guidelines for a Procedure to Register and Monitor Operations Breeding Appendix I Animal Species for Commercial Purposes); Res. Conf. 8.22 (1992, Additional Criteria for the Establishment of Captive-Breeding Operations and for the Assessment of Ranching Proposals for Crocodilians); Res. Conf. 11.16 (2000, Ranching and Trade in Ranched Specimens of Species Transferred from Appendix I to Appendix II).

[79] See Res. Conf. 9.21 (1994, The Interpretation and Application of Quotas for Species Included in Appendix I).

[80] Res. Conf. 10.14 (1997, Quotas for Leopard Hunting Trophies and Skins for Personal Use).

governs trade in markhor hunting trophies. Resolution 10.15 allows an export quota of six hunting trophies of markhor (*Capra falconeri*) from Pakistan per calendar year.

Two further quota systems are specified in the Appendices themselves: trade in ivory from African elephants, which does not currently apply following the listing of the African elephant on Appendix I at the 1989 conference of the parties,[81] and trade in the African spurred tortoise (*Geochelone sulcata*). The final type of quota system will be applicable in accordance with Resolution 9.24 of the conference of the parties. This states that in certain circumstances the transfer of taxa from Appendix I to Appendix II may be allowed even where there is uncertainty over the status or impact of trade on a species if an integral part of the amendment proposal is an export quota approved by the conference of the parties based on management measures described in the amendment proposal, and provided effective enforcement controls are in place. The resolution additionally makes provision for review procedures which, in the event of non-compliance with a quota, may result in a recommendation by the Standing Committee for all parties to suspend trade with the party concerned in specimens of the species.[82]

Export quotas may also be set by each party individually provided that the Scientific Authority of the state has advised that the proposed export would not be detrimental to the survival of the species. A party setting its own national export quotas for CITES species should inform the Secretariat,[83] which in turn informs the other parties through notifications, and by listing the quotas on the Secretariat's website.[84]

## Enforcement

The enforcement provisions of CITES are relatively detailed compared to many other environmental treaties. All parties must take appropriate measures to enforce the Convention and prohibit trade in specimens in violation of its provisions, including by penalising trade and possession, and providing for confiscation or return to the state of export.[85] The conference of the parties has adopted various resolutions aimed at improving compliance.[86] In 2000, the conference of the parties urged the parties, intergovernmental organisations and NGOs to provide additional financial support for the enforcement of the Convention, and directed the Secretariat to utilise such funds towards the following priorities:

[81] Wijnsteker, *The Evolution of CITES*, 208–25. [82] Res. Conf. 9.24 (1994), Annex 4.
[83] Res. Conf. 10.2 (1997, Permits and Certificates).
[84] See the list of national export quotas maintained on the CITES Secretariat website at www.cites.org.
[85] Art. VIII(1).
[86] Res. Conf. 3.9 (1981, International Compliance Control); Res. Conf. 6.3 (1987, Implementation of CITES); Res. Conf. 8.4 (1992, National Laws for Implementation of the Convention).

1. the appointment of additional officers to the Secretariat to work on enforcement-related matters;
2. assistance in the development and implementation of regional law-enforcement agreements; and
3. training and technical assistance to the parties.

The Secretariat was also directed to pursue closer international liaison between the Convention's institutions, national enforcement agencies, and existing intergovernmental bodies, particularly the World Customs Organization and ICPO-Interpol.[87] Resolutions have also been adopted to improve enforcement and compliance by targeted countries and regions.[88] CITES also provides for the communication of information on the adverse effects of trade on species or the non-implementation of the Convention, which envisages a role for the Secretariat.[89]

### *1992 Convention on Biological Diversity*

M. A. Hermitte, 'La Convention sur la Diversité Biologique', AFDI 844 (1992); C. Shine and P. T. B. Kohona, 'The Convention on Biological Diversity: Bridging the Gap Between Conservation and Development', 1 RECIEL 307 (1992); F. Burhenne-Guilmin and S. Casey-Lefkowitz, 'The Convention on Biological Diversity: A Hard Won Global Achievement', 3 *Yearbook of International Environmental Law* 43 (1992); M. Chandler, 'The Biodiversity Convention: Selected Issues of Interest to the International Lawyer', 4 *Colorado Journal of International Law and Policy* 141 (1993); M. Coughlin, 'Using the Merck-INBio Agreement to Clarify the Convention on Biological Diversity', 31 *Columbia Journal of Transnational Law* 337 (1993); F. McConnell, *The Biodiversity Convention: A Negotiating History* (1996); V. Koester, 'The Biodiversity Convention Negotiating Process and Some Comments on the Outcome', 27 *Environmental Policy and Law* 175 (1997); A. Ansari and J. Parveen, 'The Convention on Biological Diversity: A Critical Appraisal with Special Reference to Malaysia', 40 *Indiana Journal of International Law* 14 (2000); Secretariat of the Convention on Biological Diversity, *Handbook of the Convention on Biological Diversity* (2001); 'International Biodiversity Law', 11 RECIEL Issue 1 (2002) (special issue).

The 1992 Convention on Biological Diversity (1992 Biodiversity Convention) was negotiated under the auspices of UNEP and signed by 153 states and the EC at UNCED in June 1992.[90] It goes beyond CITES by establishing objectives for

[87] Res. Conf. 11.3 (2000, Compliance and Enforcement).

[88] Res. Conf. 6.4 (1987, Implementation of the Convention in Bolivia); Res. Conf. 11.9 (2000, Conservation of and Trade in Freshwater Turtles and Tortoises in Asia and Other Regions).

[89] Art. XIII.

[90] Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 ILM 822 (1992). As at 1 April 2003, the Convention had 187 parties; (www.biodiv.org).

the comprehensive preservation of biological diversity, reflecting objectives of the 1980 World Conservation Strategy. In 1984, IUCN prepared principles for the conservation of wild genetic resources. Three years later, IUCN submitted draft legal articles on a proposed convention to a UNEP Ad Hoc Working Group of Experts on Biological Diversity, and the following year, in 1988, the seventeenth General Assembly of the IUCN endorsed the proposal for a convention on biological diversity. At this early stage, the IUCN draft had been concerned solely with conservation and financing mechanisms, and it was the UNEP Governing Council decision to press ahead with a convention, and establish a Working Group of Legal and Technical Experts which led to a broadening of the Convention's scope. The Working Group was renamed the Intergovernmental Negotiating Committee and, as such, it met seven times in 1991 and 1992 when the text of the Convention was finalised. The Convention has three objectives:

> the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.[91]

It establishes basic rules and provides a framework for the adoption of Protocols and Annexes, and does not allow reservations.[92] For some developed countries, the Convention's provisions are problematic because they go beyond conservation and provide rules on the sustainable use of genetic resources and on the use of biotechnology. It is the latter two issues, together with the rules on financial resources, which led the United States, alone among the industrialised nations, to decide against signing the Convention at UNCED.[93]

## Preamble and jurisdictional scope

The Preamble to the Biodiversity Convention affirms that the conservation of biological diversity is 'a common concern of humankind', that states have 'sovereign rights over their own biological resources', and that they are 'responsible for conserving their biological diversity and for using their

[91] Art. 1; on the potential application of this provision, see Case C-377/98, *Netherlands* v. *European Parliament and EU Council* [2001] ECR I-7079, paras. 57–8; and chapter 20, p. 1034 below. 'Biological diversity' is defined in Art. 2 as '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'.

[92] Arts. 28–30 and 37.

[93] US Declaration made at the UNEP Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity, 22 May 1992, 21 ILM 848 (1992). On 4 June 1993, the US signed the Convention but is yet to ratify it.

biological resources in a sustainable manner'. Without expressly endorsing the precautionary approach, the Preamble provides that measures should not be avoided or postponed where there is a lack of full scientific certainty, and that biodiversity should be conserved and sustainably used for the benefit of present and future generations. The Convention is the first to incorporate Principle 21 of the Stockholm Declaration into the operational part of its text rather than merely the preambular section.[94]

With regard to components of biodiversity, the Convention applies within the limits of national jurisdiction.[95] For processes and activities carried out under the jurisdiction or control of a party, however, the Convention applies within areas of national jurisdiction or beyond the limits of national jurisdiction, regardless of where the effects of such processes and activities occur.[96]

## Conservation and sustainable use

The Convention includes several commitments of a general nature. Under Article 5, all parties must co-operate for the conservation and sustainable use of biodiversity, in respect of areas beyond national jurisdiction and on other matters of mutual interest.[97] Parties must develop national strategies, plans or programmes for the conservation and sustainable use of biodiversity, or adapt existing strategies, plans or programmes, and integrate, wherever possible and appropriate, the conservation and sustainable use of biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies.[98]

Each party is required, as far as possible, to adopt the following more specific measures: to identify components of biodiversity important for conservation and sustainable use; to monitor these components while paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use; and to identify, and monitor the effects, processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biodiversity.[99] Where a significant adverse effect has been determined, the processes or activities must be regulated or managed. For these purposes, Annex I sets forth the following indicative list of categories of ecosystems or habitats for identification and monitoring:

- those containing high diversity, large numbers of endemic or threatened species, or wilderness;
- those required by migratory species;
- those of social, economic, cultural or scientific importance; and
- those which are representative, unique or associated with key evolutionary or other biological processes.

[94] Art. 3; see further chapter 6 above. [95] Art. 4(a). [96] Art. 4(b).
[97] Art. 5. For the definition of 'substainable use' in Art. 2, see chapter 6, pp. 257–61 above.
[98] Art. 6. [99] Art. 7.

Species and communities to be identified and monitored are:

- threatened, wild relatives of domesticated or cultivated species;
- those of medicinal, agricultural or other economic value, or of social, scientific or cultural importance; and
- those of importance for research into the conservation and sustainable use of biological diversity.

Annex I requires described genome and genes of social, scientific or economic importance to be identified and monitored. The Convention also includes general obligations on research and training, public education and awareness, the exchange of information, and technical and scientific co-operation.[100]

More detailed rules exist for *in situ* and *ex situ* conservation. *In situ* conservation envisages a range of measures.[101] First, each party undertakes, as far as possible and as appropriate, to establish a system of protected areas or areas where special measures are needed, and to develop guidelines for the selection, establishment and management of such areas.[102] Secondly, biological resources important for the conservation of biological diversity must be regulated or managed, and the protection of ecosystems, natural habitats and the maintenance of viable populations must be promoted.[103] Thirdly, parties must establish or maintain the means to regulate, manage or control risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts, and to prevent the introduction of or to control or eradicate alien species which threaten ecosystems, habitats or species.[104] Subject to national legislation, each party undertakes to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles.[105]

*Ex situ* conservation is predominantly complementary to *in situ* conservation.[106] Each party must take measures which will conserve components of biological diversity; establish and maintain facilities for conservation of and research on plants, animals and micro-organisms; and ensure the recovery and rehabilitation of threatened species and their reintroduction into natural

[100] Arts. 12, 13, 17 and 18.

[101] '*In situ* conservation' is defined in Art. 2 as 'the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties'.

[102] Art. 8(a) and (b). [103] Art. 8(c) and (d). [104] Art. 8(g) and (h).

[105] Art. 8(j). In May 1998, the Fourth Conference of the Parties established an *ad hoc* working group on Art. 8(j) to provide advice on forms of protection for traditional knowledge and to develop a programme of work for implementation at the national and international level (see Decision IV/9, para. 1). The working group held its first meeting in Seville, Spain, on 27–31 March 2000.

[106] '*Ex situ* conservation' is defined in Art. 2 as 'the conservation of components of biological diversity outside their natural habitats'.

habitats under appropriate conditions.[107] The earlier proposal to include a global list of species important for conservation and sustainable use was dropped following opposition from developing countries.

The Convention requires components of biodiversity to be used sustainably, the carrying out of environment impact assessment of proposed projects likely to have significant adverse effects, and ensuring the minimisation of adverse impacts.[108] The Convention provides for notification, exchange of information and consultation on activities likely to have a significant adverse effect on the biological diversity of other states or areas beyond national jurisdiction. Notification is required in cases of imminent or grave danger or damage, and emergency responses must be promoted for activities or events which present a grave and imminent danger to biodiversity.[109] Under Article 14(2), the conference of the parties will examine the development of rules on liability and redress, for damage to biological diversity, including restoration and compensation.

## Access to genetic resources and transfer of technology

The Convention includes new international rules on access to genetic resources, access to and transfer of technology, and the handling of biotechnology and the distribution of its benefits. These are controversial to the extent that they are perceived by some countries to threaten the stability of existing intellectual and other property rights. Article 15 seeks to ensure access to genetic resources which have been provided by parties that are the countries of origin or by parties that have acquired the genetic resources in accordance with the Convention,[110] although the Convention states that the authority to determine such access rests with national governments and is subject to national legislation.[111] Each party is to facilitate such access for environmentally sound uses by other parties, and must not impose restrictions which run counter to the Convention's objectives.[112] Where access is granted, it will be on mutually agreed terms and subject to Article 15, the party seeking access having received the prior informed consent of the party providing the resources unless otherwise determined by that party.[113] Moreover, each party is to carry out scientific research based on genetic resources provided by another party with the full participation of, and where possible in the territory of, such party.[114] Finally, and to the dismay of

[107] Art. 9(a), (b) and (c). [108] Arts. 10 and 14. [109] Art. 14(1)(c) to (e).

[110] Art. 15, especially paras. (1) and (3). 'Genetic resources' means 'genetic material of actual or potential value', and 'genetic material' means 'any material of plant, animal, microbial or other origin containing functional units of heredity': Art. 2. 'Country of origin of genetic resources' means 'the country which possesses those genetic resources in *in situ* conditions', and 'country providing genetic resources' means 'the country supplying genetic resources collected from *in situ* sources, including populations of both wild and domesticated species, or taken from *ex situ* sources, which may or may not have originated in that country': *ibid.*

[111] Art. 15(1). [112] Art. 15(2). [113] Art. 15(4) and (5). [114] Art. 15(6).

the United States and other developed countries, each party is to take measures, as appropriate,

> with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilisation of genetic resources with the contracting party providing such resources. Such sharing shall be upon mutually agreed terms.[115]

These provisions are seen to allow possible claims being made on the financial profits arising from the exploitation and development of resources by companies based in developed country parties. The Director of the International Board for Plant Genetic Resources has expressed the concern clearly: 'One interpretation of the Convention is that a research centre would have to get permission from the countries of origin before it distributes materials.' Some crop varieties may have twenty or more different 'parents' in plants from twenty or more different countries, which would require the permission of all the countries of origin before the materials could be distributed.[116] In 2002, the sixth conference of the parties adopted the 'Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, Access and Benefit Sharing', which are intended to assist parties in developing an overall access and benefit-sharing strategy, which may be part of their national biodiversity strategy and action plan, and in identifying the steps involved in the process of obtaining access to genetic resources and sharing benefits.[117] To that end, the Bonn Guidelines address the following elements as relevant to access to genetic resources and benefit-sharing:

- roles and responsibilities in access and benefit-sharing (paras. 13–16);
- participation of stakeholders (paras. 17–21);
- steps in the access and benefit-sharing process, including in relation to prior informed consent and mutually agreed terms (including in relation to benefit-sharing) (paras. 22–50);[118] and
- other provisions, including in relation to incentives, accountability, monitoring, verification and settlement of disputes (paras. 51–61).

Article 16 establishes rules on access for and transfer between parties of technologies, including biotechnologies, relevant to the conservation and sustainable use of biodiversity or which make use of genetic resources and do not cause significant damage to the environment, in accordance with the financial mechanism where necessary. Access and transfer of technology is to be on 'fair

[115] Art. 15(7).

[116] J. Madeley, 'Summit Hitch for Plant Breeders', *Financial Times*, 30 June 1992, 58.

[117] Decision VI/24, para. 12.

[118] The Guidelines include Appendices on Suggested Elements for Material Transfer Agreements (Appendix 1) and Monetary and Non-Monetary Benefits (Appendix 2).

and most favourable terms': where technology is subject to patent and other intellectual property rights, access and transfer are to be provided on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights.[119] Under Article 16(3), parties are required to take measures to give those parties which provide genetic resources, particularly developing countries, access to technology (including technologies protected by patent and other intellectual property rights) which makes use of those resources, on mutually agreed terms and in accordance with international law. Additional measures will be required to ensure that parties' private sectors facilitate access to, joint development of, and transfer of these technologies for the benefit of governmental institutions and the private sectors of developing countries.[120] They must co-operate, subject to national legislation and international law, to ensure that patents and other intellectual property rights 'are supportive of and do not run counter to' the objectives of the Convention.[121] Regarding the relationship between the Convention and other international conventions, including those relating to patents and other intellectual property rights, the Convention

> shall not affect the rights and obligations of any contracting party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.[122]

The language used is sufficiently broad to allow an interpretation that the Convention could, in certain circumstances, prevail over patent and intellectual property rights protected by other international agreements.[123]

The Convention additionally provides for the exchange of information between parties, including repatriation of information, technical and scientific co-operation, personnel training and exchange, joint research programmes and joint ventures, and a clearing-house mechanism to promote co-operation.[124]

## Biotechnology

Among the 1992 Biodiversity Convention's most controversial provisions were those of Article 19 on the handling of biotechnology and the distribution of its benefits. This was the first attempt by the international community to legislate international rules on biotechnology at the global level.[125] Each party must provide for the effective participation in biotechnological research activities by parties which provide the genetic resources, especially developing countries.[126] Each party must

[119] Art. 16(2). [120] Art. 16(4). [121] Art. 16(5). [122] Art. 22(1).
[123] Chapter 20, pp. 1045–6 below. [124] Arts. 16(3), 17 and 18.
[125] Chapter 12, pp. 625–37 below. [126] Art. 19(1).

> take all practicable measures to promote and advance priority access on a fair and equitable basis by contracting parties, especially developing countries, to the results and benefits arising from biotechnologies based upon genetic resources provided by those contracting parties. Such access shall be on mutually agreed terms.[127]

The Convention did not include detailed rules on genetically modified organisms, other than the requirement for each party to provide, to the party 'into which' such organisms are to be introduced, any available information on the use and safety regulations it requires in handling such organisms, and on the potential adverse impact of the specific organism concerned.[128] However, Article 19(3) committed the parties to

> consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity.

At its second meeting in November 1995, the conference of the parties to the Convention decided to establish an Open-Ended Ad Hoc Working Group on Biosafety (BSWG) to draft a protocol on biosafety, focusing specifically on the transboundary movement of living modified organisms resulting from modern biotechnology with potentially adverse effects on the conservation and sustainable use of biological diversity.[129] The BSWG held six meetings between July 1996 and February 1999 before submitting a draft negotiating text to the conference of the parties.[130] The draft text formed the basis for negotiations at the first extraordinary conference of the parties (ExCOP), convened for the purpose of adopting a protocol on biosafety, and held in Cartagena, Colombia, in February 1999. However, a number of aspects of the draft text proved controversial – notably the scope of application of the protocol, the inclusion of the precautionary principle, risk assessment and risk management procedures, requirements for documentation and labelling, the effect of the protocol on parties' trade obligations under the GATT/WTO and provision for liability and redress. As a result, the ExCOP was unable to finalise the text of a protocol at its Cartagena session but agreed to suspend negotiations and reconvene no later than the fifth conference of the parties.[131] The resumed ExCOP was held in Montreal on 24–29 January 2000. After a week of intense negotiations which saw the parties split into a series of negotiating groups,[132] the ExCOP adopted

[127] Art. 19(2). [128] Art. 19(4). [129] Decision II/5.

[130] Open-Ended Working Group on Biosafety, Draft Negotiating Text, UNEP/CBD/BSWG/6/2, 18 November 1998.

[131] Decision EM-I/1.

[132] The negotiating groups included the Miami group of agricultural nations with a large investment in biotechnology led by the United States, the European Union, and the Like-Minded Group of Developing Countries.

a final text of the Cartagena Protocol on Biosafety on 29 January 2000.[133] An Intergovernmental Committee for the Cartagena Protocol on Biosafety (ICCP) was established at the same time, with a mandate to undertake the necessary preparations prior to the first meeting of the parties to the Protocol. To date, the ICCP has held two meetings, in December 2000 and October 2001.

### Financial resources and mechanism

Articles 20 and 21 provide for the allocation of financial resources and establish a financial mechanism to provide new and additional financial resources to enable developing country parties to meet the agreed full incremental costs to them of implementing the Convention.[134]

### Institutions and other mechanisms

The institutional arrangements to oversee implementation of the Convention comprise the conference of the parties, which keeps the implementation of the Convention under review;[135] a Subsidiary Body on Scientific, Technical and Technological Advice, to provide scientific, technical and technological advice to the conference of the parties;[136] various working groups established on an *ad hoc* basis; and a secretariat.[137] The Convention provides for settlement of disputes concerning the interpretation or application of the Convention according to traditional means, including negotiation, the use of good offices, mediation and an Annex on submission to the International Court of Justice or arbitration and conciliation.[138]

The Convention is the principal framework within which the development and implementation of rules on biodiversity conservation now occurs. The relationship of the Biodiversity Convention to other global instruments, including in particular CITES, as well as regional instruments, remains unclear.

## General instruments of regional and sub-regional application

The second category of biodiversity conservation rules are those adopted at the regional level which are, broadly speaking, of potential application to all species in the given region. The regional approach has been justified as allowing the environmental needs and concerns of different regions to be addressed. It also seeks to ensure that the powers attached to the responsibility for managing international environmental affairs are devolved to the most appropriate level of governance, whether at the regional, sub-regional or bilateral level.

The earliest regional agreement was the 1900 London Convention and the most recent the 1999 SADC Protocol on Wildlife Conservation and Law

[133] 39 ILM 1027 (2000); see chapter 12, pp. 653–8 below.
[134] Chapter 20, pp. 1032–6 below. [135] Art. 23. [136] Art. 25.
[137] Art. 24. Between entry into force of the Convention and the first meeting of the conference of the parties, the secretariat was provided by the Executive Director of UNEP: Art. 40.
[138] Art. 27 and Annex II.

Enforcement. In the intervening period, regional arrangements (in roughly chronological order) have been adopted for parts of Africa, the Americas and the Caribbean, the South Pacific, Europe, and south-east Asia. The agreements governing the Antarctic region, and the emerging principles applicable to the Arctic, are considered in chapter 14 below.

### *Africa*[139]

Flora and fauna on the African continent were the subject of the earliest nature conservation agreements, adopted by colonial powers in the first part of the twentieth century. The first treaty was the 1900 London Convention for the Protection of Wild Animals, Birds and Fish in Africa,[140] which was adopted by the colonial powers of the region (Great Britain, Italy, Portugal, Spain and France) to 'prevent the uncontrolled massacre and to ensure the conservation of diverse wild animal species in their African possessions which are useful to man or inoffensive'.[141] The 1900 Convention was replaced by the 1933 London Convention Relative to the Preservation of Flora and Fauna in Their Natural State.[142] Both agreements included provisions and techniques for international conservation that are still found in modern treaties, including a system of annexes to list protected species, and the use of trade regulations as an instrument of environmental protection. The 1933 Convention required parties to take all necessary measures within their power to ensure 'a sufficient degree of forest country and the preservation of the best native indigenous forest species',[143] and recognised a link between conservation and economic development, although the emphasis was on encouraging 'the domestication of wild animals susceptible of economic utilisation'.[144]

#### 1968 African Nature Convention

The 1933 Convention was superseded in 1968 with the adoption of the African Convention on the Conservation of Nature and Natural Resources (1968 African Nature Convention), which was negotiated under the auspices of the Organization of African Unity (OAU) by the governments of newly independent African states.[145] The Convention includes broad objectives; except for atmospheric protection, the Convention applies to all environmental media, committing parties to a comprehensive approach including research,

[139] See also Agreement on Joint Regulations on Fauna and Flora (Enugu, 3 December 1977) (Lake Chad); Protocol Agreement on the Conservation of Coma Natural Resources (Khartoum, 24 January 1982) (Sudan, Uganda, Zaire).

[140] London, 19 May 1900, 4 IPE 1607.

[141] Preamble; cited in S. Lyster, *International Wildlife Law* (1985), 112.

[142] London, 8 November 1933, in force 14 January 1936, 172 LNTS 241.

[143] Art. 7(4). [144] Art. 7(4) and (8).

[145] Algiers, 15 September 1968, in force 16 June 1969, 1001 UNTS 3.

conservation education, development plans, and national conservation services.[146] It requires parties to take measures which are reconcilable with customary rights 'to ensure conservation, utilisation and development of soil, water, flora and faunal resources in accordance with scientific principles and with due regard to the best interests of the people'.[147]

The 1968 Convention is one of the few environmental treaties with provisions for the protection of soil from erosion and misuse through the development of land-use plans, and agricultural practices and agrarian reforms which ensure long-term productivity.[148] It promotes water conservation policies and protection of flora by scientifically-based conservation measures which take into account social and economic needs.[149] The Convention subjects fauna to 'conservation, wise use and development . . . within the framework of land-use planning and of economic and social development', and to that end wildlife populations must be managed in designated areas with the aim of achieving an 'optimum sustainable yield'.[150] Hunting, capture and fishing are subject to the grant of properly regulated permits, and certain methods are prohibited.[151]

The 1968 Convention, like its predecessor, makes use of an annex system to protect endangered species. Class A species are totally protected throughout the territory of the party, while Class B species may be hunted, killed, captured or collected under special authorisation granted by the competent national authority.[152] Parties may add additional species to Class A or B according to their own specific requirements.[153] Like its predecessor, the 1968 Convention regulates trade in listed and unlisted species, in particular by making export of the former subject to authorisation, and import and transit subject to presentation of the export authorisation.[154] The Convention lacks any institutional arrangements for its implementation, a feature which has contributed to its limited effectiveness. In 1985, the OAU convened a meeting to discuss possible revision of the Convention, and, although draft amendments were prepared with the assistance of IUCN, they were never formally adopted.

At a ministerial meeting in September 1994, the governments of seven African states adopted the Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora.[155] The objective of the Agreement is to reduce and ultimately eliminate illegal trade in wild fauna and flora within the territories of the states parties.[156] Article 5 of the Agreement provides for the establishment of a Task Force for Co-operative

[146] Arts. XII to XV.

[147] Arts. II and XI. Art. XVII allows certain exceptions to the Convention, including the 'paramount interest of the state', *force majeure* and defence of human life.

[148] Art. IV. [149] Arts. V and VI. [150] Art. VII(1). [151] Art. VII(2).

[152] Art. VIII(1) and Annex. [153] Art. VIII(2). [154] Art. IX.

[155] Lusaka, 8 September 1994, in force 10 December 1996, UNEP Doc. No. 94/7929; six states are party.

[156] Art. 2.

Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, which is composed of a Director, Field Officers and an Intelligence Officer. The Director and Field Officers are drawn from national law enforcement authorities and liaise with 'National Bureaus' in each of the member states to co-ordinate enforcement operations directed at illegal wildlife trade.[157] The functions of the Task Force include facilitating co-operative activities among the National Bureaus in carrying out investigations pertaining to illegal trade; investigating violations of national laws pertaining to illegal trade at the request of the National Bureaus or with the consent of the parties concerned; collecting, processing and disseminating information on activities that pertain to illegal trade, including establishing and maintaining databases; and providing, upon request of the parties concerned, information related to the return to the country of original export, or country of re-export, of confiscated wild fauna and flora.[158] The Task Force (or 'regional Interpol' as it is sometimes referred to) was officially launched and commenced operational activities on 1 June 1999. The operations of the Task Force are overseen by a Governing Council composed of representatives from each of the parties.[159]

### 1985 Nairobi SPA Protocol

In 1985, the Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region (1985 Nairobi SPA Protocol) was adopted as a Protocol to the 1985 Nairobi Convention.[160] It establishes sub-regional arrangements for the conservation of flora and fauna in Eastern Africa and commits parties to 'take all appropriate measures to maintain essential ecological processes and life support systems, to preserve genetic diversity, and to ensure the sustainable utilisation of harvested natural resources under their jurisdiction'.[161]

The 1985 Nairobi SPA Protocol goes beyond the 1968 African Nature Convention. It requires parties to protect and preserve rare or fragile ecosystems, and to develop national conservation strategies within the framework of regional conservation activities, while taking into account the traditional activities of local populations.[162] The Protocol has four Annexes establishing more detailed commitments. Parties undertake to 'take all appropriate measures' to ensure the protection of the wild flora species listed in Annex I, to ensure 'the strictest protection' of the endangered wild fauna species listed in Annex II, to ensure the protection of the depleted or threatened wild fauna species listed in Annex III, and to co-ordinate their efforts for the protection of migratory species listed in Annex IV.[163] The 1985 Protocol also includes: general rules on the introduction of alien or new species; the establishment of protected areas and the adoption

[157] Art. 6. [158] Art. 5(9). [159] Art. 7.

[160] Nairobi, 21 June 1985, not yet in force, IELMT 985:47; on the 1985 Nairobi Convention, see chapter 9, pp. 404–5 above.

[161] Art. 2(1). [162] Arts. 2(1) and (2) and 12. [163] Arts. 3–6.

of measures and common guidelines, standards or criteria for those areas; the establishment of buffer areas to strengthen the protection of protected areas; and rules on consultation for frontier protected areas, publicity and notification, public information and education, and the exchange of information.[164] One aspect of the Protocol is particularly significant. It is the first biodiversity conservation agreement in Africa to create an institutional authority: meetings of the parties to the Protocol, which are mandated to review implementation of the Protocol, examine the need for further measures, and adopt amendments to the Annexes.[165] In practice, these take place bi-annually.

### 1999 SADC Protocol on Wildlife Conservation and Law Enforcement

More recently, in August 1999, the Wildlife Conservation and Law Enforcement Protocol to the Treaty establishing the Southern African Development Community (SADC) was signed by the Heads of State and Government in Maputo, Mozambique.[166] The Protocol seeks to establish common approaches to the conservation and sustainable use of wildlife resources in the SADC region and makes provision for collaboration between member states to achieve the objectives of international agreements concerning the conservation and sustainable use of wildlife. The Protocol also places an obligation on parties to ensure that activities within their borders do not cause damage to the wildlife resources of other states or areas beyond the limits of national jurisdiction. The Protocol will come into force once it is ratified by two-thirds of the SADC member states.

## *The Americas and the Caribbean*

The region of the Americas and the Caribbean is the subject of three regional and sub-regional agreements: the 1940 Western Hemisphere Convention; the 1978 Amazonian Treaty; and the 1990 Kingston Protocol. Several bilateral agreements have also been adopted which include general provisions on flora and fauna.[167]

### 1940 Western Hemisphere Convention

The 1940 Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (1940 Western Hemisphere Convention), negotiated under the auspices of the Pan-American Union (now the Organization

[164] Arts. 7–18. [165] Art. 21.

[166] Maputo, 18 August 1999, not yet in force; see www.sadc.int/english/protocols/p_wildlife_conservation_and_law_enforcement.html.

[167] See also the Convention for the Conservation of the Biodiversity and the Protection of Wilderness Areas in Central America, Managua, 5 June 1992, not yet in force.

of American States (OAS)), was in many respects a visionary agreement.[168] The primary objectives of the Convention are to:

> protect and preserve in their natural habitat representatives of all species and genera of their native flora and fauna, including migratory birds, in sufficient numbers and over areas extensive enough to assure them from becoming extinct through any agency within man's control . . .[169]

The nineteen parties to the Convention, which is only open to member states of the OAS, agree to explore the possibility of establishing national parks, national reserves, nature monuments and strict wilderness reserves as defined by the Convention.[170] National parks are absolutely protected against exploitation for commercial profit, and there is to be no hunting, killing or capturing of fauna or collecting of flora in national parks except by or under the direction or control of the park authorities, or for authorised scientific investigations.[171] Strict wilderness reserves are to be maintained, as far as practicable, 'inviolate' except for authorised scientific investigations or other uses consistent with the purposes for which the area was established.[172]

The Western Hemisphere Convention also requires parties to protect and preserve all other flora and fauna, to engage in scientific co-operation, to protect migratory birds, and to protect species listed in the single Annex to the Convention 'as completely as possible'.[173] The Convention has general provisions establishing trade restrictions: the import, export and transit of protected fauna and flora is to be controlled and regulated by the issuing of export and transit authorisation certificates.[174] The great weakness of the Convention is the absence of any institutions to oversee and ensure its implementation. In 1979, a group of experts convened by the Secretary General of the OAS considered the possibility of amending the Convention, and proposed the adoption of a new rule requiring other parties to take account of certain fundamental criteria: stability and diversity of ecology, biological productivity, continuous long-term production of renewable natural resources, protection of soil and of hydrographic and marine ecology, integrated rural development, and continuous research and surveillance. The expert group also proposed the establishment of an institutional mechanism and improved procedures to regulate international trade. More recently, the Inter-American Judicial Committee of the OAS has considered using the Convention as the basis for an Inter-American system for nature conservation. In the meantime, the Convention has less practical effect

[168] Washington, 12 October 1940, in force 1 May 1942, 161 UNTS 193; nineteen states are party.
[169] Preamble. [170] Art. II(1). [171] Art. III. [172] Art. IV.
[173] Arts. V to VIII. The Annex comprises a compilation of the national lists of the parties, rather than an agreed list of general application, and has not been revised since 1967.
[174] Art. IX.

than ought to be the case, and has been virtually ignored in respect of certain road-building and oil exploration activities recently carried out.

## 1978 Amazonian Treaty

The conservation of biodiversity is an important secondary, but not primary, objective of the 1978 Treaty for Amazonian Co-operation.[175] Its primary objective is to promote the harmonious development of the parties' Amazonian territories; the secondary objective is to ensure that these joint actions produce equitable and mutually beneficial results 'and achieve also the preservation of the environment, and the conservation and rational utilisation of the natural resources of those territories'.[176] The 1978 Amazonian Treaty is mainly concerned with economic development, as reflected in the language stating that the use of natural resources is 'a right inherent in the sovereignty of each state' which may only be restricted by international law.[177] This provision reflects the concern that evidently existed, even at this early period in the development of international environmental law, about interference from countries outside the region seeking to influence future development in the Amazon forest. The 1978 Treaty is silent as to the limitations which might be established by international law on environmental grounds. Measures of environmental protection required under the Treaty, which are designed to maintain the 'ecological balance' of the region and to preserve species in the context of rationally planned exploitation of flora and fauna, are limited simply to promoting scientific research and exchanging information.[178] The Treaty's institutional arrangements comprise *ad hoc* meetings of the parties' Ministers of Foreign Affairs, annual meetings of the Amazonian Co-operation Council, a secretariat, Permanent National Commissions, and Special Commissions which may be set up to study specific problems or matters.[179] The right of any state to exercise a veto on important questions is guaranteed: decisions taken by the Ministers or the Council are taken by unanimous vote of all parties, although decisions by the Special Commissions are adopted by unanimous vote only of those parties participating.[180]

In 1989, the parties to the Amazonian Treaty adopted the Amazon Declaration which reiterated support for the preservation of Amazonian resources for present and future generations and declared that the defence of the Amazonian environment was one of the essential objectives of the Treaty.[181] It provides little guidance, however, as to how that objective is to be attained, or what it means in practice. The emphasis is rather on linking environmental protection and economic development, especially by denouncing the burden of foreign debts owed by countries of the region. The Amazonian Declaration objects to conditionalities imposed in the allocation of international resources, and

[175] Brasilia, 3 July 1978, in force 2 February 1980, 17 ILM 1045 (1978); eight states are party.
[176] Art. I. [177] Art. IV. [178] Art. VII. [179] Arts. XX to XXIV. [180] Art. XXV.
[181] Manaus, Brazil, 6 May 1989, 28 ILM 1303 (1989).

emphasises the need for the concerns of the north over the Amazon region to be translated into financial and technological support and assistance.

## The 1990 Kingston SPA Protocol

The 1990 Kingston Protocol Concerning Specially Protected Areas and Wildlife to the Cartagena de Indias Convention (1990 Kingston SPA Protocol) was adopted by the parties to the 1983 Cartagena Convention, and includes innovative provisions on nature conservation for several countries in the region.[182] It was signed by thirteen parties to the 1983 Convention, representing a range of developed and developing countries, including eight Caribbean islands and Central American states, Mexico, France, the Netherlands, the United Kingdom and the United States. The 1990 Protocol applies to the area included under the 1983 Convention (marine environment) *and* territorial waters and terrestrial areas.[183] It requires parties to protect, preserve and manage in a sustainable way areas requiring special protection and threatened or endangered species of flora and fauna.[184] To that end, the parties must regulate and prohibit activities having adverse effects on these areas, and manage species of flora and fauna so as to prevent them from becoming endangered or threatened.[185] Protected areas must be established to conserve and restore representative coastal and marine ecosystems and maintain long-term viability and biological and genetic diversity, habitats and associated ecosystems critical to the survival of endangered flora or fauna. The Protocol seeks to maintain the productivity of ecosystems and natural resources that provide benefits to local inhabitants, and areas of special value whose ecological and biological processes are essential to the functioning of the wider Caribbean ecosystems.[186] Protected areas will be subject to a range of protection measures and to a planning and management regime, and parties may create buffer zones.[187] Where the protected area or buffer zone is contiguous to an international boundary, there is to be consultation between the relevant states.[188]

The protection of wild flora and fauna requires parties to identify endangered or threatened species (including migratory species) and accord protected status to them by regulating and prohibiting activities having adverse effects on them or their habitats and ecosystems.[189] The 1990 Kingston SPA Protocol establishes varying degrees of protection for species listed in the Annexes, ranging from the absolute protection of flora listed in Annex I and fauna listed in Annex II,[190] to the regulated use of flora and fauna listed in Annex III.[191] The Protocol also regulates or prohibits the introduction of non-indigenous or genetically altered species, and provides for environmental impact assessment,

[182] Kingston, 18 January 1990, in force 18 June 2000, 1 *Yearbook of International Environmental Law* 441 (1990); nine states are party.
[183] Arts. 2(1) and 1(c). [184] Art. 3(1). [185] Art. 3(2). [186] Art. 4. [187] Art. 8.
[188] Art. 9. [189] Art. 10. [190] Art. 11(1)(a) and (b). [191] Art. 11(1)(c).

the exemption of traditional activities, information and public awareness, research and assistance.[192] Implementation is through periodic reports to the meetings of the parties, and the establishment and adoption by the meetings of common guidelines and criteria formulated by a Scientific and Technical Advisory Committee.[193]

In June 1991, the conference of the parties to the Kingston SPA Protocol adopted three Annexes, listing 56 plant species, 116 animal taxa and all cetaceans for full protection. Annex III lists forty plants and thirty animal species, as well as corals.[194]

### *South Pacific*

The states of the South Pacific region have adopted a number of treaties aimed at conserving and protecting their flora and fauna. Apart from the 1985 Rarotonga Treaty, which prohibits nuclear activities in the region,[195] the main regional instruments are the 1976 Convention on the Conservation of Nature in the South Pacific (1976 Apia Convention)[196] and the 1986 Noumea Convention.[197]

The Apia Convention, which has five parties, seeks to contribute to the 'maintenance of the capacity of the earth to produce essential renewable natural resources' and to safeguard 'representative samples of natural ecosystems, and . . . the heritage of wildlife and its habitat', while providing for 'customary use of areas and species in accordance with traditional cultural practices'.[198] Its approach to nature conservation is drawn from the earlier regional agreements for Africa and the Americas. Parties must establish 'protected areas' (national parks and national reserves) and co-operate in research and training and in developing programmes of education and public awareness.[199] The established size of the national parks may only be altered after the 'fullest examination', and they may only be exploited commercially after such examination.[200] Fauna and flora in national parks, including migratory species, are protected from 'unwise exploitation and other threats that may lead to their extinction'.[201] National reserves are, as far as practicable, to be maintained as 'inviolate'.[202] Each party establishes its own list of fauna and flora threatened with extinction, which it is to protect 'as completely as possible as a matter of special urgency and

[192] Arts. 12 to 18. [193] Arts. 19 to 20.

[194] Annex V of the Report of the Meeting of the Ad Hoc Group of Experts for the Development of Annexes to the Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region, Martinique, 5–8 November 1990, UNEP(OCA)/CAR WG.4/4.

[195] See chapter 12, pp. 649–51 below.

[196] Apia, 12 June 1976, in force 28 June 1990; IELMT 976:45; five states are party.

[197] This addresses the conservation of living resources in the marine environment; see pp. 558–600 below.

[198] Preamble and Art. VI. [199] Arts. II(1) and VII. [200] Art. III(1) and (2).

[201] Arts. III(3) and V(1). [202] Art. IV.

importance', and to carefully consider the introduction of new species.[203] The Apia Convention does not establish mechanisms for meetings of the parties, and the secretariat functions are now provided by the secretariat of the South Pacific Regional Environment Programme (SPREP).[204]

Overall co-ordination of nature conservation activities in the region now rests with SPREP, which was established as an autonomous regional organisation in 1993 under the Agreement Establishing the South Pacific Regional Environment Programme.[205] The organisation's Action Plan for 2001–4 identifies nature conservation as a 'Key Results Area', critical to achieving sustainable development in the region.[206] It sets out five focus areas for the 2001–4 period:

- conservation areas;
- ecosystem management;
- conservation of endangered species and control of invasive species;
- biosafety, access to genetic resources and intellectual property rights; and
- traditional resource management.[207]

### *Europe*

Under the auspices of the Council of Europe and the EC, a number of treaties and other international agreements addressing the conservation of biological diversity have been adopted and implemented which establish general principles and rules. Treaties and other agreements addressing specific sectors, including migratory species and the expanding body of EC secondary legislation on biodiversity conservation, are considered subsequently in this chapter and in later chapters.[208]

#### 1979 Berne Convention

The Berne Convention on the Conservation of European Wildlife and their Natural Habitats (1979 Berne Convention) was negotiated under the auspices of the Council of Europe.[209] Initially, the Convention had mostly developed

[203] Art. V(2) to (4).

[204] Art. VIII. They were originally provided by the South Pacific Commission.

[205] Apia, 16 June 1993, in force 31 August 1995, ATS No. 24, 1995; fourteen states are party.

[206] SPREP, *Action Plan for Managing the Environment of the Pacific Islands Region: 2001–2004* (2000).

[207] *Ibid.*, section 5.1.

[208] On EC rules other than those set out in this chapter, see chapter 15, pp. 779–83 below; on migratory species, see pp. 574–83 below.

[209] Berne, 19 September 1979, in force 1 June 1982, UKTS No. 56 (1982), Cmnd 8738. See generally the Explanatory Report Concerning the Convention on the Conservation of European Wildlife and Natural Habitats (Council of Europe, 1979), www.nature.coe.int/english/cadres/bern.htm. The Convention has forty-five parties.

country parties, including the EC,[210] but membership has since been expanded to Africa and Central and Eastern Europe. The Convention imposes mandatory obligations on parties which are clear and unequivocal and subject to a system of administration which has been created to promote and oversee the implementation of its provisions.[211] It has three objectives: to conserve wild flora and fauna and their habitats; to promote co-operation between states; and to give particular attention to endangered and vulnerable species, including endangered and vulnerable migratory species.[212] It applies to all species and their habitats, regardless of their scarcity, and is applicable to visiting migratory species that are not confined to Europe and to European species of flora and fauna found outside the European continent. To give effect to the objectives, the parties are required to take protective measures

> to maintain the population of wild flora and fauna at, or adapt it to, a level which corresponds in particular to ecological, scientific and cultural requirements while taking account of economic and recreational requirements and the needs of sub-species, varieties or forms at risk locally.[213]

More generally, parties must: promote national conservation policies; have regard to conservation in regional planning policies and pollution abatement; promote education and the dissemination of information; co-ordinate research; and encourage the re-introduction of species while strictly controlling the introduction of non-native species.[214]

The 1979 Berne Convention includes specific obligations. Parties must take special measures to ensure the conservation of habitats of wild flora and fauna species which are listed as strictly protected in Appendices I and II, and give 'special attention' to the protection of areas of importance to migratory species specified in Appendices II and III.[215] The deliberate picking, collecting, cutting or uprooting of species of wild flora listed in Appendix I is prohibited, and their possession or sale is prohibited.[216] The deliberate capture, keeping, killing, damage, destruction or disturbance of wild fauna species listed in Appendix II is also prohibited, as is the possession of and internal trade in these species or their parts.[217] Listed fauna species are to be protected, and their exploitation regulated to keep them out of danger. All indiscriminate means of capture and

[210] The Convention has attracted many reservations, which has led the Standing Committee to discourage such reservations (Recommendation No. 4 (1986)).

[211] S. Lyster, *International Wildlife Law* (1985).

[212] Art. 1; 'endangered and vulnerable' is broader than 'threatened' and brings the Convention into line with the 1973 CITES.

[213] Art. 2; this provision is very similar to Art. 2 of the 1979 EC Wild Birds Directive, see pp. 602–5 below.

[214] Arts. 2, 3 and 11. [215] Arts. 4 and 10.

[216] Art. 5. This provision, which only regulates internal measures, also applies to sale and barter: see Explanatory Report, n. 210 above, para. 26.

[217] Art. 6.

killing, including those listed in Appendix IV, and all means capable of causing local disappearance or serious disturbance to populations are prohibited.[218] The parties are free to adopt stricter conservation measures.[219]

Under Article 9, the Convention permits exceptions to the prohibitions set out in Articles 4–8, although they are subject to the fulfilment of general and specific conditions. The general conditions require that there must be 'no other satisfactory solution' and that 'the exception will not be detrimental to the survival of the population concerned'.[220] The specific conditions only permit exceptions:

- for the protection of flora and fauna;
- to prevent serious damage to crops, livestock, forests, fisheries, water and other forms of property;
- in the interest of public health and safety, air safety or overriding public interests;
- for research and education, of repopulation, of reintroduction and for necessary breeding; and
- to permit, under strictly supervised conditions, on a selective basis and to a limited extent, the taking, keeping or other judicious exploitation of certain wild animals and plants in small numbers.[221]

These provisions include numerous ambiguities. For example, in Article 6(b), does the reference to 'deliberate' damage or destruction exclude damage or destruction caused by activities which do not have such damage or destruction as their primary purpose, or is it sufficient that such damage or destruction should be a reasonably foreseeable consequence of those activities? The former interpretation would exclude activities such as road-building which are not deliberately intended to cause damage or destruction but will often have that effect as a matter of course. With regard to the exceptions, what is meant by 'other overriding public interests', and do such interests include economic interests? The Explanatory Report provides some guidance, suggesting that all construction works would be included within the definition of 'deliberate' damage or destruction, and stating that exceptions may be made for construction works subject to the fulfilment of the conditions in Article 9 and the provisions in Article 3(2) concerning planning and development policies.[222]

Implementation of the 1979 Berne Convention is entrusted to a Standing Committee composed of a representative of each party with a range of functions, including the power to recommend measures and make proposals for improving the effectiveness of the Convention.[223] It reports to the Committee

[218] Arts. 7 and 8. [219] Art. 12. [220] Art. 9(1). [221] Art. 9(1).

[222] Explanatory Report, n. 210 above, para. 41; cf. Art. 16(1) of the 1992 EC Habitats Directive, where derogations for imperative reasons of overriding public interest include those of a social or economic nature: see p. 540 below.

[223] Arts. 13 and 14.

of Ministers of the Council of Europe, and may adopt amendments to the Appendices by a two-thirds majority of the parties, which enter into force for all parties which have not notified objections, provided that less than one-third of parties have entered such objections.[224] The Standing Committee meets regularly and has amended the Appendices on several occasions; in December 1991, for example, over 400 species were added to Appendix I; an additional 107 Eastern European species were added to Appendix I in December 1996.[225]

### 1982 Benelux Convention

The Benelux Convention on Nature Conservation and Natural Resources provides a framework for concerted action and co-operation in the conservation, management and rehabilitation of the natural environment and landscapes.[226] It goes beyond the 1979 Berne Convention by requiring the *harmonisation* of policy principles, instruments, laws and regulations, information exchange, information and education campaigns, and 'co-ordinated implementation of agreements concluded within a wider international framework'. The Convention calls for effective protection activities including, *inter alia*, the development of 'protection and management concepts for transboundary natural areas and landscapes of value' and the establishment of inventories of such areas, as well as reciprocal consultation on development projects which might adversely affect such transboundary areas.[227] It recognises that natural resources and ecosystems do not respect national boundaries, an approach reflected in several instruments subsequently adopted.

### 1991 Convention on the Protection of the Alps[228]

T. Treves, L. Pineschi and A. Fodella (eds.), *International Law and the Protection of Mountain Areas* (2002).

The 1991 Alps Convention signals a move towards the international regulation of ecosystems which cross national boundaries; it was also the first international legal instrument to address the environmental issues of mountain regions.[229] The Convention establishes a general framework to apply the precautionary principle, the polluter-pays principle, and the principle of co-operation to preserve and protect the Alps, taking into account the equitable

[224] Arts. 15 and 17.

[225] 2 *Yearbook of International Environmental Law* 203 (1991); Report of the Standing Committee, 16th Meeting, Strasbourg, 2–6 December 1996, T-PVS (96) 102.

[226] Brussels, 8 June 1982, in force 1 October 1983, 2 SMTE 163; three states are party.

[227] Art. 3.

[228] Salzburg, 7 November 1991, in force 6 March 1995; 31 ILM 767 (1992); eight states and the EC are party.

[229] See also Agenda 21, chapter 13, 'Managing Fragile Ecosystems: Sustainable Mountain Development'.

interests of all Alpine states and ensuring the sustainable use of natural resources.[230] The Convention envisages protocols and other measures to address specific issues, including: the promotion of cultural identity; the protection of air, land soil and water; the preservation of flora and fauna and mountain forests; the conservation of energy and reduction of waste; and sustainable tourism and transport.[231] An Alpine conference of the parties meets every two years to adopt measures on research and systematic observation and to adopt Protocols and Amendments.[232] A Permanent Committee of the Alpine Conference is established as the executive organ, with support from a permanent secretariat (the Commission Internationale pour la Protection des Alpes).[233]

### 1992 EC Habitats Directive

L. Krämer, 'The Interdependency of Community and Member State Activity on Nature Protection Within the European Community', 20 *Ecology Law Quarterly* 25 (1993); A. Nollkaemper, 'Habitat Protection in European Community Law: Evolving Conceptions of a Balance of Interest', 9 JEL 271 (1997).

The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (1992 EC Habitats Directive) is an important regional instrument which incorporates new approaches for 'ensuring biodiversity', implicitly recognising the failure of earlier approaches.[234] EC member states were required to implement the Directive by May 1994.[235] The Directive has two objectives: the conservation of natural habitats and habitats of species, and the protection of species.[236] It is the first international instrument to adopt the comprehensive protection of all habitat, in terms of both geographical region and type. It provides a basis for taking into account ecological conditions and the needs of all the territories of the EC member states, and recognises that measures to promote conservation of habitats and species of a Community interest is a

[230] Art. 2.

[231] Art. 3. Nine Protocols have been adopted but are not yet in force, dealing with nature conservation and landscape protection (1994), mountain farming (1994), regional management and sustainable development (1994), mountain forests (1996), tourism (1998), energy (1998), soil protection (1998), transport (2000) and dispute settlement (2000).

[232] Arts. 3, 6 and 7. [233] Arts. 8 and 9.

[234] Council Directive 92/43/EEC of 21 May 1992, OJ L206, 22 July 92, 7, Art. 2(1). Annexes I and II were amended by Council Directive 97/62/EC of 27 October 1997, OJ L305, 8 November 1997, 42.

[235] The Commisison has brought succesful infringement proceedings against several member states (e.g. Greece, [1997] ECR I-3749 and Germany, [1997] ECR I-7191).

[236] 'Natural habitats' are defined as 'terrestrial or aquatic areas distinguished by geographic, abiotic and biotic features, whether entirely natural or semi-natural': Art. 1(b); 'habitat of a species' is defined as 'an environment defined by specific abiotic and biotic factors, in which the species lives at any stage of its biological cycle': Art. 1(f). See also the definition of 'conservation' at Art. 1(a).

matter of 'common responsibility'.[237] It includes procedures for the designation of protected areas in an integrated and holistic manner, including priority habitats and species. It recognises that conservation measures can impose an excessive financial burden on some member states, since habitats and species are unevenly distributed, and that the polluter-pays principle is of limited application in the special case of conservation.[238]

Habitats The Habitats Directive sets forth substantive and procedural rules to establish a 'coherent European ecological network of special areas of conservation' (Natura 2000), including the special protection areas classified under the 1979 Wild Birds Directive.[239] Member states were required to notify to the EC Commission by May 1995 a list of sites indicating the natural habitat types listed in Annex I and the species listed in Annex II that are native to its territory which the site hosts.[240] For animals which range over wide areas, the sites must 'correspond to the places within the natural range of such species which present the physical or biological factors essential to their life and reproduction'; for aquatic species which range over wide areas, sites should only be proposed where 'there is a clearly identifiable area representing the physical and biological factors essential to their life and reproduction'.[241] Annex I lists nine habitat types whose conservation requires designation as a 'special area of conservation': coastal and halophytic habitats; coastal sand dunes and inland dunes; freshwater habitats; temperate heath and scrub; sclerophyllous scrub (matorral); natural and semi-natural grassland formations; raised bogs and mires and fens; rocky habitats and caves; and forests. Annex II lists several hundred animal and plant species of Community interest requiring the designation of special areas. Annex III lists the criteria for selecting sites of Community importance in

[237] Preamble. The English High Court has ruled that the European territory to which the Directive applies includes areas over which member states exercise sovereign rights beyond territorial waters: *R.* v. *Secretary of State for Trade and Industry, ex parte Greenpeace (No. 2)* [2000] 2 CMLR 94.

[238] *Ibid.* [239] Art. 3(1); on the 1979 Wild Birds Directive, see pp. 602–5 below.

[240] Art. 4(1) (see Commission Decision 97/266/EC concerning a site information format for proposed Natura 2000 sites, OJ L107, 24 April 1997, 1. The lists may subsequently be amended: *ibid.* The Directive establishes a procedure to be followed in the event that the Commission finds that a national list fails to mention a site hosting a priority natural habitat type or priority species: Art. 5. The ECJ has ruled that member states are not entitled to take into account economic, social and cultural requirements or regional and local characteristics (mentioned in Art. 2(3) of Directive 92/43) when selecting and defining the boundaries of sites to be proposed as eligible for identification as sites of Community importance: Case C-371/98, *R.* v. *Secretary of State for the Environment, Transport and the Regions, ex parte First Corporate Shipping Ltd* [2000] ECR I-9235. On the failure to transmit information within the prescribed period, see e.g. Case C-71/99, *Commission* v. *Germany* [2001] ECR I-5811; Case C-220/99, *Commission* v. *France* [2001] ECR I-5831; Case C-67/99, *Commission* v. *Ireland* [2001] ECR I-5757.

[241] *Ibid.*

accordance with a two-stage process. Stage 1 assesses the relative importance of sites for the habitat types and species in Annexes I and II. Stage 2 assesses the Community importance of the sites included on the national lists.

By June 1998, the EC Commission was to have adopted a list of sites of Community importance drawn from the member states' lists identifying those sites which have lost one or more priority natural habitat types or priority species;[242] however, no Community list could be adopted by that date owing to delays in submission of complete national lists. The Commission list will be drawn up on the basis of the criteria set out under Stage II of Annex III in the framework of five biogeographical regions and the European territory of the member states to which the EC Treaty applies. The Directive allows a degree of flexibility in drawing up the list in respect of member states whose sites host habitats or species which represent more than 5 per cent of their national territory. Once a site of Community importance has been designated, the relevant member state must, as soon as possible and within six years (which originally meant 2004 at the latest), designate the site as a 'special area of conservation', and establish priorities for maintenance or restoration.[243]

Once a 'special conservation area' is placed on the EC Commission list, the member state must take special conservation measures, including management plans, which correspond to the 'ecological requirements' of the site.[244] First, under Article 6(2), they must avoid the deterioration of natural habitats and the habitats of species as well as disturbance of the species. Secondly, under Article 6(3), they must conduct an 'appropriate assessment' of the implications for the site of any plan or project not directly connected with or necessary to the site's management but which is likely to have significant effects for it. Thirdly, if the plan or project goes ahead after the assessment shows 'negative' implications, there are no alternative solutions, and there are 'imperative reasons of overriding public interest, including those of a social or economic nature', the member state must 'take all compensatory measures necessary to show that the overall coherence of Natura 2000 is protected', and inform the EC Commission

[242] Arts. 4(2) and (3). 'Priority natural habitat types' are defined as 'natural habitat types in danger of disappearance, which are present on the territory referred to in Article 2 and for the conservation of which the Community has particular responsibility in view of the proportion of their natural range which falls within the territory referred to in Article 2': Art. 1(d); 'priority species' include endangered species: Art. 1(h).

[243] Art. 4(4).

[244] Art. 6(1); these provisions replace obligations under the relevant parts of Art. 4(1) of the 1979 Wild Birds Directive, Art. 7, p. 604 below. See EC, *Managing NATURA 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/ CEE* (2000). On non-compliance with Art. 6, see Case C-117/00, *Commission* v. *Ireland* [2002] ECR I-5335 (failing to take the measures necessary to safeguard a sufficient diversity and area of habitats for the red grouse, and failing to take appropriate steps to avoid, in the Owenduff-Nephin Beg Complex special protection area, the deterioration of the habitats of the species for which the special protection area was designated).

of the compensatory measures adopted.[245] However, if the site hosts a 'priority natural habitat type and/or a priority species', the plan or project may only go ahead if there are considerations relating to human health or public safety, or there are beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, there are other imperative reasons of overriding public interest.

The Habitats Directive recognises that conservation measures can entail significant economic costs. The Directive establishes the basis for the co-financing by the EC of measures which are 'essential for the maintenance or re-establishment at a favourable conservation status of the priority natural habitat types and priority species on the sites concerned'.[246] Provision is also made for the conservation obligations of member states where co-financing is not available. Other obligations under the Directive are more generous in the discretion they accord to the member states. They are, for example, required by Article 10 to endeavour, where they consider it necessary, to encourage the management of landscape features which are of major importance for wild flora and fauna, such as rivers with their banks or traditional systems for marking field boundaries, which are essential for migration, dispersal and genetic exchange. The Directive requires the Commission to review periodically the contribution of Natura 2000 towards the achievement of its objectives, and requires the member states to undertake surveillance of habitats.[247]

**Protection of species** The Directive adopts a more traditional approach to the protection of species. Member states must establish a system of strict protection for the animal species listed in Annex IV(a), including prohibitions on all forms of deliberate capture or killing of wild specimens, deliberate disturbance, deliberate destruction or taking of eggs, and deterioration or destruction of breeding sites, as well as keeping, transport and sale or exchange.[248] They must also monitor the incidental capture and killing of these species.[249] Similar prohibitions

[245] Art. 6(4). See Commission Opinion 96/15/EC on the intersection of the Peene Valley (Germany) by the planned A20 motorway, OJ L006, 9 January 1996, 14, where the Commission concludes that '[t]aking into account the foreseen compensation and mitigation measures and considering that the least damaging alternative solution has been chosen ... [the] [a]dverse effects on the protection area "Peenetal vom Kummerower See bis Schadefähre" through the planned A20 motorway east of Jarmen are justified by imperative reasons of overriding public interest'. The Opinion notes that priority habitats 'are not directly affected' and that 'no particularly rare birds, whose presence has been the reason for the designation of the valley as special protection area, will be directly affected'.

[246] Art. 8. [247] Arts. 9 and 11.

[248] Art. 12(1) and (2). On the failure of member states to comply, see Case C-103/00, *Commission* v. *Greece* [2002] ECR I-1147 (failure to take requisite measures to establish and implement an effective system of strict protection for the sea turtle *Caretta caretta* on Zakinthos so as to avoid any disturbance of the species during its breeding period and any activity which might bring about deterioration or destruction of its breeding sites).

[249] Art. 12(4).

are established in respect of the plant species listed in Annex IV(b).[250] Annex V includes a list of flora and fauna for which measures may be taken under Article 14 to ensure that their taking in the wild and their exploitation is compatible with their being maintained at a favourable conservation status. The Directive also prohibits the use of indiscriminate means which are capable of causing local disappearances of, or serious disturbance to, populations of wild animal species listed in Annex V(a) and animal species listed in Annex IV(a) for which derogations have been granted under Article 16.[251] Prohibited measures include the means of capture and killing listed in Annex VI(a) and the capture and killing from modes of transport listed in Annex VI(b).

These rules are subject to the Article 16 derogations, provided that there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range.[252] Derogations may be granted to protect wild flora and fauna in their habitat; to prevent serious damage; in the interests of public health and safety; for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment; for research and education; and to allow the limited taking or keeping of Annex IV species.[253] Member states must report derogations which are applied, including their reasons, circumstances and supervisory measures, and the Commission may give an opinion on the derogations but is not expressly empowered to prevent them or attach conditions to their grant.[254]

**Supplementary provisions** The Directive includes reporting requirements on implementation, provisions on research, and procedures for amending the Annexes, and establishes a committee to assist the Commission.[255] Additionally, member states are required to regulate the deliberate introduction into the wild of any species which is not native to their territory, and to promote education and general information.[256]

### *Asia*

The conservation of nature and biodiversity in Asia is addressed at the regional level by just one agreement. Given the large proportion of the world's population which lives in Asia, the size of the countries, their important natural resources, and their growing industrial base, further efforts are clearly needed. The Agreement on the Conservation of Nature and Natural Resources adopted by the Association of South East Asian Nations (1985 ASEAN Agreement)[257]

[250] Art. 13. [251] Art. 15. [252] Art. 16(1).
[253] *Ibid.*; cf. Art. 9(1) of the 1979 Berne Convention, p. 534 above.
[254] Art. 16(2) and (3). [255] Arts. 17 to 21. [256] Art. 22(b) and (c).
[257] Kuala Lumpur, 9 July 1985, not in force, 15 *Environmental Policy and Law* 64 (1985).

has not yet entered into force as it has not attracted the required ratification by six of the ten members of ASEAN (Brunei, Indonesia, Malaysia, the Philippines, Singapore, Cambodia, Laos, Myanmar, Vietnam and Thailand). Nevertheless, it merits consideration since it introduces innovative legal provisions compared with earlier regional biodiversity conservation agreements, including efforts to address conservation and economic development in an integrated manner, based on a 'sustainable use' standard which relies upon an ecosystem approach and the consideration of capacities of the parties.

The 1985 ASEAN Agreement will commit the parties to adopt measures and conservation strategies

> necessary to maintain essential ecological processes and life-support systems, to preserve genetic diversity, and to ensure the sustainable utilisation of harvested natural resources under their jurisdiction in accordance with scientific principles and with a view to attaining the goal of sustainable development [and to] ensure that conservation and management of natural resources are treated as an integral part of development planning at all stages and at all levels.[258]

The substantive part of the Agreement is divided into six Chapters. Chapter II ('Conservation of Species and Ecosystems') commits parties to 'maintain maximum genetic diversity' by acting for the conservation and survival of all species under their jurisdiction and control, to protect endangered species and to protect the habitats of endangered species listed on Appendix I.[259] The sustainable use of harvested species should be ensured by implementing management plans aimed at 'preventing decrease in the size of any harvested population to levels below those which ensure its stable recruitment', by maintaining the 'ecological relationship' between harvested, dependent and related populations, and by restoring depleted populations to levels which ensure 'stable recruitment'.[260] To this end, harvesting activities will be subject to a permit system, a prohibition on indiscriminate taking and use and on harvesting during certain periods, and regulated trade and possession.[261] Conservation of species and ecosystems includes measures to conserve vegetation cover, especially forests, soil conservation, land rehabilitation, the conservation of underground and surface water resources, and air quality management.[262]

The 1985 ASEAN Agreement addresses forest protection by calling for the establishment of forest reserves, reforestation and afforestation plans, and by requiring parties to ensure, to the maximum extent possible, the conservation of their natural forests (particularly mangroves) and to develop forestry management plans which maintain the potential 'for optimum sustained yield and avoiding depletion of the resource capital'.[263]

[258] Arts. 1 and 2(1). [259] Arts. 3 and 5. [260] Art. 4(1).
[261] Art. 4(2). [262] Arts. 6 to 9. [263] Art. 6(2).

Under Chapter III, parties must prevent, control and reduce degradation of the natural environment and polluting discharges and emissions. Again, the provisions on environmental degradation are innovative and progressive in addressing the need to promote environmentally sound agricultural practices and industrial processes and products, including the use of economic and fiscal incentives.[264] Without specifically mentioning the polluter-pays principle, the Agreement reflects its spirit by requiring parties to undertake,

> as far as possible, to consider the originator of the activity which may lead to environmental degradation responsible for its prevention, reduction and control as well as, wherever possible, for rehabilitation and remedial measures required . . .[265]

With regard to pollution prevention, the Agreement requires consideration of the 'cumulative effects' of pollutants, making control measures conditional upon the treatment of emissions, and establishing national environmental quality monitoring programmes.[266] Chapter IV supports land use planning to achieve 'optimum sustainable land use' based on the 'ecological capacity' of the land, the establishment of protected areas, and environmental impact assessment.[267] In relation to protected areas, the Agreement prohibits the use or release of toxic substances or pollutants as well as, to the maximum extent possible, activities outside the protected area which are likely to cause disturbance or damage.[268] Chapter V of the Agreement proposes measures for scientific research, education, public participation, and administrative machinery.[269] Chapter VI envisages international monitoring, research, the exchange of data and information, and the conservation and harmonious utilisation of shared natural resources.[270] The latter includes the following: environmental impact assessments before allowing activities which may create a risk of significantly affecting the environment of another party; notifying other parties of such activities and consulting with related plans; and informing other parties of emergency situations or sudden grave natural events which may have repercussions on their environment.[271] The Agreement is also the first to integrate a large part of Principle 21 of the Stockholm Declaration into the operational part of an international treaty.[272]

The institutional arrangements for implementing the Agreement comprise meetings of the parties, a secretariat, and national focal points for co-ordination and channelling of communications.[273] The meetings of the parties, to be held at least once every three years, will review implementation, amend the Appendix, consider reports submitted by the parties, establish working groups or other bodies, and take any additional action.[274] Amendments to the Agreement and to the Appendix require consensus.[275]

[264] Art. 10(a) to (c). [265] Art. 6(d). [266] Art. 11(a) to (c).
[267] Arts. 12 to 14. [268] Art. 13(5)(b) and (c). [269] Arts. 15 to 17.
[270] Arts. 18 and 19. [271] Art. 19(2)(c) to (f). [272] Art. 20(1).
[273] Arts. 21 to 23. [274] Art. 21. [275] Arts. 25 and 26.

## Regulation of particular habitats or species

Many international environmental agreements regulate specific habitats, species or species types. They fall into eight basic categories which have as their *primary purpose* the conservation and enhancement of: wetlands; forests; plants; soil and land; marine living resources; birds; land animals; and migratory species. In addition, three agreements specifically address cultural and other heritage, including the heritage of nature and natural resources.

### *Wetlands*

A. Timoshenko, 'Protection of Wetlands by International Law', 5 *Pace Environmental Law Review* 463 (1988); IUCN and Synge (eds.), *Legal Aspects of the Conservation of Wetlands* (1991); G. Matthews, *The Ramsar Convention on Wetlands: Its History and Development* (1993); M. Bowman, 'The Ramsar Convention Comes of Age', 42 NYIL 1 (1995); T. Davis, *Le Manuel de la Convention de Ramsar: guide de la convention relative aux zones humides d'importance internationale, particulièrement comme habitats des oiseaux d'eau* (1996); D. Farrier and L. Tucker, 'Wise Use of Wetlands under the Ramsar Convention: A Challenge for Meaningful Implementation of International Law', 12 JEL 21 (2000).

The first global agreement to address the conservation of a particular habitat was the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (1971 Ramsar Convention),[276] which aims to conserve and enhance wetlands. As defined in the Ramsar Convention, wetlands are:

> areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.[277]

This definition does not reflect the enormous variety of wetland types or the fact that they are dynamic, capable of changing with the seasons and over longer periods of time, and that accordingly their boundaries are often difficult to define with any degree of precision.[278] Recent estimates suggest that globally

[276] Ramsar, 2 February 1971, in force 21 December 1975, 996 UNTS 245 (www.ramsar.org). The Convention has 133 parties, and has been amended twice: first by the Paris Protocol of 3 December 1982, in force 10 October 1986, 22 ILM 698 (1982); and secondly by the Regina Amendments of 28 May 1987, in force 1 May 1994, IELMT 977:9/13. The Paris Protocol inserted a new Art. 10*bis* to provide for amendment of the Convention.

[277] Art. 1(1).

[278] See World Conservation Monitoring Centre, *Global Biodiversity: Earth's Living Resources in the 21st Century* (2000), noting that, according to the broadest grouping of habitat types, there are thirty categories of natural wetlands and nine man-made categories.

there remain between 5.3 and 5.7 million square kilometres of wetlands including bogs, fens, swamps, marshes, floodplain and shallow lakes. They serve a variety of functions, including flood and erosion control, water purification, and shoreline stabilisation.[279] The loss of wetlands has been difficult to quantify, and the only country in which the rate is well documented is the United States, where estimates suggest that the wetlands in ten states fell from 895,000 square kilometres in the 1780s to 422,397 square kilometres in the 1980s.[280] The major threats include pollution, hunting, human settlement, agricultural drainage and fishing. Wood-cutting, degradation of the watershed, soil erosion, siltation and the diversion of water supplies are additional threats.

The Ramsar Convention reflected new international legal efforts aimed at conservation by protecting a habitat type rather than a species, resulting largely from the activities of the non-governmental International Waterfowl Research Bureau. The Ramsar Convention has over 130 parties and now protects 1,109 sites in those countries, comprising a total surface area of 87,254,670 hectares. Without prejudice to their sovereign rights, each party must designate suitable wetlands within its territory for inclusion in the List of Wetlands of International Importance, taking account of their international significance in terms of ecology, botany, zoology, limnology or hydrology.[281] At least one wetland must be designated upon signature or ratification or accession; thereafter the addition of further wetlands, or the extension of listed wetlands, is a matter for each party.[282] The deletion or restriction of listed wetlands is permitted on grounds of 'urgent national interest' but must, as when designating entries, take into consideration the 'international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl' and compensate for any loss of wetland resources, such as the establishment of additional nature reserves.[283] In 1990, the conference of the parties adopted criteria for the designation of wetlands sites which were updated at the sixth and seventh meetings in 1996 and 1999 respectively. The criteria are divided into two groups: Group A criteria for identifying sites containing representative, rare or unique wetland types; and Group B criteria for identifying sites of international importance for conserving biological diversity, including general criteria based on species and ecological communities and specific criteria based on waterbirds and fish.[284]

Each party's basic commitments include formulating and implementing wetlands conservation and its wise use; establishing nature reserves; endeavouring to increase waterfowl populations; and ensuring that it is informed of any actual or likely change in the ecological character of any of its listed

[279] *Ibid.* [280] *Ibid.* [281] Art. 2(1) to (3).
[282] Art. 2(4) and (5). [283] Arts. 2(5) and (6) and 4(2).
[284] See Strategic Framework and Guidelines for the Future Development of the List of Wetlands of International Importance of the Convention on Wetlands (Ramsar, Iran, 1971), adopted by Ramsar Res. VII.11 (1999), Part V.

wetlands, which information is to be passed on to the Convention secretariat.[285] The Convention also encourages research, the exchange of data, the training of personnel, and consultation between parties about implementing their obligations.[286] Implementation of the Convention is reviewed by Conferences on the Conservation of Wetlands and Waterfowl held every three years, the latest in 2002. The Conference may consider problems of implementation, additions and changes to the List of Wetlands, and changes in the character of listed wetlands. The Conference may make recommendations to the parties on the conservation, management and wise use of wetlands and their flora and fauna which must be taken into consideration by the parties.[287] Each party has one vote at the Conference, and recommendations are adopted by a simple majority of votes cast, provided that half the parties vote.[288] The Conference has also established a number of working groups, including a wide use of working groups to guide the decisions of the Conference. The Conference is assisted by a secretariat, which maintains the List of Wetlands and informs parties of changes.[289]

Since 1975, eight conferences of the parties have been held and a range of recommendations adopted. To improve implementation, particularly by developing countries and countries with economies in transition, the conference of the parties established a 'Wetland Conservation Fund' in 1990 (subsequently renamed the Ramsar Small Grants Fund for Wetland Conservation and Wise Use), decided to treat amendments as being in force from the time of their adoption, and adopted general measures to improve implementation and monitoring.[290]

### *Forests*

M. Prieur (ed.), *Forêts et environnement en droit comparé et droit international* (1985); M. B. Saunders, 'Valuation and International Regulation of Forestry Ecosystems: Prospects for a Global Forest Agreement', 66 *Washington Law Review* 871 (1991); A. Fabra, *The International Legal Protection of the Forest: A Case Study in Ecuador* (1992); H. Schally, 'Forests: Towards an International Legal Regime?', 4 *Yearbook of International Environmental Law* 30 (1993); Canadian Council of International Law, *Global Forests and International Environmental Law* (1996); R. Tarasofsky, 'The Global Regime for the Conservation and Sustainable Use of Forests', 56 ZaöRV 669 (1996).

[285] Arts. 3 and 4(1) and (4); 'waterfowl' are defined as 'birds which are ecologically dependent on wetlands': Art. 1(2).

[286] Arts. 4(3) and (5) and 5. [287] Art. 6(3). [288] Art. 7(2).

[289] Art. 8. The secretariat function is fulfilled by IUCN.

[290] Decision in 'Framework for Implementation of the Ramsar Convention', Annex Recommendation 2.3 of the Conference of the Parties, 12 *Environmental Policy and Law* 118 (1984) (Doc. C.4.12) (see also the Kushiro Statement, Res. V.I, Annex 1 (1993)); and Decision on Monitoring (1988); see chapter 20, p. 1031 below.

Forests have three important ecological functions: they provide habitats for the preservation of biodiversity; they act as carbon sinks (for removing carbon from the atmosphere and limiting atmospheric concentrations of carbon dioxide and consequential climate change); and they contribute to maintaining and enhancing the quality of soil. The fact that preserving forests contributes to climate stability and biodiversity goals has provided developing states with extensive forests with significant leverage in response to the efforts by developed states to agree an international forest convention. So far, those efforts have been unsuccessful, resulting in the limited statement of Forest Principles adopted at UNCED and a general commitment in Agenda 21 to 'consider the need for and feasibility of all kinds of appropriately internationally agreed arrangements to promote international co-operation' on forests.[291] There is no consensus on the need for a global forest convention.

It is estimated that, between 1700 and 1980, more than 11 million square kilometres of forest and woodland were lost, amounting to nearly 20 per cent of the total.[292] Temperate and boreal forests have suffered acute deforestation, including the virtual elimination of ecosystem types such as the cedar groves of Lebanon and the old-growth hardwood forests of Europe and North America. Of the estimated original 31 million hectares of non-tropical forests found on earth, 56 per cent are believed to have been logged or cleared.[293] Recent FAO figures suggest a lower rate of net loss of forests worldwide in the 1990s than in the 1980s owing mainly to a higher rate of natural expansion of forest area in industrialised countries.[294] Rates of tropical deforestation remain high with an estimated 15.2 million hectares of forest lost annually in the tropics.[295] Deforestation rates are highest in Africa and South America; the loss of natural forests in Asia is also high but has been significantly offset by forest plantation establishment.[296] The causes of deforestation, as identified at UNCED, include increased human needs, agricultural expansion, and environmental mismanagement, including unsustainable commercial logging, over-grazing, airborne pollutants and economic incentives.[297]

International legal efforts to address forest issues have taken place in the context of the historical loss of the forests of developed countries, and of these states' efforts to ensure that the bulk of remaining forests in developing countries is preserved for their contribution to ecological cycles, particularly in relation to biodiversity and climate issues. Attempts by developed countries to 'internationalise' forest issues have so far been unsuccessful in legal terms, and the tropical forest resources of developing countries are carefully

[291] Agenda 21, para. 11.12(e).
[292] World Resources Monitoring Centre, *Global Biodiversity: Earth's Living Resources in the 21st Century* (2000), 253.
[293] World Watch Institute, *State of the World 1992* (1992), 11.
[294] FAO, *State of the World's Forests 2001* (2001), 46.
[295] *Ibid.*, 45–6. [296] *Ibid.* [297] Agenda 21, para. 11.10.

guarded as part of the national patrimony of these countries. Contrary to certain views which have been expressed, tropical and other forests are not the 'common heritage of mankind' under international law, and were not identified as a 'common concern' to mankind in the Forest Principles. Apart from the specific instruments identified below, forests are subject to general protection under the regional agreements identified in the earlier part of this chapter, EC obligations,[298] the 1973 CITES (if a particular forest species has been listed as endangered),[299] the 1992 Biodiversity Convention and the 1992 Climate Change Convention.[300] Agenda 21 does not suggest that new international legal developments are imminent. Chapter 11 of Agenda 21 ('Combating Deforestation') is divided into four programme areas which more or less repeat the content of the statement of Forest Principles. The first programme area is intended to sustain the multiple roles and functions of all types of forests;[301] the second is to enhance the protection, sustainable management and conservation of all forests and 'green' degraded areas through rehabilitation, afforestation and reforestation;[302] the third will promote efficient use and assessment to recover the full value of goods and services provided by forests;[303] and the fourth is to establish and strengthen planning, assessment and systematic observation.[304]

### 1994 International Tropical Timber Agreement

The objectives of the 1994 International Tropical Timber Agreement (ITTA)[305] include developing 'industrial tropical timber reforestation and forest management activities' and encouraging 'national policies aimed at sustainable utilisation and conservation of timber producing forests and their genetic resources, and at maintaining the ecological balance in the regions concerned'.[306] These are but two of fourteen ITTA objectives, the others including the expansion and diversification of international trade in tropical timber from sustainable sources and promotion of the industrialisation of tropical timber-producing member countries. A major initiative of the ITTA is the 'Year 2000 objective', which aims to ensure that by the year 2000 all tropical timber products traded internationally by member states shall originate from sustainably managed

[298] See chapter 15, p. 779 below; see also the Agreement for the Establishment of a Latin-American Forest Research and Training Institute, Rome, 18 November 1959, 1 SMTE 143.

[299] For example, at the conference of the parties in 2002, mahogany was added to Annex II.

[300] See chapter 8, pp. 357–68 above.

[301] Paras. 11.1 to 11.9.

[302] Paras. 11.10 to 11.19.

[303] Paras. 11.20 to 11.28.

[304] Paras. 11.29 to 11.40.

[305] Geneva, 26 January 1994, in force 1 January 1997, 33 ILM 1014 (1994); 36 states and the EC are party. The 1994 Agreement replaced the expired 1983 International Tropical Timber Agreement (Geneva, 18 November 1983, in force 1 April 1985, UN Doc. TD/TIMBER/11/Rev.1 (1984)).

[306] Art. 1(j) and (l).

forests.[307] Article 18 of the ITTA establishes the Bali Partnership Fund to assist producing members to make the investments necessary to enhance their capacity to implement the Year 2000 objective.

The ITTA is administered by the International Tropical Timber Organization (ITTO), which functions through a Council.[308] The permanent committees of the ITTO include a Committee on Reforestation and Forest Management, the functions of which include harmonising international co-operation in reforestation and forest management.[309] The tenth session of the ITTO, held in 1991, established a small working group to develop Guidelines for the Conservation of Biological Diversity in Tropical Production Forests, adopted in December 1993, the principal objective of which is to 'optimise the contribution of [tropical] forests to the conservation of biological diversity that is consistent with their primary objective, namely the sustainable production of timber and other products'.[310]

## FAO Tropical Forestry Action Plan

The non-binding Tropical Forestry Action Plan (TFAP) was adopted in 1985 as a non-binding global strategy developed by FAO, with the World Bank, UNDP, UNEP and the non-governmental World Resources Institute, to provide a framework for concerted national and international action to manage, protect and restore forest resources in states in tropical regions. By 1991, seventy-four countries were participating in programmes under the TFAP. Activities carried out in individual countries under the TFAP include a preliminary forest sector review which will then lead to a national Tropical Forestry Action Plan. TFAP exercises are intended to establish national targets on policies and practices to halt deforestation, contribute forest resources to sustainable economic development, conserve forests, and integrate forest-related issues into other sectors. The TFAP was subject to criticism for not addressing the root causes of deforestation, and it has now been subsumed into the FAO's national forest programme and into the work undertaken under the auspices of the UN Commission on Sustainable Development (discussed below).

## 1992 Forest Principles

The 'Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests' (the 1992 Forest Principles) was adopted at UNCED.[311] Its weakness reflects the absence of international consensus on the subject, and

[307] See Poore and Chiew, 'Review of Progress Towards the Year 2000 Objective', November 2000, ITTC(XXVIII)/9/Rev.2.

[308] Art. 3. [309] Arts. 26(1) and 27(2).

[310] ITTO, *Guidelines on the Conservation of Biological Diversity in Tropical Production Forests*, ITTO Policy Development Series No. 5 (1993).

[311] 13 June 1992, 31 ILM 881 (1992).

it is of limited legal authority and content. The guiding objective of the Forest Principles is to contribute to the management, conservation and sustainable development of forests and to provide for their multiple and complementary functions and uses.[312] It is 'a first global consensus on forests' which may serve as a basis for a future legal instrument. It applies to all types of forests,[313] and provides that forest issues must be dealt with in a 'holistic and balanced' manner. The Principles do not 'internationalise' forest issues, or state that forests are 'a common concern of mankind'. Instead, they note that:

> their sound management and conservation is of concern to *the Governments of the countries to which they belong* and are of value to local communities and to the environment as a whole (emphasis added).[314]

The fifteen Principles do not have titles, are difficult to classify in any logical or coherent way, and are poorly drafted. As a practical guide to the sustainable management of forests, the statement has been of little assistance. Consistently through the statement runs the theme that forest issues are a matter for national, rather than international, policies.[315] Several governing principles to inform the development of national policies are set forth, including 'the right to socio-economic development on a sustainable basis', Principle 21 of the Stockholm Declaration, the needs of present and future generations, an integrated and comprehensive approach, and the rights of indigenous peoples.[316]

The Principles make only limited reference to institutional arrangements and their development,[317] endorse public participation, scientific research, forest inventories and assessments, education and training, the international exchange of information, and the utilisation of indigenous knowledge.[318] Environmental impact assessments should be carried out where actions are likely to have significant adverse impacts on important forest resources, and where such actions are subject to a decision of a competent national authority.[319]

This weak language regarding environmental impact assessments, which obviates the need for an environmental impact assessment where actions do not require a decision of an authority, is further limited by the requirement that decisions on forest resources should benefit from 'a comprehensive assessment of economic and non-economic values of forest goods and services and of the environmental costs and benefits'.[320] Positive and transparent actions are called

[312] Preamble, para. (b).
[313] '[N]atural and planted, in all geographic regions and climatic zones, including austral, boreal, subtemperate, temperate, subtropical and tropical': Preamble, para. (e).
[314] Preamble, para. (f).
[315] Principle 2(a). 'National policies' are also referred to, *inter alia*, in Principles 3(a), 5(a), 6(b), 8(d), 8(f), 8(h) and 9(c).
[316] Preamble, para. (a); Principles 1(a), 2(b) and (c), 3(c), 4, 5(a) and (b), 8(d) and 15.
[317] Principle 3(a).
[318] Principles 2(d) and 12.
[319] Principle 8(h).
[320] Principle 6(c).

for, notably in developed countries, by means of reforestation, rehabilitation, afforestation and forest conservation.[321]

To this end, financial incentives for sustainable forest management should be provided. The 'agreed full incremental costs' of forest conservation and sustainable development should be equitably shared by the international community,[322] and specific financial resources should be provided to developing countries 'with significant forest areas which establish programmes for the conservation of forests'.[323] National policies and programmes should be supported by international financial and technical co-operation, and 'new and additional financial resources' should be provided to enable them to manage, conserve and develop their forest resources.[324] The Principles endorse incentives to encourage conservation and sustainable development, such as: the incorporation of environmental costs and benefits into market forces and mechanisms; the redress of external debt; and the avoidance of fiscal, trade, industrial, transportation and other policies and practices which may lead to forest degradation.[325] International trade in forest products should be based on non-discriminatory and multilaterally agreed rules and procedures consistent with international trade law and practices.[326] Moreover, in restrictive language, the Principles provide that:

> [u]nilateral measures, incompatible with international obligations or agreements, to restrict and/or ban the international trade in timber or other forest products should be removed or avoided . . .[327]

Following UNCED, renewed efforts were made to establish institutional arrangements for international forest management, conservation and sustainable development. At its third session, in April 1995, the UN Commission on Sustainable Development (CSD) established an Intergovernmental Panel on Forests (IPF) with a two-year mandate. The IPF's primary responsibility was the implementation of the forest-related decisions taken at UNCED. Its work was supported by an Interagency Taskforce on Forests (ITF) which co-ordinated the inputs of various international organisations into the forest policy process. In July 1997, the IPF was replaced by an *ad hoc* open-ended Intergovernmental Forum on Forests (IFF) with responsibility for promoting and facilitating the implementation of proposals for action developed by the IPF. The IFF was also given a mandate to consider international arrangements and mechanisms to promote forest management, conservation and sustainable development, with the view to developing a legally binding instrument. The IFF's mandate came to an end in 2000, and it was replaced by the United Nations Forum on Forests (UNFF),[328] a subsidiary body of the UN Economic and Social Council, which

[321] Principle 8(a) and (b). [322] Principle 1(b). [323] Principle 7(b).
[324] Principles 8(c) and 10. [325] Principles 9(a) and 13(c) and (d).
[326] Principle 13(a) and (b). [327] Principle 14.
[328] ECOSOC Res. E/2000/35, 18 October 2000.

held its first session in June 2001. UNFF's primary goal is the development of a legal framework dealing with all types of forests. Its work is supported by the Collaborative Partnership on Forests (replacing the ITF) which consists of representatives from relevant United Nations organisations as well as other international and regional organisations in the forestry area.[329]

### *Plants*

S. Johnston, 'Conservation Role of Botanic Gardens and Gene Banks', 2 RECIEL 172 (1993); D. Cooper, 'The International Undertaking on Plant Genetic Resources', 2 RECIEL 158 (1993); R. L. Margulies, 'Protecting Biodiversity: Recognising International Intellectual Property Rights in Plant Genetic Resources', 14 *Michigan Journal of International Law* 322 (1993).

Several international agreements aim to improve co-operation in controlling pests and diseases of plants and plant production and in preventing their introduction and spread across national boundaries. These include the 1951 International Convention for the Establishment of the European and Mediterranean Plant Protection Organization,[330] the 1951 FAO International Plant Protection Convention,[331] the 1954 Phyto-Sanitary Convention for Africa South of the Sahara,[332] the 1956 Plant Protection Agreement for the Asia and Pacific Region,[333] the 1959 Agreement Concerning Co-operation in the Quarantine of Plants and Their Protection Against Pests and Diseases[334] and the 1993 Agreement for the Establishment of the Near East Plant Protection Organization.[335] These treaties provide for a combination of measures, including the development of national standards, restrictions on import and export, and research on phyto-sanitary conditions.

[329] The current membership of the CPF includes the Secretariat of the Convention on Biological Diversity; the Centre for International Forestry Research; the UN Department of Economic and Social Affairs; the Food and Agriculture Organization; the International Tropical Timber Organization; the United Nations Development Programme; the United Nations Environment Programme; the World Bank; the UN Convention to Combat Desertification; the Global Environment Facility; and the UN Framework Convention on Climate Change.

[330] Rome, 18 April 1951, in force 1 November 1953, UKTS 44 (1956), as amended by the EPPO Council on 27 April 1955, 9 May 1962, 18 September 1968, 19 September 1973, 23 September 1982, 21 September 1988 and 15 September 1999.

[331] Rome, 6 December 1951, in force 3 April 1952, 150 UNTS 67, as revised by the FAO Conference in 1979. At its twenty-ninth session in November 1997, the FAO Conference adopted a new revised text of the Convention; however, this is not yet in force.

[332] London, 29 July 1954, in force 15 June 1956, 1 SMTE 115.

[333] Rome, 27 February 1956, in force 2 July 1956, 247 UNTS 400.

[334] Sofia, 14 December 1959, in force 19 October 1960, 1 SMTE 153.

[335] Rabat, 18 February 1993, not yet in force.

The need to prevent the spread of plant pests may conflict with the need to protect the diversity of plant genetic resources and ensure the international dissemination of such resources for research purposes. In 1983, the FAO Council adopted a non-binding International Undertaking on Plant Genetic Resource (FAO Undertaking) to preserve plant genetic resources and make them as widely available as possible for plant breeding,[336] which is administered by the Commission on Genetic Resources for Food and Agriculture (CGRFA). It provides for *in situ* and *ex situ* conservation and has been supplemented by an International Fund for Plant Genetic Resources.[337] The FAO Undertaking, which contains elements subsequently reflected in the Biodiversity Convention, is based on 'the universally accepted principle that plant genetic resources are a heritage of mankind' and should be made available without restriction.[338] It supports the identification of potentially valuable plant genetic resources that are in danger of becoming extinct and other plant genetic resources which may be useful for development but whose existence or essential characteristics are unknown.[339] Adhering states undertake to protect and preserve the genetic resources of plants growing in their habitat, and to ensure the collection and safeguarding of material where resources are in danger of becoming extinct because of agricultural or other development.[340] They also undertake to make plant genetic resources under their control available, free of charge, for scientific research, plant breeding, or genetic resource conservation.[341] The Undertaking's objective of furthering international co-operation includes the establishment of an international network of base collections in gene banks.[342] The Undertaking is stated to be without prejudice to any measures taken by governments in accordance with the 1951 Convention, to regulate the entry of plant genetic resources in order to prevent the introduction or spread of plant pests.[343]

In 1989, the FAO Conference adopted an Agreed Interpretation of the International Undertaking (1989 Agreed Interpretation)[344] which recognised that plant genetic resources are 'a common heritage of mankind to be preserved, and to be freely available for use, for the benefit of present and future generations'. It was adopted to attract the participation of states which had not adhered to the Undertaking because of potential conflict with plant breeders' rights and farmers' rights adopted under the International Union for the Protection of New Varieties of Plants (UPOV).[345] The 1989 Agreed Interpretation

[336] Rome, 23 November 1983, as supplemented; Res. 8/83 of the twenty-second FAO Conference. The Undertaking is part of the FAO's Global System on Plant Genetic Resources for Food and Agriculture. One hundred and thirteen states have expressed their commitment to the Undertaking.

[337] Arts. 3, 4 and 6(d). [338] Art. 1. [339] Art. 3(1). [340] Art. 4. [341] Art. 5.

[342] Art. 7(1)(a). [343] Art. 10. [344] 29 November 1989, 25 FAO Conf. Res. 5189.

[345] 1961 UPOV Convention, as revised in 1978. The UPOV Convention requires each party to adopt national legislation to give at least twenty-four genera or species legal protection,

declares that plant breeders' rights under the UPOV are not incompatible with the FAO Undertaking, and that an adhering state may impose such minimum restrictions on the free exchange of plant genetic resources as are necessary to conform with national and international obligations.[346] The Interpretation makes it clear that the best way to implement the concept of farmers' rights (allowing farmers to replant seeds developed on the basis of germ plasm from their own native plants) is to ensure the conservation, management and use of plant genetic resources for the benefit of present and future generations of farmers, including making funds available from the International Fund for Plant Genetic Resources.[347]

With the entry into force of the Biodiversity Convention and the concomitant rise of agro-biotechnology in the early 1990s, it became clear that a non-binding undertaking was no longer sufficient to ensure the conservation and sustainable use of plant genetic resources. Thus in November 1993 the FAO Conference called on the CGRFA to open negotiations for the revision of the Undertaking as a legally binding agreement which would operate in harmony with the Biodiversity Convention. After some seven years of negotiation, an Agreed Text of the International Undertaking on Plant Genetic Resources was adopted by the CGRFA on 1 July 2001. The Agreed Text was forwarded to the thirty-first session of the FAO Conference which adopted the International Treaty on Plant Genetic Resources for Food and Agriculture.[348] The objectives of the new treaty are 'the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security'.[349] In furtherance of these objectives, the parties are to promote an integrated approach to the exploration, conservation and sustainable use of plant genetic resources through activities such as: surveying and collecting plant genetic resources; promoting on-farm, *in situ*

in accordance with the Convention, within eight years of signing. A plant variety is subject to protection under the Convention if it is distinct, uniform and stable, and it satisfies the requirement of 'novelty'. Protection granted under the Convention generally lasts for twenty to thirty years, and the grant of plant variety rights confers on the holder the exclusive right, *inter alia*, to sell the reproductive material (e.g. seeds, cuttings or whole plants) but not material for consumption (e.g. fruit). In 1991, the UPOV Convention was revised to give greater protection by requiring parties to apply the Convention to all genera and species, to extend the exclusive right to include harvested materials (e.g. fruit), to allow enforcement against farm-saved seed (where a farmer produces further seed of the protected variety from the previous year's crop), and to allow double protection through the grant of patentability: see World Resources Monitoring Centre, *Global Biodiversity: Earth's Living Resources in the 21st Century* (2000), 496.

[346] 1989 Agreed Interpretation, paras. 1 and 2. [347] Para. 4.

[348] FAO Conference Res. 3/2001. As at 1 November 2002, nine states were parties to the Treaty, which will enter into force on the nineteenth day following the fortieth ratification, provided that at least twenty of the ratifications are received from FAO members.

[349] Art. 1.

and *ex situ* conservation of such resources; and monitoring the maintenance of the viability, the degree of variation, and the genetic integrity of collections of plant genetic resources for food and agriculture.[350] Parties also commit to develop and maintain policy and legal measures to promote the sustainable use of plant genetic resources, such as the promotion of diverse farming systems and broadening the genetic base of crops.[351] Pursuant to Article 9 of the Treaty, parties are to take measures to protect and promote 'farmer's rights', including traditional knowledge, the right to participate in the equitable sharing of benefits arising from the utilisation of plant genetic resources and the right to participate in national decision-making on matters related to the conservation and sustainable use of plant genetic resources.

Part IV of the Treaty establishes a Multilateral System for access to plant genetic resources for food and agriculture, and the sharing of benefits deriving from their utilisation. The treaty recognises the sovereign rights of parties over their plant genetic resources, including that the authority to determine access to those resources rests with national governments and is subject to national legislation.[352] The Multilateral System covers plant genetic resources in food crops and forages, listed in Annex I, which are under the management and control of parties and in the public domain.[353] Other private entities which hold plant genetic resources are to be encouraged to include those resources within the Multilateral System.[354] The contracting parties undertake to facilitate access by other contracting parties, including natural and legal persons under their jurisdiction, to the plant genetic resources under the Multilateral System.[355] Access is subject to the condition that it is provided solely for the purpose of utilisation and conservation for research, breeding and training for food and agriculture; pharmaceutical and industrial uses are not permitted.[356] Any benefits (including commercial benefits) arising from the use of resources under the Multilateral System are to be shared fairly and equitably through mechanisms such as the exchange of information, access to and transfer of technology, capacity-building and the sharing of any benefits arising from commercialisation.[357] Benefits are to flow primarily, directly or indirectly, to farmers.[358]

The implementation of the Treaty is to be overseen by a Governing Body composed of the contracting parties. The Governing Body has oversight of the Multilateral System, may establish subsidiary bodies as necessary, and may consider amendments to the Treaty or its Annexes.[359] The Governing Body is assisted by a Secretary appointed by the Director General of the FAO.[360]

[350] Art. 5. [351] Art. 6. [352] Art. 10. [353] Art. 11.1 and 11.2.
[354] Art. 11.3. [355] Art. 12.1. [356] Art. 12.3(a). [357] Art. 13.
[358] Art. 13.3. [359] Art. 19. [360] Art. 20.

### *Land and soil conservation*

A 1992–3 study sponsored by UNEP found that an area of 1.2 billion hectares, nearly 11 per cent of the earth's vegetated surface, suffers from soil degradation. This has been defined as 'a process that describes human-induced phenomena which lower the current and/or future capacity of the soil to support human life', and occurs as: light degradation (good soils that show signs of degradation but can be restored using good conservation practices); moderate degradation (which allows continued agricultural use but with greatly reduced productivity, and restoration requires major changes in land use practices); severe degradation (agricultural use is no longer possible and restoration is possible at a high cost); and extreme degradation (the area is unsuitable for agriculture and is beyond restoration).[361] Apart from wind and water erosion, soil degradation results from chemical deterioration due to salinisation, acidification and pollution, or from physical deterioration due to compaction, waterlogging or subsidence of organic soils. These are caused principally by agricultural activities, deforestation, over-exploitation, industrial and bio-industrial activities, and overgrazing; the rate of soil degradation has intensified significantly over the past forty-five years.[362]

International legal responses to address soil degradation have been limited. Apart from the commitments which establish general obligations,[363] a 1998 Protocol on Soil Protection to the Alpine Convention and a solitary EC Directive,[364] no legally binding instruments have been adopted which have, as their primary aim, specific measures to conserve, improve and rehabilitate soil, and prevent erosion and other forms of degradation.

Some non-binding instruments establish general guidelines. The FAO Council's World Soil Charter adopts agreed principles and guidelines to improve productivity, conservation and rational use of soils, and to promote 'optimum land use', recognising the responsibility of governments to ensure long-term maintenance and improvement of soil productivity.[365] UNEP has subsequently adopted a World Soils Policy,[366] developed environmental guidelines for the formulation of National Soil Policies,[367] and adopted an Action

[361] World Resources Institute, *World Resources (1992–3)*, 113. See also the recent joint study by the International Food Policy Research Institute (IFPRI) and World Resources Institute, *Pilot Analysis of Global Ecosystems: Agroecosystems* (November 2000), 45–54.

[362] *Ibid.*, 111–12, citing International Soil Reference and Information Centre (ISRIC) and UNEP, Global Assessment of Soil Degradation (GLASOD).

[363] 1968 African Nature Convention, Art. IV; 1985 ASEAN Agreement, Art. 7.

[364] Council Directive 86/278/EEC, OJ L181, 12 June 1986, 6.

[365] 25 November 1981, 21 FAO Conf. Res. 8/81, 50 *FAO Soils Bulletin* 79.

[366] UNEP GC/DEC/10/14, 31 May 1982; see also Plan of Action for Implementation of the World Soils Policy, UNEP/GC/DEC/12/12, 28 May 1984.

[367] UNEP Environmental Guidelines for the Formulation of National Soil Policies, UNEP Environmental Management Guidelines No. 7 (1983).

Plan on Drought and Desertification.[368] The Revised Montevideo Programme identifies the conservation of soil as a priority legal issue, and will promote the effective implementation of the Plan of Action of the World Soil Charter through the preparation of guidelines for domestic legislation and related institutional arrangements.[369] In 1992, the Committee of Ministers of the Council of Europe adopted a Recommendation on Soil Protection which set out four fundamental principles: soil protection should be declared of general public interest and integrated into development planning; soil should be recognised by states as a common heritage and a natural, non-renewable resource, and its community interest transcends private interests associated with its use; soil should be taken into consideration in all other policies, including agricultural, forestry, industrial, transport and town planning; and the public should have access to information on soil and be permitted to participate in relevant procedures.[370]

Following on from this, the Sixth Environment Action Programme of the European Community for the period 2001–10 contains a commitment by the European Commission to develop a thematic strategy for soil with the ultimate goal of raising the political importance of soil issues at the European Union level.

One aspect of soil degradation which is now more firmly on the international legal agenda after UNCED is drought and desertification, which is a particularly serious form of soil degradation. It is defined by Agenda 21 as 'land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities',[371] and encompasses soil degradation and associated changes in vegetation in arid and semi-arid areas. Chapter 12 of Agenda 21 ('Managing Fragile Ecosystems: Combating Desertification and Drought') establishes six programme areas to combat desertification (including soil degradation) and drought. These are intended to combat land degradation through intensified soil conservation, afforestation and reforestation and through developing anti-desertification programmes and drought preparedness and relief schemes, including programmes to cope with environmental refugees.[372]

In December 1992, at the request of UNCED, the UN General Assembly established an intergovernmental negotiating committee to elaborate an international convention to combat desertification in those countries experiencing

[368] UNEP/GC.6/11, 24 May 1978. [369] UNEP/GC.17/5, Annex, Section K (1993).

[370] Rec. 92(8), 18 May 1992, cited in 3 *Yearbook of International Environmental Law* 334 (1992).

[371] Agenda 21, Chapter 12, para. 12.2; desertification is said to affect about one-sixth of the world's population, 70 per cent of all drylands, amounting to 3.6 billion hectares, and one-quarter of the total land area of the world: *ibid.*

[372] Paras. 12.15 to 12.25; 12.35 to 12.44; and 12.45 to 12.54.

serious drought and/or desertification, particularly in Africa.[373] The United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) was adopted in June 1994 and entered into force on 26 December 1996.[374] One hundred and seventy-eight states are currently party to the Convention.

The objective of the Convention is:

> to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international co-operation and partnership arrangements, in the framework of an integrated approach which is consistent with Agenda 21, with a view to contributing to the achievement of sustainable development in affected areas.[375]

Affected country parties (i.e. countries whose lands include, in whole or in part, arid, semi-arid and/or dry sub-humid areas affected or threatened by desertification) are required to develop national action programmes to combat desertification in accordance with regional criteria set out in four Annexes to the Convention.[376] The purpose of the programmes is to identify factors contributing to desertification and practical measures necessary to combat desertification and to mitigate the effects of drought such as the establishment of early warning systems, the strengthening of drought contingency plans, the establishment of food security systems and the development of sustainable irrigation programmes. National action programmes must specify the respective roles of government, local communities and land users and the resources available and needed.[377] Development of the national programmes should take a 'bottom-up' approach ensuring the participation of populations and local communities and the creation of an 'enabling environment' at higher levels to facilitate action at national and local levels.[378] The programmes should also be integrated with other national policies for sustainable development.[379]

[373] UNGA Res. 47/188 (1992).

[374] Paris, 17 June 1994, 33 ILM 1328 (1994); states are party.

[375] Art. 2. 'Desertification' is defined as land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities (Art. 1(a)). 'Drought' is defined as the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems (Art. 1(c)).

[376] Art. 5. Regional Implementation Annexes are provided for Africa, Asia, Latin America and the Caribbean, and the Northern Mediterranean.

[377] Art. 10.1 and 10.2. [378] Art. 3(a). [379] Art. 5(b).

Obligations are also placed on developed country parties to provide 'substantial' financial resources and other forms of support to affected developing countries, particularly those in Africa, and to promote and facilitate access by affected country parties, particularly affected developing country parties, to appropriate technology, knowledge and know-how.[380] In implementing the Convention, the parties must give priority to affected African country parties, in the light of the particular situation prevailing in that region, while not neglecting affected developing country parties in other regions.[381]

The primary institution of the Convention is the conference of the parties which is responsible for reviewing the implementation of the Convention, facilitating the exchange of information on implementing measures and adopting amendments to the Convention.[382] It is supported by a Permanent Secretariat[383] and a Committee on Science and Technology, which provides the conference of the parties with information and advice on scientific and technological matters relating to combating desertification and mitigating the effects of drought.[384]

## *Marine living resources*

D. M. Johnston, *The International Law of Fisheries: A Framework for Policy Oriented Enquiries* (1965); D. Caron, 'International Sanctions, Ocean Management, and the Law of the Sea: A Study of Denial of Access to Fisheries', 16 *Ecology Law Quarterly* 311 (1989); W. Herrington, 'In the Realm of Diplomacy and Fish: Some Reflections on the International Convention on High Seas Fisheries in the North Pacific Ocean and the Law of the Sea Negotiations', 16 *Ecology Law Quarterly* 101 (1989); D. Lodge, 'New Approaches to Fisheries Enforcement', 2 RECIEL 277 (1993); W. T. Burke, *The New International Law of Fisheries: UNCLOS 1982 and Beyond* (1994); J. de Yturriaga, *The International Regime of Fisheries: From UNCLOS to the Presencial Sea* (1997); E. Hey (ed.), *Developments in International Fisheries Law* (1999); F. Orrego Vicuna, *The Changing International Law of High Seas Fisheries* (1999); R. Churchill and A. Lowe, *The Law of the Sea* (1999, 3rd edn); OECD, *Towards Sustainable Fisheries: Economic Aspects of the Management of Living Marine Resources* (1999); D. Vidas and W. Ostreng (eds.), *Order for the Oceans at the Turn of the Century* (1999); S. Kaye, *International Fisheries Management* (2000); O. Stokke (ed.), *Governing High Seas Fisheries* (2001).

[380] Art. 6. [381] Art. 7. [382] Art. 22.

[383] Art. 23. Since January 1999, the permanent Secretariat of the UNCCD has been located in Bonn, Germany.

[384] Art. 24.

## Introduction

The marine living resources of the oceans and seas include marine fish,[385] cephalods,[386] crustaceans[387] and marine mammals.[388] Other sea-dependent mammals not usually included in international fisheries and other marine statistics include sea otters and polar bears. FAO statistics show that the annual take of living resources from the oceans is occurring at a rate which goes far beyond the maximum sustainable yield (MSY) and that further international efforts are needed to conserve fisheries and other marine living resources. According to the FAO, the average annual global marine catches of fish, cephalods and crustaceans increased by 35 per cent in the decade up to 1989.[389] In the decade up to 1999, there was a production increase of 20 million tonnes over the previous decade although this was mainly due to aquaculture, as capture fisheries production remained relatively stable.[390] These annual catch data, which relate to the 840 'species items' identified by the FAO and in its nineteen marine statistical areas, suggest that most traditional marine fish stocks have reached full exploitation: any further intensified fishing effort is unlikely to produce an increase in catch, and the use of new fishing methods that increased catches, such as driftnet fishing, would result in overfishing and further declines in fish populations.[391] The FAO's statistics show that in the period 1987–9 four of the seventeen major marine fishing areas were overfished (the Mediterranean and Black Sea, the North-West Pacific Ocean, the South-East Pacific Ocean and the Eastern Indian Ocean) to the extent that catches exceeded the maximum sustainable limit recognised by the FAO, and that the world's total marine catch was within approximately 20 per cent of the estimated total maximum sustainable yield. In the past decade, catches in many of these fisheries have stabilised, but the FAO estimates that some 47–50 per cent of stocks remain fully exploited, with another 15–18 per cent of stocks being overexploited.[392] The development and use of new technologies and fishing practices, such as

[385] These include the following nine FAO species groupings: flounders, halibuts, soles, etc.; cods, hakes, haddocks, etc.; redfishes, basses, congers, etc.; jacks, mullets, sauries, etc.; tunas, bonitos, billfishes, etc.; herrings, sardines, anchovies, etc.; mackerels, snoeks, cutlassfishes, etc.; sharks, rays, chimeras, etc.; and miscellaneous marine fishes: World Resources Institute, *World Resources (1992–3)*, 343.

[386] *Ibid.* The FAO grouping includes squids, cuttlefishes, octopuses, etc.

[387] *Ibid.* The FAO grouping includes the following categories: seaspiders, crabs, etc.; lobsters, spinyrock lobsters, etc.; squat lobsters; shrimp, prawns. etc.; krill, planktonic crustaceans, etc.; and miscellaneous marine crustaceans.

[388] *Ibid.*; divided into three main groups: cetaceans, including whales and dolphins; pinnipeds, including seals, sea lions and walruses; and sirenians, including manatees and dugongs.

[389] FAO, *Yearbook of Fishery Statistics* for 1983, 1984, 1986 and 1989; World Resources Institute, *World Resources (1992–3)*, 343 and Table 23.4.

[390] FAO, *The State of World Fisheries and Aquaculture* (2000).

[391] *Ibid.*

[392] *Ibid.*

large-scale driftnet fishing and electronic equipment to identify and track marine living resources, and increased demand for fisheries resources for human consumption and animal feed, are placing an overwhelming strain on the ability of these ocean resources to sustain and replenish themselves. This has led to an increase in the number of international disputes over fisheries, including cases being brought to the ICJ and under the 1982 UNCLOS. According to one commentator, three policy failures at the national and international levels are responsible for the threat to fisheries: the over-capitalisation of fishing fleets and the over-exploitation of fisheries; the environmental deterioration, including the degradation of coastal and estuarine habitats which are frequently the breeding grounds of fisheries; and the increasing use of fisheries for recreational purposes.[393]

The main objective of international law for fisheries conservation has been to establish a framework for international co-operation towards the management and conservation of fisheries and marine living resources which is built upon two related obligations: international research and scientific co-operation, and international regulation. Both are influenced by changes which have taken place over the past century resulting in an extension of the rights of coastal states and a corresponding diminution of the area of high seas on which any state is allowed to fish. Despite the belief that the extension of the coastal states' rights would benefit conservation efforts, reports of landings do not suggest that the new regime has led to a stabilisation of fish stocks at levels which are sustainable. This aspect of the conservation of biological diversity poses particularly complex challenges for international law. Many marine living resources are migratory over medium or long distances and do not remain conveniently within the territorial jurisdiction of any single state.[394] The fact that many marine living resources are found in the high seas area, beyond the national jurisdiction of any state, means that they have been traditionally subject to the right of all states to allow fishing activities and to benefit from the freedom of the high seas. In the absence of effective international management regimes for these areas, there is little incentive for a state to impose conservation measures unilaterally when it knows that its abstention will be replaced by the activities of fishing vessels from other states. Many marine living resources are therefore 'shared' within the meaning of the 1978 UNEP Principles.[395] According to Churchill and Lowe, four consequences of particular note flow from the common property nature of marine living resources:

[393] F. W. Bell, *Food from the Sea: The Economics and Politics of Ocean Fisheries* (1978), 339–40, cited in L. K. Caldwell, International Environmental Policy (1990, 2nd edn), 285.

[394] See in this regard the decision of the WTO Appellate Body in the *Shrimp/Turtle* case, chapter 19, pp. 965–73 below.

[395] See chapter 2, p. 43 above.

> a tendency for fish stocks to be fished above biologically optimal levels; a tendency for more fishermen to engage in a fishery than is economically justified; a likelihood of competition and conflict between different groups of fishermen; and the necessity for any regulation of marine fisheries to have a substantial international component.[396]

International conservation rules are closely related to the jurisdictional rights of states.[397] Today the main points of reference relating to those jurisdictional rights are the maritime zones established by the 1982 UNCLOS, according to which different rules govern marine living resources in and beyond national territory.[398] This is reflected in the two relevant programme areas of Agenda 21: the first addresses the sustainable use and conservation of marine living resources of the high seas,[399] and the second addresses the sustainable use and conservation of marine living resources under national jurisdiction, including the exclusive economic zone.[400]

This part of chapter 11 is divided into the following five sections: (1) the historical background; (2) the general conservation rules established by the 1982 UNCLOS; (3) the particular conservation rules established under the multilateral fisheries arrangements; (4) driftnet fishing; and (5) the rules for the conservation of whales, tuna and seals.

## Historical background

The rules of international law relating to the sustainable use and conservation of marine living resources have a lengthy history, particularly compared to other international environmental issues. The current legal regime reflects developments in state practice and treaty law which extend back to the second half of the eighteenth century. Landmark historical developments include the 1893 award of the arbitral tribunal in the *Pacific Fur Seal Arbitration*, the establishment of the FAO in 1945, the Geneva Conventions adopted by the 1958 United Nations Conference on the Law of the Sea, and the ICJ judgment in the *Fisheries Jurisdiction* case in 1974. These have been joined more recently by the ITLOS provisional measures order in the *Southern Bluefin Tuna* case in 1999, and cases filed at the ICJ (the *Estai* case in 1999) and at ITLOS (the *Swordfish* case in 2000), reflecting efforts by coastal states to take measures to prevent unlawful fishing.[401]

***Pacific Fur Seal Arbitration*** The *Pacific Fur Seal Arbitration* award of 1893 is relevant today for at least three reasons:[402] it reflects the inherent difficulties in

[396] R. R. Churchill and A. V. Lowe, *The Law of the Sea* (1988, 2nd edn), 224.
[397] See chapter 1, pp. 13–14 above, and pp. 569–72 below.
[398] Paras. 17.44 and 17.69.
[399] Agenda 21, paras. 17.44 to 17.88.
[400] Agenda 21, paras. 17.69 to 17.95.
[401] See also in this regard the series of 'prompt release' cases at ITLOS, similarly premised on efforts by coastal states to prevent illegal fishing: chapter 5, pp. 218–20 above.
[402] 15 August 1893, 1 *Moore's International Arbitration Awards* 755.

the conservation of natural resources which fall, wholly or partly, outside the jurisdiction of a single state; the Regulations adopted in the award illustrate early international legal techniques for the conservation of shared natural resources; and it indicates the role of international courts and tribunals in the peaceful resolution of disputes and the progressive development of international legal arrangements. The *Pacific Fur Seal Arbitration* concerned the right of states to adopt regulations to conserve fur seals in areas beyond national jurisdiction. It arose out of a dispute between the United States and the United Kingdom following their failure (with France, Germany, Japan, Russia, Sweden and Norway) to agree on international rules to protect fur seal fisheries in the Bering Sea from indiscriminate destruction and extermination by over-exploitation. The United States had previously proposed international arrangements to protect the seals by limiting the annual take based upon provisions of the 1882 North Sea fisheries convention.[403] Negotiations collapsed following the seizures in 1886 and 1889 by the US of British Columbian and British vessels engaged in fur sealing in the Bering Sea beyond the three-mile limit of US territorial sea. An 1892 Treaty of Arbitration between the US and the UK submitted five questions to a tribunal to settle the dispute over jurisdictional rights in the Bering Sea, the preservation of fur seals, and the rights of nationals of each country to take these fur seals.[404] The first four questions concerned the following issues: Russia's historic claims to jurisdiction in the Bering Sea and its assertion of seal fishing rights; the UK's recognition of such rights; and the transfer of those rights to the US by a Treaty of 1867. The fifth question raised an environmental issue, asking whether the US had any right, and if so what right, 'of protection or property in the fur seals frequenting the islands of the United States in the Bering Sea when such seals are found outside the ordinary three-mile limit'.[405]

The award and the Regulations The arbitrators found by a majority of six to one that Russia had never asserted any exclusive jurisdiction in the Bering Sea or in the seal fisheries beyond territorial waters, and that the UK had not recognised any claim to exclusive jurisdiction over the seal fisheries in the Bering Sea outside territorial waters. The arbitrators unanimously agreed that the Bering Sea was part of the Pacific Ocean as that term was used in the Treaty of 1825, and by a majority of six to one held that Russia held no exclusive rights of jurisdiction in the Bering Sea and no exclusive rights as to its seal fisheries outside of ordinary territorial waters after the Treaty of 1825. The arbitrators also held unanimously that Russia's rights as to jurisdiction and as to the seal

[403] The Hague, 6 May 1882, S. Ex. Doc. 106, 50 Cong. 2 Sess. 97.

[404] Treaty Between Great Britain and the United States for Submitting to Arbitration the Questions Relating to the Seal Fisheries in the Bering Sea, Washington, 29 February 1892, 176 CTS 447, 8 IPE 3874. Art. 1. The Tribunal comprised seven arbitrators: two appointed by each of the United States and the UK and one appointed by France, Italy and Sweden.

[405] *Ibid.*

fisheries in the Bering Sea in the 1867 Treaty passed unimpaired to the US under the Treaty.

On the important question of conservation, the arbitrators held by a majority of five to two that the US had no 'right of protection or property in the fur seals frequenting the islands of the United States in the Bering Sea, when such seals are found outside the ordinary three-mile limit'.[406]

Having rejected the United States' argument that the US could apply conservation measures in areas beyond national jurisdiction, the arbitrators adopted Regulations for the protection and preservation of fur seals outside jurisdictional limits. The Regulations included elements recognisable in modern international environment law, including rules establishing closed seasons, and limiting the methods and means of hunting. They prohibited the two countries from allowing the killing, capture or pursuit of fur seals at any time within a zone of sixty miles around the Pribilov Islands, including the territorial waters, and between 1 May and 31 July inclusively on the high seas in certain other parts of the Pacific Ocean.[407] Such fur seal fishing as was permitted could only be carried out with the use of sailing vessels authorised by a special government-issued licence and carrying a distinguishing flag, and the Regulations required information to be kept on the seal captures and the communication of the information between the governments at the end of each season.[408] The Regulations prohibited the use of nets, firearms and explosives, required the governments to control the fitness of men engaged in fur seal fishing, and were not applicable to Indians carrying on fur seal fishing in traditional ways.[409] The arbitrators adopted a Supplementary Declaration on fur-sealing within the territorial limits of each state which recommended that the critical condition of fur seal populations required both governments to come to an understanding to prohibit any killing of fur seals, either on land or at sea, for a period of two or three years, or at least one year, subject to appropriate exceptions.[410] Neither government accepted the recommendation.

The arguments The legal arguments of the two states are of some interest. The US based its claim on its jurisdiction over the Bering Sea and on a right of protection and property in the fur seals found outside the ordinary three-mile limit 'based upon the established principles of the common and the civil law, upon the practice of nations, upon the laws of natural history, and upon the common interests of mankind'.[411]

The US argued that property rights entitled it to preserve the fur seals from destruction by the use of 'such reasonable force as may be necessary', and that

[406] 8 IPE 3877. [407] Regulations, Arts. 1 and 2.
[408] Regulations, Arts. 3 to 5. [409] Regulations, Arts. 6 to 8.
[410] Declaration 11, *Pacific Fur Seals Arbitration*, 15 August 1893, 1 *Moore's International Arbitral Awards* 755; the arbitrators adopted a Supplementary Declaration, *ibid.*, 856.
[411] *Ibid.*, 811.

even if it did not have property rights it had an interest in the 'legitimate and proper use of the seal herd on its territory' which it was entitled to protect against wanton destruction. In terms not dissimilar to its position underlying the yellow-fin tuna case nearly one hundred years later, the US argued that no part of the high sea was open to individuals for the purpose of destroying national interests of such a character and importance. Moreover, it argued that it alone possessed the power of preserving the seals and that it was acting as the trustee 'for the benefit of mankind and should be permitted to discharge their trust without hindrance'.[412] The property argument was based upon the belief that the dominion conferred upon particular nations over things of the earth was limited since nations 'are not made the absolute owners; their title is coupled with a trust for the benefit of mankind. The human race is entitled to participate in the enjoyment.'[413] The trust argument was illustrated in the following way:

> The coffee of central America and Arabia is not the exclusive property of those two nations; the tea of China, the rubber of South America, are not the exclusive property of those nations where it is grown; they are, so far as not needed by the nations which enjoy the possession, the common property of mankind; and if nations which have custody of them withdraw them, they are failing in their trust, and other nations have a right to interfere and secure their share.[414]

The UK's defence, which prevailed, was traditional and less elaborate: the Bering Sea was 'an open sea in which all nations of the world have the right to fish and navigate', which rights could 'not be taken away or restricted by the mere declaration or claim of any one or more nations', since they were natural rights which continued to exist to their full extent 'unless specifically modified, controlled or limited by treaty'.[415] Denying the existence of any property right in the US, the UK relied upon 'the law on which depends the freedom of the sea . . . The right to come and go upon the high sea without let or hindrance, and to take therefrom at will and pleasure the produce of the sea.'[416] The UK argued that the US claim of property in and the right to protect the fur seal outside the three-mile limit was without precedent and unsupported even by US practice: the right to protect the seals was limited to the right to prevent ships and persons from entering territorial waters for the purpose of capturing them.[417] The UK successfully argued that this view was 'shorn of all support of international law and of justification from the usage of nations' and based solely on 'a claim of property':[418]

[412] *Ibid.*, 813–14. [413] *Ibid.*, 853. [414] *Ibid.*, 853. [415] *Ibid.*, 816.
[416] *Ibid.*, 845–6. [417] *Ibid.*, 819–20. [418] *Ibid.*, 845.

> the United States takes refuge in a claim for protection where there is no property, under circumstances so novel that its supporters confess with candour that it can be rested on no precedent, but that precedent ought to be established by international law to meet the exigencies of the case. To all this shadowy claim the government of the Queen submit but one answer – the law.[419]

The Regulations adopted by the *Pacific Fur Seal Arbitration* in 1893 were followed by treaties in 1911, 1942 and 1957,[420] which also introduced some innovative principles, including quantitative limits on the number of seals that could be taken and a commitment to transfer, by way of compensation, a number of sealskins between the various parties.

Subsequent developments The principle of absolute freedom to fish on the high seas endorsed by the *Pacific Fur Seal Arbitration* meant that coastal states did not have jurisdiction for that reason alone over the marine living resources of the high seas. Jurisdiction to prescribe legislation for the conservation of these resources and to enforce such legislation was a matter exclusively for the state which has granted to a ship the right to sail under its flag (flag state).[421] Today the advent of new technologies and practices leading to over-exploitation of the marine living resources of the high seas illustrates the limitations of the principle underlying the award of the *Pacific Fur Seal Arbitration*, and is causing the traditional approach to be challenged by coastal states concerned with the effects of high seas fisheries activities, and also by international legislative and judicial efforts which are seeking to place limits on traditional high seas fisheries freedoms, in particular the 1995 Straddling Stocks Agreement. In this context, the *Pacific Fur Seal Arbitration* award shaped the form and content of subsequent agreements to conserve marine living resources, including the International Whaling Conventions of 1931 and 1937,[422] and many bilateral fisheries agreements to conserve individual species or regional stocks.[423] These were *ad hoc* efforts which could not effectively address the global expansion of international fisheries activities in the period after the Second World War.

The establishment of the FAO in 1945 created a forum for the development of a more co-ordinated international approach to fisheries regulation at the

[419] *Ibid.*

[420] Treaty for the Preservation and Protection of Fur Seals, 7 July 1911, 104 BFSP 175; Provisional Fur Seals Treaty, 156 UNTS 363; Interim Convention on the Conservation of North Pacific Fur Seals, 9 February 1957, 314 UNTS 105.

[421] UNCLOS, Art. 92. [422] See p. 592 below.

[423] See e.g. Canada–United States, Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean, 2 March 1923, 32 LNTS 93; Canada–United States, Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea, 9 May 1930, 121 LNTS 209.

regional and global levels. It will be recalled that the FAO was the only UN specialised agency with a mandate to promote the conservation of natural resources, and its competence over agricultural matters included fisheries and other marine products.[424] The Committee on Fisheries (COFI) has served as a focal point for the activities of the organisation, has assisted in developing a number of regional fisheries agreements, and provides advice and assistance to governments and international organisations.[425] After 1945, international efforts addressed the management and conservation of fisheries at the regional level, and instruments were adopted for the European Community, Nordic marine waters, the North Pacific, the South Pacific, the Black Sea, the South-East Atlantic, the North-West Atlantic, the North-East Atlantic and North Atlantic,[426] and the Antarctic.[427] Future developments were also very significantly influenced by adoption at the First UN Conference on the Law of the Sea in 1958.

The First UN Conference on the Law of the Sea (1958) In 1958, the First United Nations Conference on the Law of the Sea adopted four conventions.[428] Three of the conventions established general rules. The 1958 Convention on the Territorial Sea and the Contiguous Zone recognised the sovereignty of the coastal state and rights over living resources in the territorial sea up to twelve nautical miles from the baseline. Article 2 of the Convention on the High Seas, which includes all parts of the sea that are not included in the territorial sea or in the internal waters of a state, recognised the freedom of the high seas for coastal and non-coastal states under the general principles of international law, including freedom of fishing, which is 'to be exercised by all states with reasonable regard to the interests of other states in the exercise of the freedom'. The 1958 Convention on the Continental Shelf granted sovereign rights to coastal states over the continental shelf for exploration and exploitation of the natural resources without affecting the legal status of superjacent waters as high seas.[429] Under Article 5(1), such exploration or exploitation 'must not result in any unjustifiable interference . . . [with] fishing or the conservation of the living resources of the sea'.

Of the four conventions, the only one which established detailed obligations was the 1958 High Seas Fishing and Conservation Convention which, like the High Seas Convention, recognised the general right of all states to engage in

[424] Chapter 3, pp. 95–6 above. [425] www.fao.org/fi/body/cofi/cofi.asp.
[426] Pp. 585–6 below. [427] Chapter 14, pp. 714–15 below. [428] Chapter 9, p. 393 above.
[429] Art. 2(1) and (3). 'Natural resources' include 'living organisms belonging to the sedentary species; that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or subsoil': Art. 2(4). In the *North Sea Continental Shelf* cases, the ICJ found that Arts. 1 and 2 of the Convention represented customary international law: (1969) ICJ Reports 3, para. 72.

fishing on the high seas.[430] The right to fish on the high seas was not, however, unlimited. The Convention required states to adopt such measures for their nationals 'as may be necessary for the conservation of the living resources of the high seas', which co-operation should lead to negotiated agreements for the conservation of living resources.[431] The Convention also recognised the special interests of coastal states in maintaining the productivity of living resources of adjacent areas of high seas, and declared that coastal states could take unilateral measures of conservation for any stock of fish or other resources in any areas of the high seas to maintain the productivity of the living resources of the sea.[432] However, such measures could only be taken if negotiations with other states concerned had not led to a conservation agreement within six months,[433] and limits existed on the right of recourse to unilateral measures: the need for conservation measures should be urgent, based on scientific findings, and should be non-discriminatory against foreign fishermen.[434] In 1960, a Supplementary Conference failed to agree on the extension of the territorial sea beyond the traditional three-mile limit or on the extension of certain exclusive fishing rights for coastal states beyond their territorial seas.[435] Consequently, a number of states, including Iceland, extended their claims to exclusive fishing rights to a twelve-nautical-mile limit and, in some cases, even up to a 200-nautical-mile limit.

**Fisheries Jurisdiction Case** In 1972, Iceland extended its exclusive fishing zone to fifty nautical miles, catalysing disputes with the United Kingdom and the Federal Republic of Germany over access to fishing grounds. The disputes were submitted to the ICJ, which was thus presented with an opportunity to consider, *inter alia*, the issue of conservation and its relationship to traditional fisheries freedoms.[436] The Court denied Iceland's right to extend its exclusive fishery zone to fifty nautical miles from the baseline and held that Iceland could not unilaterally exclude vessels of the United Kingdom and the Federal Republic of Germany from the area within the fifty-nautical-mile limit from the baseline. The Court also held, however, that as Iceland was a state which was specially dependent on coastal fisheries it had certain preferential fishing

[430] Geneva, 29 April 1958, in force 20 March 1966, 559 UNTS 285.

[431] Arts. 1(2) and 2. The Convention defines 'conservation' as 'the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products': Art. 2.

[432] Arts. 6 and 7(1). [433] Art. 7(1).

[434] Art. 7(2). Disputes, including those over unilateral measures, could go before a special commission with the power to take binding decisions: Arts. 9 and 11.

[435] Whiteman, 4 *Digest of International Law* 91–137.

[436] *Fisheries Jurisdiction* cases (*United Kingdom* v. *Iceland*) (Merits), (1974) ICJ Reports 3; (*Federal Republic of Germany* v. *Iceland*) (Merits), (1974) ICJ Reports 175; Sands *et al.*, *Basic Documents in International Environmental Law* (1995), vol. IIA, 810.

rights in areas beyond its territorial sea; the United Kingdom and the Federal Republic of Germany had traditional fishing rights in those areas; an 'equitable solution' required these two potentially conflicting rights to be reconciled; and for these reasons and for 'conservation needs' neither right was 'absolute'.[437] Accordingly, the Court held that the states concerned had

> an obligation to take full account of each other's rights and of any fishery conservation measures the necessity of which is shown to exist in those waters. It is one of the advances in maritime international law, resulting from the intensification of fishing, that the former laissez faire treatment of the living resources of the sea in the high seas has been replaced by a recognition of a duty to have due regard to the rights of other states and the needs of conservation for the benefits of all. Consequently, both parties have the obligation to keep under review the fishery resources in the disputed waters and to examine together, in the light of the scientific and other available information, the measures required for the conservation and development, and equitable exploitation, of those resources, taking into account any international agreement in force between them, such as the North-East Atlantic Fisheries Convention of 24 January 1959, as well as such other agreements as may be reached in the matter in the course of further negotiation.[438]

This *dictum* from the Court recognised the duty of states to have 'due regard' to the 'needs of conservation for the benefits of all', and in effect established limits on the right of states to fish on the high seas. The decision of the Court provides a basis for the establishment of further limitations on the traditional rights of states, in respect both of fisheries and of other shared natural resources.

Related developments In the period prior to and following the judgment in the *Fisheries Jurisdiction* cases, other developments were emphasising the need for international collaboration to address over-exploitation of marine living resources. Apart from the provisions to be found in the 1972 Stockholm Declaration and Action Plan,[439] the 1978 UNEP Draft Principles set forth a range of principles which could be incorporated into legal agreements.[440]

## UNCLOS and UNCED

The 1982 UNCLOS is the principal international legal instrument setting forth the general rights and obligations of states and other members of the international community for the conservation and sustainable use of marine living resources. It was negotiated over a period of nearly two decades and the question

[437] *Fisheries Jurisdiction* cases (*United Kingdom* v. *Iceland*) (Merits) (1974) ICJ Reports 3 at 30–1; (*Federal Republic of Germany* v. *Iceland*) (Merits) (1974) ICJ Reports 174 at 198–9.
[438] *Fisheries Jurisdiction* cases (*United Kingdom* v. *Iceland*) (Merits) (1974) ICJ Reports 3 at 31; (*Federal Republic of Germany* v. *Iceland*) (Merits) (1974) ICJ Reports 174 at 199.
[439] See below. [440] Chapter 2, p. 43 above.

of fisheries rights and obligations, including conservation, was a central issue. Most developing countries and some developed countries, including Australia, Canada and Norway, sought an extension of the jurisdictional rights of coastal states over fisheries; other states, including the United States, proposed a management approach which took into account the migratory characteristics of different species so that highly migratory species would be regulated by the various international fisheries commissions, and other species would be primarily subject to the jurisdiction of coastal states; states whose ships engaged in long-distance fishing, including Japan and the former Soviet Union, generally opposed any extension of coastal states' management rights which might interfere with their long-distance fishing rights.[441] On balance, the provisions of the 1982 UNCLOS extended the rights of coastal states, principally by formalising the legal status of exclusive economic zones. The Convention also recognised the need for special rules to manage and conserve particular types of species.

UNCLOS has exerted a significant influence on the practice of states, particularly since it came into force in 1994. In respect of the provisions on the management and conservation of fisheries, it may be considered to reflect customary international law. UNCLOS provided the basis for the deliberations at UNCED on international legal aspects of conservation, and is described by Agenda 21 as setting forth 'rights and obligations of states with respect to conservation and utilisation' of marine living resources.[442] UNCLOS includes provisions on the conservation and sustainable use of marine living resources in territorial waters, in archipelagic waters, on the continental shelf, in the exclusive economic zone, and on the high seas. UNCLOS also includes special rules for common stocks, for highly migratory species, for marine mammals and for anadromous and catadromous species.

**Territorial waters, archipelagic waters and the continental shelf** Under UNCLOS, a coastal state has sovereignty over the twelve-nautical-mile territorial sea and the marine living resources found therein.[443] Each coastal state is free to set laws for the conservation and sustainable use of living resources subject to compliance with its international legal obligations. Each coastal state can adopt laws governing innocent passage through its territorial waters in respect of, *inter alia*, the conservation of marine living resources, the prevention of infringement of its fisheries laws, and the preservation of its environment.[444]

[441] Churchill and Lowe, *The Law of the Sea* (1988, 2nd edn), 231–2.

[442] Agenda 21, paras. 17.44 and 17.69; see also the Preamble to the 1992 OSPAR Convention, which describes UNCLOS as reflecting customary international law: chapter 9, pp. 425–6 above.

[443] Arts. 2 and 3.

[444] Art. 21(1)(d) to (f). Fishing activities which occur in the territorial seas are inconsistent with innocent passage: Art. 19(2)(i).

Archipelagic states have sovereignty over the waters within archipelagic baselines, including marine living resources found therein, and the rules of innocent passage applicable to territorial waters apply also to archipelagic waters.[445] However, archipelagic states must recognise the traditional fishing rights of neighbouring states which are immediately adjacent to the archipelagic waters, for areas falling within archipelagic waters, subject to these rights being regulated by non-transferable bilateral agreements.[446]

Coastal states continue to have exclusive sovereign rights over their continental shelf to explore and exploit natural resources.[447] These rights do not affect the legal status of superjacent waters and their exercise must not infringe or unjustifiably interfere with navigation and other rights and freedoms of other states.[448]

**Exclusive economic zone** UNCLOS established new rules of international law for the exclusive economic zone of coastal states. Under Article 56(1), the coastal state has within the EEZ 'sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living'.

Subject to its right to determine the total allowable catch (TAC) of living resources in its EEZ, the coastal state must ensure through conservation and management measures that living resources are not endangered by overexploitation, taking into account the best scientific evidence available to it.[449] This requirement is clarified by the additional obligation of states to ensure that populations of harvested species are restored or maintained

> at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing states, and taking into account fishing patterns, the interdependence of stocks, and any generally recommended international minimum standards, whether sub-regional, regional or global.[450]

These measures must also take into consideration the need to keep associate or dependent species above a level at which they would be seriously threatened.[451] Coastal states must promote the 'optimum utilisation' of living resources and determine their capacities to harvest the living resources of their EEZ, and have the right to give other states access to the surplus of the allowable catch.[452] In

[445] Arts. 49 and 52(1). [446] Art. 51(1).
[447] Art. 77(1) and (2). The 'natural resources' include the sedentary species as defined in the 1958 Continental Shelf Convention, p. 566 above.
[448] Art. 78. Cf. the equivalent provision in the 1958 Continental Shelf Convention, p. 566 above.
[449] Art. 61(1) and (2). [450] Art. 61(3). [451] Art. 61(4). [452] Art. 62(1) to (3).

determining whether to give access to other states, the coastal state must take into account all relevant factors including, *inter alia*:

> the significance of the living resources of the area to the economy of the coastal state concerned and its other national interests, the provisions of Articles 69 and 70, the requirements of developing states in the region or subregion in harvesting part of the surplus and the need to minimise economic dislocation in states whose nationals have habitually fished in the zone or which have made substantial efforts in research and identification of stocks.[453]

Nationals of other states fishing in the EEZ must comply with the measures, laws and regulations adopted by the coastal state, including conservation laws. Coastal states must give due notice of such measures and laws.[454] The conservation and development of a stock or stocks of associated species which occur in the EEZ of two or more coastal states, or in the EEZ and in an area beyond and adjacent to the EEZ, often referred to as 'straddling stocks' (and now governed by the 1995 Straddling Stocks Agreement), should be subject to agreed measures by those states which are necessary to co-ordinate and ensure the conservation and development of such stocks without prejudice to other provisions relating to the EEZ.[455]

UNCLOS also includes in relation to the EEZ rules which are applicable to highly migratory species, marine mammals, anadromous stocks, catadromous stocks and sedentary species. Marine mammals, such as whales and seals, are subject to the provisions of Articles 65 and 120.[456] For anadromous species (such as salmon, which spawn in freshwaters but spend most of their time in the sea), the management and conservation is primarily a matter for the states in whose rivers they originate, subject to the rule that fishing for such stocks on the high seas is prohibited in the waters beyond the high seas unless this would result in economic dislocation for a state other than a state of origin.[457] For catadromous stocks (such as eels, which spawn at sea but spend most of their time in freshwaters), management responsibilities rest with the coastal state in whose waters they spend the greater part of their life cycles, and fishing on the high seas of such stocks is prohibited.[458] UNCLOS treats sedentary species as part of the natural resources of the coastal state's continental shelf.[459]

Article 64 of UNCLOS provides that the

> coastal state and other states whose nationals fish in the region for the highly migratory species listed in Annex I shall co-operate directly or through appropriate international organisations with a view to ensuring conservation and promoting the objective of optimum utilisation of such species

[453] Art. 62(3); Arts. 69 and 70 relate to the rights of land-locked and geographically disadvantaged states.
[454] Art. 62(4) and (5). [455] Art. 63. [456] See p. 591 below.
[457] Art. 66. [458] Art. 67. [459] Art. 68.

> throughout the region, both within and beyond the exclusive economic zone. In regions for which no appropriate international organisation exists, the coastal state and other states whose nationals harvest these species in the region shall co-operate to establish such an organisation and participate in its work.[460]

The over-exploitation of highly migratory species, such as tuna, has given rise to numerous disputes over appropriate conservation measures and permissible techniques for fishing, particularly in the Eastern Pacific.[461]

High seas Part VII of UNCLOS establishes rules for high seas activities. Article 87 maintains the freedom of all states to fish on the high seas, subject to the limited conditions established by the Convention and by other rules of international law, and 'with due regard for the interests of other states in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area'. Article 116 limits in three ways the right of nationals to fish on the high seas. First, treaty obligations must be complied with.[462] Secondly, the rights, duties and interests of coastal states must be respected in relation to the provisions on common stocks, highly migratory species, marine mammals, anadromous stocks and catadromous stocks (as set out in Articles 63(2) and 64–67 and supplemented by the 1995 Straddling Stocks Agreement). Thirdly, provisions concerning the conservation and management of the living resources of the high seas as set out in Articles 116–120 must be respected.

Under Article 117, states must take such measures for their nationals as may be necessary for the conservation and management of the living resources of the high seas, and under Article 118 they must co-operate for the establishment of regional or sub-regional fisheries organisations where nationals exploit identical living resources, or different living resources in the same area, and must negotiate to take measures necessary for the conservation of the living resources concerned. In determining the allowable catch and in establishing other conservation measures for the high seas, Article 119 requires that measures be based on the best scientific evidence available to produce the maximum sustainable yield, and that consideration be given to the effects on associated or dependent species. Such measures and their implementation must

[460] Art. 64(1). Species listed in Annex 1 include eight species of tuna, and frigate mackerel, pomfrets, marlins, sail-fishes, swordfish, sauries, dolphins, oceanic sharks and cetaceans.

[461] See chapter 19, pp. 953–61 below.

[462] See in this regard the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, November 1993 (FAO Res. 15/93). Art. VI of the Agreement requires parties to exchange information on vessels authorised by them to fish on the high seas, and obliges the FAO to facilitate this information exchange. The Agreement has been accepted by nineteen states and the EC, and will enter in force when accepted by twenty-five parties.

be non-discriminatory, in form or in fact, against fishermen of any state.[463] Article 65 also applies to the conservation of marine mammals on the high seas.[464]

**UNCED** UNCLOS has not prevented the over-exploitation of fisheries within the EEZ or on the high seas, and Agenda 21 recognised the inadequacy of many conservation measures.[465] States set themselves several specific objectives, of which four are relatively focused and are likely to be priority areas in the coming years: the maintenance or restoration of species at levels that can produce the maximum sustainable yield as qualified by relevant environmental and economic factors; the use of selective fishing gear and practices that minimise waste in the catch of the target species and minimise by-catch of non-target species; the protection and restoration of endangered marine species; and the preservation of habitats and other ecologically sensitive areas.[466] Other objectives agreed at UNCED include: giving full effect to the provisions of UNCLOS for straddling stocks of fisheries and highly migratory species; minimising incidental catches; deterring reflagging to avoid compliance with conservation rules; prohibiting certain destructive fishing practices such as dynamiting and poisoning; and fully implementing General Assembly Resolution 46/215 on large scale pelagic driftnet fishing.[467]

In the absence of any substantive agreement at UNCED on the issue of straddling fish stocks and highly migratory fish stocks, Agenda 21 called for states to convene an intergovernmental conference to promote the effective implementation of UNCLOS on the issue.[468] At UNCED, states also committed themselves to the conservation and sustainable use of marine living resources under national jurisdiction, adopting similar objectives to those accepted in relation to high seas fisheries. However, this was without prejudice to the need to ensure that coastal states, particularly developing countries and states whose economies are overwhelmingly dependent on the exploitation of the marine living resources of their EEZ, should continue to obtain 'the full social and economic benefits from sustainable utilisation of marine living resources within their exclusive economic zone and other areas under national jurisdiction'.[469] Other general commitments were made to preserve rare or fragile ecosystems, giving priority to coral reefs, estuaries, temperate and tropical wetlands (including mangroves), seagrass beds, and other spawning and nursery areas.[470]

[463] Art. 119(3)(a). [464] Art. 120. [465] Agenda 21, para. 17.45.
[466] Para. 17.46. This commitment is stated to be without prejudice to the right of a state or the competence of an international organisation to prohibit, limit or regulate the exploitation of marine mammals on the high seas more strictly than para. 17.47.
[467] Paras. 17.49(a) and (b) and 17.50–17.54.
[468] Para. 17.49(e). [469] Paras. 17.73–17.74. [470] Paras. 17.74(f) and 17.85.

## 1995 Straddling Stocks Agreement and the Code of Conduct for Responsible Fisheries

E. Hey, *The Regime for the Exploitation of Transboundary Marine Fisheries Resources: The United Nations Law of the Sea Convention* (1989); E. Meltzer, 'Global Overview of Straddling and Highly Migratory Fish Stocks: The Non-Sustainable Nature of High Seas Fisheries', 25 *Ocean Development and International Law* 255 (1994); M. Hayashi, 'The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention', 29 *Ocean and Coastal Management* 51 (1995); D. Momtaz, 'L'Accord rélatif à la conservation et la gestion des stocks chévauchants et grands migrateurs', AFDI 676 (1995); F. Orrega Vicuna, 'Coastal States Competences over High Seas Fisheries and the Changing Role of International Law', 55 ZaöRV 520 (1995); D. Anderson, 'The Straddling Stocks Agreement of 1995: An Initial Assessment', 45 ICLQ 463 (1996); P. G. Davies and C. Redgwell, 'The International Legal Regulation of Straddling Fish Stocks' 67 BYIL 199 (1996); D. Balton, 'Strengthening the Law of the Sea: The New Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks', 27 *Ocean Development and International Law* 125 (1996); D. Freestone and Z. Makuch, 'The New International Environmental Law of Fisheries: The 1995 UN Straddling Stocks Convention', 7 *Yearbook of International Environmental Law* 3 (1996); E. de Lone, 'Improving the Management of the Atlantic Tuna: The Duty to Strengthen the ICCAT in Light of the 1995 Straddling Stocks Agreement' 6 NYUELR 657 (1998); A. Boyle, 'Problems of Compulsory Jurisdiction and the Settlement of Disputes Relating to Straddling Fish Stocks', 14 IJMCL 1 (1999).

Following UNCED, the UN General Assembly convened a conference on straddling and highly migratory fish stocks in 1993 to identify and assess existing problems related to the conservation and management of such fish stocks, to consider means of improving fisheries co-operation, and to formulate appropriate recommendations.[471] The resolution reaffirmed that the work and results of the conference

> should be fully consistent with the provisions of the [UNCLOS], in particular the rights and obligations of coastal states and states fishing on the high seas, and that states should give full effect to the high seas fisheries provisions of the [UNCLOS] with regard to fisheries populations whose ranges lie both within and beyond exclusive economic zones (straddling fish stocks) and highly migratory fish stocks.[472]

The UN Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995 Straddling Stocks Agreement)[473] was adopted on

[471] UNGA Res. 47/192 (1992). [472] Para. 4.

[473] 34 ILM 1542 (1995) in force 11 December 2001. As at 1 April 2003, the Agreement had thirty-four parties.

4 August 1995 and came into force on 11 December 2001, after the deposit of the thirtieth instrument of ratification or accession. The Agreement sets out specific principles to guide the development of conservation and management measures for straddling and highly migratory fish stocks, with a view to addressing the problems identified in Chapter 17 of Agenda 21. By Article 2, the object of the Agreement is

> to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks through effective implementation of the relevant provisions of the Convention.

The Agreement applies to the conservation and management of straddling fish stocks and highly migratory fish stocks beyond areas under national jurisdiction, except that its Articles 6 and 7 apply also to the conservation and management of such stocks within areas under national jurisdiction, and coastal states must apply the general principles enumerated in Article 5 to stocks within areas under national jurisdiction.[474] No reservations are permitted.[475] Part II addresses management and conservation. Article 5 commits coastal states and states fishing on the high seas to adopt a broad range of measures, which merit restating in full:

(a) adopt measures to ensure long-term sustainability of straddling fish stocks and highly migratory fish stocks and promote the objective of their optimum utilization;
(b) ensure that such measures are based on the best scientific evidence available and are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global;
(c) apply the precautionary approach in accordance with article 6;
(d) assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks;
(e) adopt, where necessary, conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon the target stocks, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened;
(f) minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species (hereinafter referred to as non-target species) and impacts on associated or dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use

[474] Art. 3(1) and (2). [475] Art. 45.

of selective, environmentally safe and cost-effective fishing gear and techniques;
(g) protect biodiversity in the marine environment;
(h) take measures to prevent or eliminate overfishing and excess fishing capacity and to ensure that levels of fishing effort do not exceed those commensurate with the sustainable use of fishery resources;
(i) take into account the interests of artisanal and subsistence fishers;
(j) collect and share, in a timely manner, complete and accurate data concerning fishing activities on, inter alia, vessel position, catch of target and non-target species and fishing effort, as set out in Annex I, as well as information from national and international research programmes;
(k) promote and conduct scientific research and develop appropriate technologies in support of fishery conservation and management; and
(l) implement and enforce conservation and management measures through effective monitoring, control and surveillance.

In applying a precautionary approach, states must establish stock-specific 'precautionary reference points' of two kinds: limit reference points and target reference points. Limit reference points set boundaries which are intended to constrain harvesting within safe biological limits within which the stocks can produce maximum sustainable yield. Target reference points are intended to meet management objectives. Management strategies are to seek to maintain or restore populations of harvested stocks at levels consistent with previously agreed precautionary reference points. Fishery management strategies should ensure that the risk of exceeding limit reference points is very low and that target reference points are not exceeded on average. If a stock falls below a limit reference point or is at risk of falling below such a reference point, conservation and management action must be initiated to facilitate stock recovery. When information for determining reference points for a fishery is insufficient or absent, provisional reference points may be set by analogy to similar and better-known stocks.[476] In addition to developing measures for target stocks, states are required to take a variety of measures to minimise the impact of fishing for such stocks on the marine environment. These measures include devising conservation and management measures for associated and dependent species, minimising pollution and by-catch, protecting biodiversity, and preventing or eliminating overfishing and excess fishing capacity.[477] Coastal states and states fishing in adjacent high seas areas are required to co-operate in devising conservation and management measures for straddling and highly migratory stocks to ensure the compatibility of national and high seas measures.[478]

Part III of the 1995 Agreement addresses mechanisms for international co-operation, and envisages a significant role for sub-regional and regional fisheries organisations and arrangements in facilitating co-operation by states in the

[476] Art. 6 and Annex II. [477] Art. 5(d)–(h). [478] Art. 7.

development and enforcement of conservation and management measures for straddling and migratory stocks.[479] Where a regional fisheries organisation is competent to establish conservation and management measures for a particular stock, states fishing for those stocks are required to become members of or participants in the organisation, or agree to apply its measures, in order to be permitted to continue to fish for the stock.[480] This far-reaching provision has the consequence, in effect, of departing from traditional principles reflecting absolute rights of high seas fisheries freedoms, even for those states which are not parties to regional agreements. Where there is no existing regional fisheries organisation or arrangement, the states concerned are to co-operate to establish a suitable organisation or arrangement to ensure the conservation and management of the particular stock.[481] Part III also provides for the conditions for new membership or participation of organisations, transparency in their activities and decision-making and strengthening of existing organisations,[482] as well as rules on enclosed and semi-enclosed seas and certain high seas areas.[483] Part V governs the duties of the flag state, including the obligation to take such measures as may be necessary to ensure that vessels flying its flag comply with regional and sub-regional conservation and management measures.[484] Part VI addresses compliance and enforcement,[485] and Part VII provides for the dispute settlement provisions of UNCLOS to apply also to the 1995 Agreement.[486] While the 1995 Agreement has contributed positively to the development of the law of the sea fisheries, such development is uneven, as one leading commentator has noted:

> If looked upon from the perspective of the traditional freedoms of the sea there is here undoubtedly a departure from those principles; but if the same matter is looked upon from the perspective of the need to ensure effective conservation and management ... the conclusion is then entirely different since such developments are the necessary corollary to implement effectively these other objectives.[487]

In parallel with the elaboration of the 1995 Agreement, the FAO has sponsored the elaboration of a voluntary Code of Conduct on Responsible Fisheries, which was unanimously adopted by the FAO Conference on 31 October 1995.[488] The Code is intended to be global in scope, and is directed toward members and non-members of FAO, fishing entities, sub-regional, regional and global

[479] Arts. 8–10.
[480] Art. 8(4) and Art. 17 (Part IV, 'Non-Members and Non-Participants').
[481] Art. 8(5). Detailed prescriptions of the functions which the new fisheries organisation should perform are provided in Art. 10.
[482] Arts. 11–13. [483] Arts. 15 and 16. [484] Art. 18(1).
[485] Chapter 5, p. 186 above. [486] Chapter 5, p. 186 above.
[487] F. Orrego Vicuña, *The Changing International Law of High Seas Fisheries* (1999), 289.
[488] www.fao.org/fi/agreem/codecond/ficonde.asp.

organisations, whether governmental or non-governmental, and all persons concerned with the conservation of fishery resources and the management and development of fisheries. It provides principles and standards applicable to the conservation, management and development of all fisheries, and covers the capture and processing of and trade in fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management. The core of the Code is set forth in its section 6 (general principles), section 7 (fisheries management), section 8 (fisheries operations) and section 9 (aquaculture).

**International cases** The negotiation and adoption of the 1995 Agreement – and the trend towards a new era of environmental constraint and more limited rights of access to high seas fisheries rights – has coincided with a renewed willingness of certain states to bring international proceedings to enforce fisheries conservation requirements, including in areas beyond national jurisdiction. Beyond the three important cases filed between 1995 and 2000, the International Tribunal for the Law of the Sea (ITLOS) has also had occasion to comment upon (but not act upon) fisheries conservation requirements in a series of 'prompt release' cases.[489]

*Estai case (Canada v. Spain)*

The dispute between Canada and Spain over fishing for the Greenland halibut in the high seas occurred against the background of the UN negotiations on the 1995 Agreement, and may well have influenced the outcome of those negotiations. On 12 May 1994, Canada adopted legislation on the conservation and management of fish stocks in the North Atlantic Fisheries Organization (NAFO) Regulatory Area, including areas beyond Canada's 200-nautical-mile zone. Canadian regulations on the implementation of the new legislation were adopted on 25 May 1994, specifying the classes of vessels that were considered to pose the most immediate threat to the conservation of straddling stocks: those flying the flags of states with open registries and those with no nationality at all. The regulations also prescribed particular stocks, such as Greenland halibut, as being straddling stocks and subject to prescribed Canadian conservation and management measures. According to the Canadian Government, the legislation

[489] Chapter 5, p. 220 above. See in particular the Dissenting Opinion of Judge Anderson in the *Camouco* case (*Panama* v. *France*), Judgment of 7 February 2000, 39 ILM 666 (2000) ('Article 292 aims to protect certain economic and humanitarian values: ships and crews should be released from detention upon posting "reasonable" security pending trial on fishery or pollution charges. At the same time, Part V of the Convention protects other values, including the conservation of the living resources of the sea and the effective enforcement of national fisheries laws and regulations. In my opinion, greater significance should have been accorded to these latter values in deciding the question of the reasonableness of the security in this case.').

and regulations were intended to enable Canada to take the urgent steps necessary to prevent further destruction of straddling fish stocks on the Grand Banks of Newfoundland, and to permit their rebuilding.

These measures had followed stringent cuts for the Greenland halibut fishery which had been adopted by Canada, for areas within its own jurisdiction. In September 1994, Canada proposed that the NAFO should manage the Greenland halibut stock. NAFO agreed to establish a total allowable catch (TAC) for Greenland halibut of 27,000 tonnes for 1995, 8,000 tonnes less than the amount Spain had caught in 1993. This TAC was for the entire stock in certain NAFO regulatory areas, including the parts of those areas that lay within Canada's 200-nautical-mile zone. The NAFO Commission adopted allocations of Greenland halibut for Canada (16,300 tonnes for 1995) and the European Union (3,400 tonnes for 1995), with the remainder being divided principally between Russia and Japan. On 3 March 1995, the European Union objected to the NAFO quota and set for itself a unilateral quota in excess of the TAC that had been allocated to it by NAFO. On 9 March 1995, the Spanish fishing vessel *Estai* was boarded and inspected, and then charged with offences under Canada's Coastal Fisheries Protection Act, including excessive fishing for Greenland halibut in areas beyond Canada's 200-nautical-mile zone. On 28 March 1995, Spain initiated proceedings with the ICJ, asking:

> (A) that the Court declare that the Canadian legislation, insofar as it purports to exercise jurisdiction over vessels flying foreign flags on the high seas, beyond Canada's exclusive economic zone, is unopposable to the Kingdom of Spain;
>
> (B) that the Court adjudge and declare that Canada must refrain from repeating the actions complained of, and make due amends to the Kingdom of Spain in the form of compensation, the amount of which shall cover all damage and injury caused; and
>
> (C) that, consequently, the Court also declare that the boarding of the Spanish flag vessel *Estai* on the high seas on 9 March 1995, as well as the coercive measures and the exercise of jurisdiction over it and its captain, constitutes a concrete violation of the above-indicated principles and norms of international law.

As described in chapter 5 above, the ICJ declined jurisdiction, on the grounds that Canada's acceptance of the Court's jursidiction did not, following a new reservation made by Canada, encompass the matters which were the subject of the dispute, namely, 'disputes arising out of or concerning conservation and management measures taken by Canada with respect to vessels fishing in the NAFO Regulatory Area'.[490] In reaching this conclusion, the Court rejected Spain's argument that Canada's acts were not 'conservation and management' measures:

[490] (1998) ICJ Reports 432; chapter 5, p. 216 above.

> for a measure to be characterised as a 'conservation and management measure', it is sufficient that its purpose is to conserve and manage living resources and that, to this end, it satisfies various technical requirements.[491] Having regard to various international agreements, including the 1995 Stradddling Stocks Agreement and the 1993 FAO Agreement, a majority of the Court concluded that the measures taken by Canada fell within its reservation.[492]

The view was not supported by all members of the Court, particularly those who saw the object of Canada's reservation as being 'to signal *urbi et orbi* that Canada claims special jurisdiction over the high seas', with consequences for traditional high seas fisheries freedoms.[493]

*Southern Bluefin Tuna cases (New Zealand v. Japan, Australia v. Japan)*

B. Kwiatkowska, Case Report, 94 AJIL 150 (2000); B. Kwiatkowska, Case Report, 95 AJIL 162 (2001); A. Boyle, 'The Southern Bluefin Tuna Arbitration', 50 ICLQ 337 (2001); S. Marr, 'The Southern Bluefin Tuna Cases: The Precautionary Approach and Conservation and Management of Fish Resources', 11 *European Journal of International Law* 815 (2000); B. Kwiatkowska, 'The Southern Bluefin Tuna Cases', 15 IJMCL 1 (2000); J. Peel, 'The Future for Resolving Fisheries Disputes under UNCLOS in the Aftermath of the Southern Bluefin Tuna Arbitration', 1 *Melbourne Journal of International Law* 53 (2002).

In July 1999, Australia and New Zealand initiated arbitration proceedings under Part XV of and Annex VII to UNCLOS, alleging that Japan had breached its obligations under Articles 64 and 116–119 of UNCLOS in relation to the conservation and management of southern bluefin tuna stock through implementation of a unilateral experimental fishing programme. The three states were parties to the 1993 Convention for the Conservation of Southern Bluefin Tuna, a regional fisheries convention established to 'ensure, through appropriate management, the conservation and optimum utilisation of southern bluefin tuna'.[494] The Convention established a Commission for the Conservation of Southern Bluefin Tuna with power to decide upon a total allowable

[491] Para. 70.

[492] Para. 71. The Court went on to reject Spain's argument that Canada's reservation had to be interpreted so as to cover only acts compatible with international law.

[493] Dissenting Opinion of Judge Bedjaoui, (1998) ICJ Reports 519 (the conflation of the merits of the case with the Court's jurisdiction appears even more evident in Judge Bedjaoui's expression of regret 'that the Court did not reject, or even hold null and void, a reservation whose object and purpose . . . was to permit encroachment upon an essential freedom of international law, both past and present, without fear of judicial intervention': *ibid.*, 536).

[494] Convention for the Conservation of Southern Bluefin Tuna, adopted 10 May 1993, in force 30 May 1994, 1819 UNTS 360, Art. 3.

catch (TAC) for southern bluefin tuna and its allocation among the parties to the Convention.[495] The parties had been unable to reach agreement through the Commission on a new TAC: Japan had sought an increase in the size of the previous TAC, whereas Australia and New Zealand argued that available scientific information did not indicate that the southern bluefin tuna stock had recovered sufficiently to support a higher TAC. In 1998, Japan initiated a unilateral experimental fishing programme on the basis that this was necessary in order to gather scientific data on the state of the southern bluefin tuna stock. Australia and New Zealand objected to Japan's experimental fishing programme, claiming that its purpose was simply to allow Japan to take more than its allocated portion of the southern bluefin tuna TAC. Australia and New Zealand claimed that Japan had *inter alia*: failed to adopt necessary conservation measures so as to maintain or restore stocks to levels which could produce a maximum sustainable yield; carried out unilateral experimental fishing which would result in southern bluefin tuna being taken by Japan over and above the national allocations previously agreed under the Convention; failed to co-operate with New Zealand and Australia; and otherwise failed in its UNCLOS obligations in respect of conservation and management of southern bluefin tuna, having regard to the precautionary principle.

Two weeks after initiating the Annex VI proceedings, Australia and New Zealand requested the ITLOS to prescribe provisional measures pending the decision of the arbitral tribunal to be set up in accordance with Annex VII to UNCLOS. By its Order of 27 August 1999, the ITLOS ordered the three states to ensure that their annual catches did not exceed national annual allocations at the levels last agreed by the parties, and to

> [r]efrain from conducting an experimental fishing programme involving the taking of a catch of southern bluefin tuna, except with the agreement of the other parties or unless the experimental catch is counted against its annual national allocation.[496]

Of particular note in the Order is the Tribunal's view that, in the face of scientific uncertainty as to the status of the southern bluefin tuna stock, 'the parties should . . . act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna'.[497] The case did not proceed to the merits after the decision of the Annex VII arbitral tribunal, the following year, accepting Japan's argument that the tribunal did not have jurisdiction to receive the claims.[498]

[495] Arts. 6 and 8(3)(a).

[496] *Southern Bluefin Tuna* cases (*New Zealand* v. *Japan*; *Australia* v. *Japan*) (Provisional Measures), 38 ILM 1624 (1999), para. 90(c) and (d).

[497] *Ibid.*, para. 77.

[498] Chapter 5, p. 220 above.

*Swordfish case (Chile v. EC)*

A. Serdy, 'See You in Port: Australia and New Zealand as Third Parties in the Dispute Between Chile and the EC over Chile's Denial of Port Access to Spanish Vessels Fishing for Swordfish on the High Seas', 1 *Melbourne Journal of International Law* 79 (2002).

During much of the 1990s, Chile and the EU were involved in a dispute concerning the conservation of declining stocks of swordfish in the South Pacific. Concerned about the state of stocks, in 1991 Chile implemented a number of conservation measures within its exclusive economic zone and, in relation to its own nationals, in the high seas adjacent to that zone. Thereafter, Chile prohibited the unloading in its ports (for onward transportation) of swordfish caught in waters beyond its jurisdiction. Once again the unilateral act of a coastal state to conserve fisheries led to a dispute, which was eventually brought to two different dispute settlement procedures.

Following unsuccessful negotiations, in April 2000 the EU brought the matter to the WTO Dispute Settlement Body (DSB), claiming that Chile's prohibition was inconsistent with GATT 1994, in particular Article V (providing for freedom of transit for goods through the territory of each contracting party) and Article XI (prohibiting quantitative restrictions on imports or exports). For its part, Chile considered that its measures were covered by Article XX(g), permitting it to adopt and enforce measures relating to the conservation of natural resources in conjunction with restrictions on domestic production or consumption.[499] In December 2000, the WTO DSB established a Panel to resolve the dispute.[500]

Thereafter, by September 2000, Chile had initiated UNCLOS Annex VII arbitration proceedings against the EU, alleging violations of various fisheries provisions of UNCLOS. The parties subsequently agreed that the dispute be submitted to a special chamber of ITLOS composed of five members.[501] The parties requested the special chamber to decide, on the basis of UNCLOS, issues put forward by the parties. The issues put forward by Chile were *inter alia*:

> (a) whether the EC had complied with its obligations under the Convention, especially articles 116 to 119, to ensure conservation of swordfish, in the fishing activities undertaken by vessels flying the flag of any of its member States in the high seas adjacent to Chile's exclusive economic zone;

[499] Chapter 19, p. 948 below.

[500] Case DS193: Chile: Measures Affecting the Transit and Importation of Swordfish, WTO Press Release, 12 December 2000.

[501] *Case Concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean (Chile – EC)*, Order 2000/3 of 20 December 2000, 40 ILM 475 (2001). The special chamber comprises Judges Chandrasekhara Rao (President), Caminos, Yankov, Wolfrum and Judge Ad Hoc Orrego Vicuña.

(b) whether the EC had complied with its obligations under the Convention, in particular article 64, to co-operate with Chile as a coastal State for the conservation of swordfish in the high seas adjacent to Chile's exclusive economic zone;
(c) whether the EC had challenged the sovereign right and duty of Chile, as a coastal State, to prescribe measures within its national jurisdiction for the conservation of swordfish and to ensure their implementation in its ports, in a non-discriminatory manner, as well as the measures themselves, and whether such challenge would be compatible with the Convention;
(d) whether the obligations arising under Articles 300 and 297(1)(b) of the Convention had been fulfilled by the EC.

The issues put to ITLOS by the EC were:

(a) whether the Chilean Decree 598 which purported to apply Chile's unilateral conservation measures relating to swordfish on the high seas was in breach of, *inter alia*, articles 87, 89 and 116 to 119 of the Convention;
(b) whether the 'Galapagos Agreement' signed in Santiago de Chile on 14 August 2000 was negotiated in keeping with the provisions of the Convention and whether its substantive provisions were in consonance with, *inter alia*, articles 64 and 116 to 119 of the Convention;
(c) whether Chile's actions concerning the conservation of swordfish were in conformity with article 300 of the Convention and whether Chile and the European Community remained under a duty to negotiate an agreement on co-operation under article 64 of the Convention; and
(d) whether the jurisdiction of the special chamber extended to the issue referred to in paragraph (c) above.

In January 2001, the EU and Chile agreed to suspend (but not terminate) the WTO and ITLOS proceedings,[502] to resume bilateral co-operation, and to put in place a provisional arrangement. The provisional arrangement comprised three elements: a resumption of meetings within the framework of the Bilateral Scientific and Technical Commission on Swordfish Stocks in the South-East Pacific; access for a limited number of EU vessels to Chilean ports, permitting transhipment or landing up to 1,000 tons of swordfish under a joint programme to assist in the joint scientific evaluation of the swordfish stocks; and a commitment to agree on a multilateral framework for the conservation and management of the swordfish in the South East Pacific, with a diplomatic conference to be held in 2002. The provisional arrangement envisaged a more permanent agreement being put in place by 2004.

[502] See ITLOS Order, 15 March 2001, www.itlos.org/case_documents/2001/document_en_99.pdf.

## Regional rules for the conservation of fisheries

It is in the context of these developments that commissions and other international organisations established by regional and bilateral fisheries conservation treaties have been established and conduct their activities. The 1995 Straddling Stocks Agreement underlines their growing importance. Many were established in the 1940s and 1950s or earlier. In light of the changing rules of fisheries jurisdiction several have been amended or replaced to take account of the development of new fisheries laws. These regional bodies are established by treaty between two or more states and endowed with either or both of two related functions: an informational and research function, to study or obtain information on the conservation status of the fisheries over which they have competence; and a regulatory function, which grants them power to adopt binding or non-binding conservation measures (such as total allowable catches; meshes and net sizes; size limits of fish; seasons and areas; fishing gear and appliances; closed seasons; and total catches by species, group of species or region). As indicated above, the coming into force of the 1995 Straddling Stocks Agreement affirms and strengthens the role of sub-regional and regional fisheries organisations and arrangements in respect of straddling and highly migratory fish stocks.

The International Council for the Exploration of the Sea was among the first informational/research organisations. It is a regional scientific research body established in 1902 and reorganised in 1964 to collect and publish information supplied by its seventeen members.[503] The Council carries out co-operative research on particular species within the Atlantic area and adjacent seas, or parts of it. Although it does not have regulatory functions, it can make recommendations and has played an influential role. In the 1920s, the International Council was asked by the League of Nations to establish a commission of jurists to 'consider whether it is possible to establish by way of international agreement rules regarding the exploitation of the products of the sea', and this led to the adoption of a report prepared by Professor J. L. Suarez which proposed a far-sighted international regulatory regime but which had no immediate consequences in practical terms.[504] The Council has served as a model for international scientific bodies in other regions, which were subsequently rationalised under the auspices of the FAO.

In 1919, the International Commission for the Scientific Exploration of the Mediterranean Sea was established, which was replaced in 1949 by the Agreement which established the General Fisheries Commission for the

[503] Copenhagen, 12 September 1964, in force 22 July 1968, superseding the 1902 constituent instrument.

[504] 20 AJIL 230–41 and 752–3 (1926).

Mediterranean under Article 14 of the FAO Constitution.[505] Following the 1976 amendments, the competence of the organisation was expanded to include all matters for the conservation and rational management of fisheries, and its research and development activities were added to by allowing it to adopt recommendations. In 1948, the FAO established the Indo-Pacific Fisheries Commission (now the Asia-Pacific Fisheries Commission) to promote the full and proper utilisation of living aquatic resources.[506]

These scientific and informational bodies are accompanied by a number of other regional organisations which combine a scientific role with a regulatory role. The principal regulatory commissions or organisations are the following:

- International Pacific Halibut Commission (1923);[507]
- North Pacific Anadromous Fish Commission (NPAFC, 1952/1992);[508]
- South Pacific Permanent Commission on the Exploitation of the Marine Resources of the South Pacific (1952);[509]
- South-East Atlantic Fisheries Organization (SEAFO, 1973/2001);[510]
- International Baltic Sea Fishery Commission (1973);[511]
- Northwest Atlantic Fisheries Organization (NAFO, 1978);[512]
- South Pacific Forum Fisheries Agency (SPFFA, 1979);[513]

[505] Rome, 24 September 1949, in force 20 February 1952, 126 UNTS 257, amended 1963 and 1976; twenty-four states and the EC are party.

[506] Baguio, 26 February 1948, in force 9 November 1948, 120 UNTS 59, amended 1952, 1955, 1958, 1961, 1977 and 1993; twenty-one states are party.

[507] 32 LNTS 93, amended in 1930 (121 LNTS 45) and 1937 (159 LNTS 209). The new Convention was signed in Ottawa on 2 March 1953 and entered into force on 28 October 1953; the US and Canada are party.

[508] Convention for the Conservation of Anadromous Fish Stocks in the North Pacific Ocean, Moscow, 11 February 1992, in force 16 February 1993; four states are party. The 1992 Convention replaced the International Convention for the High Seas Fisheries of the North Pacific Ocean, Tokyo, 9 May 1952, in force 12 June 1953, 205 UNTS 65.

[509] 201 UNTS 374; four states are party.

[510] Convention on the Conservation and Management of the Fishery Resources in the Southeast Atlantic Ocean, Windhoek, 20 April 2001, not yet in force. The 2001 Convention replacing the 1973 Convention on the Conservation of the Living Resources of the Southeast Atlantic, Rome, 23 October 1969, in force 24 October 1971, 801 UNTS 101.

[511] 1973 Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts, Gdansk, 13 September 1973, in force 28 July 1974, 12 ILM 1291 (1973); five states and the EC are party; Amendment Protocol, Warsaw, 11 November 1982, in force 10 February 1984, 22 ILM 704 (1982).

[512] Convention on Future Multilateral Co-operation in the Northwest Atlantic Fisheries, Ottawa, 24 October 1978, in force 1 January 1979, 2 SMTE 60 (replacing the North-West Atlantic Fisheries Commission established in 1959); the Convention has fourteen parties.

[513] 1979 South Pacific Forum Fisheries Convention, Honiara, 10 July 1978, in force 9 August 1979, IELMT 979:57; seventeen states are party.

- North-East Atlantic Fisheries Commission (NEAFC, 1980);[514] and
- North Atlantic Salmon Conservation Organization (1982).[515]

Since the adoption of the 1996 Straddling Stocks Agreement, several other regional fisheries conventions have been concluded which will give rise to further regulatory commissions in the future.[516]

In addition to these fisheries organisations, other bodies which regulate marine living resources include those with regional competence (the European Community;[517] the Commission for the Conservation of Antarctic Marine Living Resources[518]) or species competence (the International Whaling Commission;[519] the Inter-American Tropical Tuna Commission; the International Commission for the Conservation of Atlantic Tunas; the Convention for the Conservation of Southern Bluefin Tuna; and the Indian Ocean Tuna Commission[520]).

Each organisation is governed by its own constitutional instrument and rules of procedure, and they have varied records of achievement in respect of fulfilling their objectives. Judging by fisheries catch statistics which continue to show significant over-exploitation even in areas where many of the commissions operate, it is clear that their achievements are, for the most part, limited. According to one commentator, 'most fisheries commissions have proved to be relatively ineffective in the management of fisheries within their competence';[521] according to another, a plausible case could be made that even if none of the international conservation agreements negotiated prior to 1970 had been consummated, the state of fisheries generally (as well as worldwide wildlife) would not have been significantly different.[522] Despite these historic failures and the growing emphasis being placed on coastal states' management rights and

[514] Convention on Future Multilateral Co-operation in North-East Atlantic Fisheries, London, 18 November 1980, in force 17 March 1982, 2 SMTE 107 (replacing the North East Atlantic Fisheries Commission established in 1949); the Convention has nine parties.

[515] Convention for the Conservation of Salmon in the North Atlantic Ocean, Reykjavik, 2 March 1982, in force 1 October 1983, 2 SMTE 157; NASCO, *Ten Year Review of the Activities of the North Atlantic Salmon Conservation Organization, 1984–94* (1995). The Convention has nine parties.

[516] See the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean, 5 September 2000, not yet in force, 40 ILM 277 (2001); Framework Agreement for the Conservation of the Living Marine Resources of the High Seas of the South Pacific (Galapagos Agreement), 14 August 2000, not yet in force (www.oceanlaw.net/texts/galapagos.htm); Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean, 20 April 2001, not yet in force, 41 ILM 257 (2002).

[517] Chapter 15, p. 781 below. [518] Chapter 14, pp. 714–15 below. [519] See p. 592 below.

[520] See p. 597 below. [521] G. Rose, *Global Biodiversity*, 534.

[522] L. K. Caldwell, *International Environmental Policy* (1990, 2nd edn), 40 (citing the now expired North Pacific Fur Seal Convention as an exception).

conservation obligations, the fisheries commissions will continue to play a role, especially for migratory and high seas species.

Several reasons have been put forward to explain the limited success of these legal and institutional arrangements, suggesting the need for a radical overhaul to the law-making and enforcement process which would require further incursions to be made on the extensive right of states to permit high seas fishing.[523] First, the availability of reliable information on the status of stocks needs to be improved to ensure that decisions can be made on the basis of the best available information, including future trends. In particular, there is a need for an independent information-gathering function. Secondly, the manner in which the commissions determine total allowable catches needs to be based upon objective scientific criteria, including biological requirements, and if conservation on a sustainable basis is to be assured economic needs will have to be de-emphasised. Moreover, the decision to set total allowable catches should be separated from the decision on the allocation of quotas to individual parties to ensure that the decision on the former is reached on an objective basis. Thirdly, experience suggests that the allocation of quotas to parties works best when it is carried out by small commissions, suggesting that the institutional arrangements for commissions with more than three or four parties should be restructured. Fourthly, the emphasis on setting quantitative limits may be inefficient in that it applies to a catch after it has been caught, and should be supplemented by increased emphasis upon regulatory measures which are subject to port enforcement, including regulation of gear, area, season and duration requirements, and new techniques for limiting entry to particular areas and the conduct of certain activities. Fifthly, the commissions will increasingly need to take binding decisions on the basis of a majority vote to by-pass the blocking ability of the lone dissenter. Sixthly, there is a need to improve the domestic enforcement of international fisheries obligations, building on efforts which allow some of the commissions (such as the NEAFC and NAFO) to carry out limited surveillance based upon mutual inspection. To that end, consideration needs to be given to finding effective ways to allow the commissions to participate in the enforcement process. Seventhly, the whole question of membership in the commissions needs to be addressed to ensure that all states participating in fisheries activities in areas within their competence can participate in the legislative and enforcement process. Finally, there is a need to extend the use of international licensing and radar surveillance systems to improve upon existing, *ad hoc* monitoring arrangements which are relatively inefficient.[524]

[523] See G. Rose, *Global Biodiversity*, 534.

[524] Note, in this regard, that the ITLOS has ruled that the fitting of a surveillance device does not fall within the permissible limits of setting a bond in respect of the release of a vessel alleged to be engaged in illegal fishing: the *Volga* case (2002), see chapter 5, p. 220 above.

## Driftnet fishing

D. M. Johnston, 'The Driftnetting Problem in the Pacific Ocean: Legal Considerations and Diplomatic Options', 21 *Ocean Development and International Law* 5 (1990); W. T. Burke, 'Driftnets and Nodules: Where Goes the United States?', 21 *Ocean Development and International Law* 237 (1990); W. T. Burke, 'Regulation of Driftnet Fishing on the High Seas and the New International Law of the Sea', 3 *Georgetown International Environmental Law Review* 265 (1991); M. R. Islam, 'The Proposed "Driftnet Free Zone" in the South Pacific and the Law of the Sea Convention', 40 ICLQ 184 (1991); T. Burke, M. Freeburg and E. Miles, 'UN Resolutions on Driftnet Fishing: An Unsustainable Precedent for High Seas and Coastal Fisheries Management', 25 *Ocean Development and International Law* 127 (1994).

Apart from the rules designed to protect particular species or habitats of fisheries, international law also regulates methods and means of fishing to conserve stocks. The Regulations established by the tribunal in the *Pacific Fur Seal Arbitration* prohibited the use of nets, firearms and explosives, and similar provisions are to be found in many other international fisheries agreements. Recent technological innovations have led to the use of driftnets of a width of up to thirty miles to sweep the high seas with 'the single most destructive fishing technology ever devised by man'.[525] Driftnets have been controversial because of the advantages of scale which they bring to fishing practices and because they incidentally catch non-target fish, dolphins, turtles and sea birds.

The first agreement to address driftnet fishing directly was the 1989 Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, which requires parties to prohibit its nationals and 'vessels documented under its laws' from engaging in driftnet fishing activities in the area governed by the 1986 Noumea Convention.[526] The 1989 Convention defines a driftnet as a 'gillnet or other net or a combination of nets which is more than 2.5 kilometres in length the purpose of which is to enmesh, entrap or entangle fish by drifting on the surface of or in the water'.[527] Driftnet fishing activities include: the use of a driftnet to catch, take or harvest fish; attempts to carry out such activities or engage in activities which can reasonably be expected to have that result; and any supporting or preparatory activities.[528] Parties must adopt measures to prevent assistance in the use of driftnets in the Convention's area of application (the 'Area'), to prohibit the use of driftnets within their jurisdiction, and to prohibit the transhipment of driftnet catches within areas under their jurisdiction.[529] Further measures which parties are permitted but not required to adopt (provided that they are consistent with international law) include: prohibiting the landing of driftnet catches within their territories; prohibiting the

[525] Cited in C. Stone, *The Gnat is Older than Man* (1993), 7–8.

[526] Wellington, 23 November 1989, in force 17 May 1991, 29 ILM 1454 (1990); thirteen states are party. On the 1986 Noumea Convention, see p. 531 above.

[527] Art. 1(b). [528] Art. 1(c). [529] Art. 3(1).

processing of driftnet catches in their facilities; prohibiting imports of fish or fish products caught using a driftnet; restricting port access for driftnet fishing vessels; and prohibiting the possession of driftnets on board any fishing vessel within their jurisdiction.[530] The South Pacific Forum Fisheries Agencies (FFA) has administrative responsibilities, and the Convention additionally provides for consultation and co-operation with 'distant water fishing nations' and other entities in the conservation of South Pacific albacore tuna.[531] The Convention is only open to signature, ratification and accession by members of the FFA and to certain states or territories who are within or linked to the Convention Area.[532] In 1990, Protocols to the Convention were adopted to allow states outside the Convention Area to associate themselves with the Convention. Protocol I is open to states whose nationals or fishing vessels fish within the Convention Area and requires them, *inter alia*, to prohibit the use of driftnets by their nationals or vessels.[533] Protocol II is open to states which are contiguous with or adjacent to the Convention Area, and also requires them, *inter alia*, to prohibit the use of driftnets by their nationals or vessels.[534]

In 1989, the UN General Assembly took up the issue and in 1991 adopted a resolution calling on all members of the international community to ensure that a global moratorium on all large-scale pelagic driftnet fishing was fully implemented on the high seas, including enclosed seas and semi-enclosed areas, by 31 December 1992.[535] The resolution is addressed to 'all members of the international community', rather than to states or to members of the United Nations, and was adopted despite strong lobbying by commercial interests. The resolution also appears to implement the precautionary principle by shifting the burden of proof in decision-making: its Preamble notes that some members of the international community had reviewed the best available scientific data on the impact of driftnet fishing and failed to conclude that the practice had no adverse impacts on the conservation and sustainable management of marine living resources. The resolution is not itself legally binding, but the fact that it was adopted by consensus, that its terms are clear, and that it has received support from a very large number of states since its adoption, suggests that it may now reflect a rule of customary international law.[536]

[530] Art. 3(2). Parties may also take stricter measures: Art. 3(3).

[531] Arts. 5 to 9. [532] Art. 10.

[533] Noumea, New Caledonia, 20 October 1990, not yet in force, 29 ILM 1462 (1990); Arts. 2 and 7.

[534] *Ibid.*, Arts. 2 and 7.

[535] UNGA Res. 46/215 (1991); also UNGA Res. 44/225 (1989); and UNGA Res. 45/197 (1990).

[536] Agenda 21 declares that 'states should fully implement' Res. 46/215: para. 17.54. The General Assembly has regularly returned to the subject, with a view to ensuring compliance with Res. 46/215 (see Resolutions 49/116 and 118 (1994); 50/25 (1995); 51/36 (1996); 52/29 (1997); 53/33 (1998); and 55/8 (2000). UNGA Res. 50/25, 51/36 and 52/29 all '[reaffirm] the rights and duties of coastal States to ensure proper conservation and

## Marine mammals and tuna

R. M. M'Gonigle, 'Economising of Ecology: Why Big, Rare Whales Still Die', 9 *Ecology Law Quarterly* 119 (1980); P. Birnie, *International Regulation of Whaling: From Conservation of Whaling to Conservation of Whales and Regulation of Whale-Watching* (1985); P. Birnie, 'International Legal Issues in the Management and Protection of the Whale: A Review of Four Decades of Experience', 29 *Natural Resources Journal* 903 (1989); N. Doubleday, 'Aboriginal Subsistence Whaling: The Right of Inuit to Hunt Whales and Implications for International Environmental Law', 17 *Denver Journal of International Law and Policy* 373 (1989); A. D'Amato and S. Chopra, 'Whales: Their Emerging Right to Life', 85 AJIL 21 (1991); G. Rose and S. Crane, 'The Evolution of International Whaling' in P. Sands, (ed.), *Greening International Law* (1993), 159; D. Caron, 'The International Whaling Commission and the North Atlantic Marine Mammal Commission: The Institutional Loss of Coercion in Consensual Structures', 89 AJIL 154 (1995); P. Birnie, 'Small Cetaceans and the International Whaling Commission', 10 *Georgetown International Environmental Law Review* 1 (1997); M. Maffei, 'The International Convention for the Regulation of Whaling', 12 IJMCL 287 (1997); P. Birnie, 'Are Twentieth Century Marine Conservation Conventions Adaptable to Twenty First Century Goals and Principles?', 12 IJMCL 488 (1997).

The conservation of marine mammals (cetaceans, pinnipeds, sirenians), including whales, dolphins and seals, is an issue which has received widespread public attention since 1972, when a proposal was put forward at the Stockholm Conference to establish a total moratorium on commercial whaling.[537] Since then, the whale has emerged as a symbol of the world environment movement and has come to represent, perhaps better than any other single issue, the difficulty of reconciling the need to conserve biological diversity, protect cultural and indigenous values, and give effect to economic needs. Thirty years after Stockholm, the issue remains controversial.

Whale species have been hunted on a large scale since the eighteenth and nineteenth centuries for lamp oil, for perfume ingredients, and for the whalebones used in corset stays.[538] In the second half of the nineteenth century, new technological developments, such as cannon-fired harpoons, allowed whalers

management measures with respect to the living resources in areas under their national jurisdiction, in accordance with international law as reflected in [UNCLOS]'. UNGA Res. 53/33 and 55/8 both '[reaffirm] the importance [they attach] to sustainable management and conservation of the marine living resources of the world's oceans and seas, and the obligations of States to co-operate to this end, in accordance with international law, as reflected in the relevant provisions of [UNCLOS], in particular, the provisions on co-operation set out in Part V and Part VII, Section 2, of the Convention regarding straddling stocks, highly migratory species, marine mammals, anadromous stocks and marine living resources of the high seas'.

[537] Chapter 2, p. 37 above.

[538] World Resources Institute, *World Resources (1988–9)*, 155.

to catch the faster species, such as blue, fin, sei, Bryde's and minke whales. By 1988, the grey whale was extinct in the Atlantic and has been nearly extinct in the Western North Pacific; the humpback, bowhead and black right whales were categorised as endangered; and the population of the blue whale, estimated at between 166,000 and 226,400 in pre-whaling times, had dropped to between 7,500 and 15,000 worldwide.[539] Other members of the cetacean family include dolphins, which are not generally endangered but have been adversely affected by modern fishing practices, such as driftnet fishing, in a way which has attracted widespread criticism because of the high rate of incidental taking of dolphins. Of the pinniped species, the Galapagos fur seal, the Juan Fernandez fur seal and the Guadalupe fur seal are thought to be vulnerable as a result of nineteenth- and twentieth-century sealing, tourism and human disturbance. The Japanese sea lion is thought to be extinct as a result of persecution by fishermen and coastal development.[540] For similar reasons the Mediterranean monk seal and the Hawaiian monk seal are endangered, and the Caribbean monk seal is thought to be extinct. Among the sirenian species the West African and the Caribbean manatee and the dugong are thought to be vulnerable species, and the Amazonian manatee is endangered.

Marine mammals are subject to the general rules established by UNCLOS governing the conservation of marine living resources as well as the special provisions of Article 65 of UNCLOS, which provides that nothing in the provisions relating to the exclusive economic zone

> restricts the right of a coastal state or the competence of an international organisation, as appropriate, to prohibit, limit or regulate the exploitation of marine mammals more strictly than provided for in [the provisions of UNCLOS on the EEZ]. States shall co-operate with a view to the conservation of marine mammals and in the case of cetaceans shall in particular work through the appropriate international organisations for their conservation, management and study.

This provision applies to the conservation and management of marine mammals in the high seas.[541] Marine mammals are protected by other treaties, including those which establish general rules, the 1973 CITES,[542] and 1979 Bonn Convention on migratory species. Four agreements are in place which specifically address whaling issues: the 1946 International Convention for the Regulation of Whaling (International Whaling Convention); the 1992 Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (1992 ASCOBANS); the 1992 Agreement Establishing the North Atlantic Marine Mammals Organization; and the 1996 Agreement on the Conservation of

[539] *Ibid.*, 156, Table 9.4. [540] *Ibid.* [541] UNCLOS, Art. 120.

[542] By 1983, Appendix I to CITES listed the following whales: sperm, fin, sei, blue, humpback, bowhead, right, Bryde's, grey and bottlenose, as well as several dolphin types, and all cetaceans not listed on Appendix I or II.

Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (1996 ACCOBAMS).

**Whales: the International Whaling Commission** The International Whaling Commission (IWC) was established by the 1946 International Whaling Convention,[543] which replaced the 1937 Agreement.[544] It currently has forty-two parties. The 1946 Convention began as a whaling club, established 'to provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry', while taking into account the need to safeguard whale resources from over-fishing and to achieve optimum levels of whale stocks without causing widespread economic and nutritional distress in the context of an international system of regulation.[545] The Convention, which includes a Schedule establishing the detailed regulations and obligations under the Convention, applies to factory ships, land stations and whale catchers and 'to all waters in which whaling is prosecuted'.[546] The Convention does not, however, define what is meant by a 'whale' and this has led to differences of view as to whether the IWC has competence over dolphins and porpoises, which are all cetaceans and therefore members of the same taxonomic family as whales. The IWC has, however, exercised competence over small cetaceans in the past. For example, in 1980 it adopted a resolution recommending that the Scientific Committee, in part through the Sub-Committee on Small Cetaceans, continue to consider the status of small cetaceans.[547]

The IWC is the principal institutional organ established by the Convention, assisted by a secretariat.[548] Subsidiary organs include a Finance and Administrative Committee, a Scientific Committee and a Technical Committee, and other sub-committees established on an *ad hoc* basis. Decisions of the IWC are taken by simple majority of those members voting, except that a three-fourths majority of those voting is required for action under Article V.[549] The IWC's functions include studies and investigations, collecting and analysing statistical information, and methods of maintaining and increasing populations of whale stocks. More specifically, it has the power under Article V(1) to amend the provisions of the Schedule by adopting 'regulations' for the conservation and utilisation of whale resources, and under Article VI it may make 'recommendations' (which are not binding) on any matter relating to whales or whaling. The powers of the IWC under Article V(1) allow it to fix:

[543] Washington, 2 December 1946, in force 10 November 1948, 161 UNTS 72; forty-two states are party; the Convention has been subject to one amending Protocol (19 November 1956, 338 UNTS 366), but is usually subject to an annual amendment of its Schedule.

[544] 8 June 1937, 190 LNTS 79, and amending Protocol (24 June 1938, 196 LNTS 131); the 1937 Convention itself superseded the 1931 Convention for the Regulation of Whaling, Geneva, 24 September 1931, 55 LNTS 349.

[545] Preamble. [546] Art. I. [547] IPE III/B/26-07-80. [548] Art. III. [549] Art. III(2).

- protected and unprotected species;
- open and closed seasons;
- open and closed waters, including the designation of sanctuary areas;
- size limits for each species;
- time, methods and intensity of whaling (including the maximum catch of whales to be taken in any one season);
- types and specifications of gear and apparatus and appliances which may be used;
- methods of measurement; and
- catch returns and other statistical and biological records.[550]

The IWC has thus taken binding decisions on whaling, although the Convention establishes strict criteria for the adoption of amendments to the Schedule. Amendments must be necessary to carry out the objectives of the Convention; they must be based on scientific findings; and they must take into consideration the interests of the consumers of whale products and the whaling industry.[551] An amendment adopted by the IWC is binding on all parties unless one or more parties object to the amendment, in which case it is binding on all parties except those which object to it within the period of time provided by the Convention.[552]

There are a number of exceptions to the specific obligations established under the Convention and in the Schedule. The main one is scientific: parties may grant a special permit authorising a national to kill, take or treat whales 'for the purposes of scientific research subject to such restrictions as to number . . . and other conditions' as the party thinks fit.[553] The authorising party must report such authorisations to the IWC, as well as scientific information relating to whaling, including the results of the research conducted pursuant to Article VIII(1).[554] Despite these conditions the scientific exception was used by Japan, Norway, Iceland and the former USSR to continue whaling, although in 2001 Japan was the only country to issue such 'special permits'. The Convention also includes enforcement provisions. Each party must ensure the application of the Convention and the prosecution and punishment of infractions, and since 1949 at least two inspectors must be maintained on factory ships, and adequate inspection maintained at land stations.[555] In 1971, the IWC established an international observer scheme which grants the IWC limited powers of observation, intended to provide some international oversight.

The Schedule is subject to amendment at the annual sessions of the IWC and sets forth detailed rules which contain binding legal obligations for the parties. The six sections of the Schedule contain provisions interpreting key terms (in particular whale types); establishing seasons; limiting capture; providing for the treatment, supervision and control of whales; and setting out

[550] Art. V(1). [551] Art. V(2). [552] Art. V(3).
[553] Art. VIII(1). [554] Art. VIII(1) and (3). [555] Art. IX.

information requirements in relation to whaling.[556] In recent years, the Convention has been reoriented. Originally intended to be an instrument for the 'orderly development of the whaling industry', it has been transformed into the primary international instrument prohibiting commercial whaling. Events leading up to the moratorium on commercial whaling adopted in 1986 can be divided into phases. The first, which lasted until 1972, regulated the total amount of whales that could be taken in any year by setting 'blue whale units', (one blue whale was equal to two fin whales, or two and a half humpbacks, or six sei whales) but did not set individual species limits.[557] From 1972 to 1976, the IWC operated a quota on a species-by-species basis. In 1976, a 'New Management Procedure' (NMP) was put in place which divided each species into stocks and established a quota for each stock (Initial Management Stocks; Sustained Management Stocks; and Protection Stocks). In the meantime, by the early 1980s, the membership of the IWC had grown significantly, and for the first time composed a majority of anti-whaling nations. In 1982, the requisite three-fourths majority existed, and the IWC adopted a prohibition on commercial whaling by amending the Schedule to provide that

> catch limits for the killing for commercial purposes of whales from all stocks for the 1986 coastal and the 1985/86 pelagic seasons and thereafter shall be zero. This provision will be kept under review, based upon the best scientific advice, and by 1990 the Commission will undertake a comprehensive assessment of the effects of this decision on whale stocks and consider modification of this provision and the establishment of other catch limits.[558]

The Schedule was not amended at the May 2002 meeting of the IWC to allow a limited resumption of commercial whaling, despite strong lobbying efforts in support of lifting the moratorium. The ban on commercial whaling has led a number of countries, in particular Japan and Iceland, to make use of the Article VIII 'scientific whaling' exception, leading to further controversy and dispute over the meaning of 'scientific research', which is undefined by the Convention or Schedule.[559] The IWC has also adopted other exceptions including

[556] 1999 Schedule to the 1946 International Whaling Convention.

[557] S. Lyster, *International Wildlife Law (1985)*, 25.

[558] 1992 IWC Schedule, para. 10(e). The amendment came into force on 3 February 1983 except for the Governments of Japan, Norway, Peru and the USSR, which lodged objections. Peru withdrew its objection on 22 July 1983. Japan withdrew its objections with effect from 1 May 1987 for commercial pelagic whaling, from 1 October 1987 for commercial coastal whaling for minke and Bryde's whales, and from 1 April 1988 for commercial coastal sperm whaling. As Norway and the Russian Federation have not withdrawn their objections, the paragraph is not binding on them.

[559] In 1987, the IWC mandated the Scientific Committee to review annually all research programmes involving the killing of whales under special permits and report on whether the programmes satisfy the criteria on special permits for scientific research: see

catch limits for aboriginal subsistence whaling to satisfy aboriginal subsistence needs.[560] Other issues concern the competence of the IWC over whales in the exclusive economic zone, and countries such as Mexico and Brazil have taken the view that they remain free to take whales in their exclusive economic zones if they wish; whether to establish an Antarctic whaling sanctuary (in 1979, a sanctuary was established for the Indian Ocean, which was extended by ten years in 1992, and in 1994 a Southern Ocean Sanctuary was established to be reviewed after ten years[561]); and whether to replace the NMP with a Revised Management Procedure which would establish a new system for 'sustainable' commercial whaling based upon a new 'catch limit algorithm' formulated by the Scientific Committee in 1992.[562] The IWC has decided that the operation of any such procedure would require the establishment of a 'fully effective' inspection and observation scheme, comprising two elements: population assessment and monitoring; and an international inspection and observer scheme. The tensions in the organisation are reflected by developments in 1991 and 1992 which led to the creation of two new instruments, following the departure of Canada and Iceland from the IWC, and doubts expressed by Norway and Japan about their future participation.

**Whales: other developments** In March 1992, the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (1992 ASCOBANS) was signed, and adopted as an agreement under the 1979 Bonn Agreement.[563] The Convention was negotiated in the context of drastic decreases in the population of harbour porpoises of the Baltic Sea and the adverse effects of by-catches, habitat deterioration and disturbance on populations of small cetaceans, in the Baltic and North Seas. It establishes a framework for co-operative action to

Resolution on Scientific Research Programme (1987). The Resolution establishes the following criteria:

- whether the research addresses questions which need to be answered to aid candid' comprehensive assessment or meet other critically important research needs;
- whether the research adversely affects the overall status and trends of stock or the success of the comprehensive assessment;
- whether the research addresses questions which cannot be answered by analysis of existing data and/or the use of non-lethal research; and
- whether the research is likely to yield results leading to reliable answers.

See also Res. IWC 38/28 on Special Permits for Scientific Research.

560 See para. 13(a) of the 1999 Schedule, which was adopted in 1982.

561 1999 IWC Schedule, paras. 7(a) and (b). In 2002, proposals for sanctuaries in the South Pacific and the South Atlantic failed to gain the necessary three-quarters majorities to be adopted.

562 The Scientific Committee has unanimously recommended the Revised Management Procedures to the Commission.

563 New York, 17 March 1992, in force 29 March 1994; eight states are party.

maintain a 'favourable conservation status' for small cetaceans, and commits parties to apply the conservation, research and management measures set out in the Annex within the limits of their jurisdiction and in accordance with their international obligations.[564] Its provisions do not affect the rights and obligations of a party arising under any other existing treaty, convention or agreement.[565] The Annex establishes a Conservation and Management Plan which establishes general obligations in relation to: habitat conservation and management; surveys and research; the use of by-catches and strandings; legislation; and information and education. The habitat and conservation measures commit parties to 'work towards' the prevention of release of hazardous substances, the development of modifications to fishing gear and practice to reduce by-catches, the effective regulation of activities which affect their food resources, and the prevention of other significant disturbance. Additional measures are required to establish an efficient system for reporting and retrieving by-catches and stranded specimens, and further obligations to 'endeavour to establish' the prohibition under national law of the intentional killing and taking of small cetaceans and the obligation to release any animals caught alive and in good health. The Convention is administered by meetings of the parties, assisted by an Advisory Committee and a secretariat. A second Agreement on the Conservation of the Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (1996 ACCOBAMS) was adopted in 1996 and came into force in June 2001.[566]

In April 1992, the Faroe Islands, Greenland, Iceland and Norway adopted an Agreement on the North Atlantic Marine Mammals Conservation Organization (NAMMCO)[567] as a counterbalance to the IWC which was seen by these countries as having been hijacked by non-whaling interests. The aims of NAMMCO include the conservation of marine mammals in the North Atlantic, although its powers are limited to those of an advisory and scientific nature. Participation in NAMMCO is open to other states provided that they are approved by all parties, a stringent requirement which reflects the desire to prevent entry by states which do not share a similar desire to allow the resumption of at least some commercial whaling and for increased cultural exceptions to the existing moratorium. It remains to be seen whether NAMMCO is an 'appropriate international organisation' within the meaning of Article 65 of UNCLOS.

More recently, France, Italy and Monaco concluded an Agreement Concerning the Creation of a Marine Mammal Santuary in the Mediterranean.

[564] Art. 2(1) and (2); 'small cetacean' is defined as 'any species, subspecies or population of toothed whales *Odontocet*, except the sperm whale *Physter macrocephalus*': Art. 1(2)(a).
[565] Art. 8.2.
[566] Monaco, 24 November 1996, in force 1 June 2001, 36 ILM 777 (1997); twelve states are party.
[567] Nuuk, Greenland, 9 April 1992, in force 7 July 1992; four states are party.

The 1999 Agreement establishes a sanctuary for whales and dolphins in the Mediterranean Sea off the coasts of the signatory states which is the largest marine protected area in the Mediterranean.[568]

Agenda 21 recognised the role of the IWC and its responsibility for the conservation and management of whale stocks and the regulation of whaling, as well as the work of its Scientific Committee in carrying out studies of large whales and other cetaceans.[569] This left open the question of the competence of the IWC to regulate cetaceans other than whales; Agenda 21 limited itself to calling on states to co-operate for the conservation, management and study of cetaceans.[570]

### Tuna

A. Szekely, 'Yellow-Fin Tuna: A Transboundary Resource of the Eastern Pacific, 29 *Natural Resources Journal* 1051 (1989); J. F. Pulvenis, 'Vers une emprise des etats riverains sur la haute mer au titre des grands migrateurs? Le Régime international de la pêche au thon dans le Pacifique oriental', AFDI 774 (1989).

A number of international agreements specifically regulate tuna fishing: the 1949 Convention for the Establishment of an Inter-American Tropical Tuna Commission (1949 Tropical Tuna Convention),[571] the 1966 International Convention for the Conservation of Atlantic Tuna (1966 Atlantic Tuna Convention),[572] the 1989 Convention Establishing the Eastern Pacific Tuna Organization,[573] the 1991 Western Indian Ocean Tuna Organization Convention,[574] the 1993 Agreement for the Establishment of the Indian Ocean Tuna Commission[575] and the 1993 Convention for the Conservation of Southern Bluefin Tuna.[576] Outside these areas, no binding international management regime exists, which has led to disputes concerning fishing stocks and

[568] Rome, 25 November 1999.

[569] Agenda 21, paras. 17.61(a) and (b) and 17.89(a) and (b). [570] Para. 17.62.

[571] Washington, 30 May 1949, in force 3 March 1950, 80 UNTS 3; thirteen states are party. In June 1998, a working group was established to review the IATTC Convention in light of the significant changes in international law relating to the conservation and management of marine resources since the Convention was adopted in 1949.

[572] Rio de Janeiro, 14 May 1966, in force 21 March 1969, 637 UNTS 63; the Convention was amended in 1984 and 1992; thirty-four states and the EC are party.

[573] Agreement Creating the Eastern Pacific Tuna Fishing Organization, Lima, 21 July 1989, not yet in force, www.oceanlaw.net/texts/oapo.htm.

[574] 1991 Western Indian Ocean Tuna Organization Convention, Seychelles, 19 June 1991, in force December 1992, www.oceanlaw.net/texts/wioto.htm.

[575] 1993 Agreement for the Establishment of the Indian Ocean Tuna Commission, Rome, 25 November 1993, in force 27 March 1996, www.oceanlaw.net/texts/iotc.htm.

[576] 1993 Convention for the Conservation of Southern Bluefin Tuna, Canberra, 10 May 1993, in force 20 May 1994, 1819 UNTS 360.

techniques, particularly concerning yellow-fin tuna in the Eastern Pacific area between the United States and Mexico.[577]

The 1949 Tropical Tuna Convention establishes a Commission to maintain populations of yellow-fin and skipjack tuna and other kinds of fish in the Eastern Pacific Ocean.[578] Its functions are to gather and interpret information necessary to maintain the populations of these fish, and to recommend on the basis of scientific investigations 'proposals for joint action by the . . . parties designed to keep the populations of fishes covered by [the] Convention at those levels of abundance which will permit the maximum sustained catch'.[579] In 1962, the Commission established a Yellow-fin Regulatory Area covering over five million square nautical miles, within which there were established annual maximum permissible global catch quotas.[580] The establishment of EEZs in the mid-1970s during the negotiation of UNCLOS led to more extensive claims by coastal states, and the exclusion of foreign vessels, in particular those of the US, from previously accessible waters. The 1989 Eastern Pacific Convention, which has not yet entered into force, was negotiated by Ecuador, El Salvador, Mexico, Nicaragua and Peru to limit the access of foreign fleets to surpluses left by coastal fleets. Each party is represented on the Commission and has one vote, and 'decisions, resolutions, recommendations, and publications' are taken by unanimous vote.[581] The Commission meets annually, and since 1949 has adopted resolutions and recommendations on a wide range of issues.

The objective of the 1966 Atlantic Tuna Convention is to maintain populations of tuna and 'tuna-like fishes' in the Atlantic Ocean and adjacent seas (including the Mediterranean) at levels 'which will permit' the maximum sustainable catch for food and other purposes.[582] The Convention establishes an International Commission for the Conservation of Atlantic Tunas composed of delegates from the parties, which meets once every two years, a Council with a smaller but representative membership which gives due consideration to the 'geographic, tuna fishing and tuna processing interests' of the parties, and an Executive Secretary.[583] In the Commission, each party has one vote, and, except as provided otherwise, decisions are taken by simple majority of the parties.[584] The Commission studies populations and may establish panels to review species, groups of species or geographic areas, and propose recommendations for joint action by the parties and studies and investigations.[585]

The Commission may, on the basis of scientific evidence, make recommendations 'designed to maintain the populations of tuna and tuna-like fishes that may be taken in the Convention area at levels which will permit the maximum

[577] Canberra, 10 May 1993, in force 20 May 1994, 1819 UNTS 360.
[578] Preamble and Art. I(1). [579] Art. II(1) to (5).
[580] See P. Sand (ed.), *The Effectiveness of International Environmental Agreements* (1992), 265–5.
[581] Art. I(1) and (8). [582] Preamble and Art. I.
[583] Arts. III(1), (2) and (4), IV(1) and VII. [584] Art. I(3). [585] Arts. IV and VI.

sustainable catch'.[586] Such recommendations become 'effective' for all parties six months after the date of notification, subject to a process of objections, depending on whether fewer than one-fourth, more than one-fourth or a majority of the parties object. This system essentially imposes an 'opt-out' process for parties objecting to a recommendation.[587]

Since 1966, the Commission has held annual regular meetings and special meetings every alternate year, during which it has adopted a range of resolutions designed to conserve tuna.[588] Of particular note are the quotas imposed on bluefin tuna harvests in the western North Atlantic, which has resulted in fisheries operations being moved to the North Pacific Ocean where no international management programme has yet been developed. Other regulations have been adopted on minimum size for yellow-fin tuna, bigeye tuna, bluefin tuna and swordfish; and limits on fishing mortality for bluefin tuna. In 1992, in the face of evidence suggesting the rapid and serious depletion of stocks of bluefin tuna, an attempt was made at the eighth CITES conference of the parties to list the bluefin tuna as an Appendix II endangered species. This led to a dispute over which treaty, CITES or the 1966 Convention, had jurisdiction. Without adequate support, no decision was taken at CITES and the matter was held over until the next meeting of the Atlantic Tuna Commission. However, a resolution was adopted under the 1966 Atlantic Tuna Convention which required the compulsory presentation of a statistical document when bluefin tuna are imported into the territory of a party, signalling a move by that treaty organisation towards a regulatory approach based upon trade information.[589]

The objective of the 1993 Agreement for the Establishment of the Indian Ocean Tuna Commission is to promote co-operation among its members with a view to ensuring the conservation and optimum utilisation of tuna and tuna-like stocks in the Indian Ocean and adjacent seas.[590] The Agreement establishes the Indian Ocean Tuna Commission (IOTC) with membership open to FAO members that are situated within the Agreement's area of competence, or whose nationals fish for tuna stocks within the area. Non-FAO members situated in the Indian Ocean or fishing in that area may also be admitted as members with the approval of a two-thirds majority of the IOTC.[591] In the Commission, each party has one vote and, except as provided otherwise, decisions are taken by a simple majority of the parties.[592] The Commission is assisted by a permanent Scientific Committee and may establish sub-commissions to deal with

[586] Art. VIII(1)(a). [587] Art. VIII(2) to (4).

[588] See Compendium of Management Recommendations and Resolutions Adopted by ICCAT for the Conservation of Atlantic Tunas and Tuna Like Species, COM-SCRS/01/10, October 2001.

[589] Recommendation 92-1 by ICCAT Concerning the ICCAT Bluefin Tuna Statistical Document Programme, in force 25 July 1993.

[590] Art. V(1). [591] Art. IV. [592] Art. VI(2).

particular stocks covered by the Agreement.[593] The IOTC may, on the basis of scientific evidence, adopt conservation and management measures for covered stocks.[594] If adopted by a two-thirds majority of the Commission, the measures are binding though parties may 'opt-out' of particular measures by registering an objection within a 120-day period.[595] Since 1996, the IOTC has held six regular sessions and two special sessions adopting a range of resolutions concerning tuna conservation, including mandatory statistical requirements for IOTC members and a recommendation to establish a bigeye statistical document programme.[596]

The 1993 Convention for the Conservation of Southern Bluefin Tuna (CCSBT) establishes a special regime for the conservation and management of southern bluefin tuna, a highly migratory species. The Convention has four parties – Australia, New Zealand, Japan and South Korea – which are required to encourage accession to the Convention by other states whose nationals harvest southern bluefin tuna or coastal states with EEZs or fishery zones through which southern bluefin tuna migrate.[597] The Convention establishes a Commission for the Conservation of Southern Bluefin Tuna with competence to decide on a total allowable catch for the species which is allocated among the three parties.[598] The Commission's decisions are based on advice from a Scientific Committee composed of representatives from the parties.[599] Disputes over the setting of the TAC and Japan's implementation of a unilateral 'experimental fishing programme' to increase its catch of southern bluefin tuna in 1998 and 1999 led to invocation of the UNCLOS compulsory dispute settlement procedures by Australia and New Zealand in the *Southern Bluefin Tuna* cases.[600]

## WSSD Plan of Implementation

One of the few areas in which the WSSD made a reasonable concrete commitment was in relation to fisheries, with a commitment to 'maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015'.[601] The Plan of Implementation also calls for states to become parties to the 1995 Straddling Stocks Agreement, to implement the 1995 Code of Conduct for Responsible Fisheries, and to develop and implement national and regional plans to put into effect the FAO's international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004.[602]

[593] Art. XII. [594] Art. V(2)(c). [595] Art. IX.
[596] Resolutions 01/04 and 01/05. [597] Art. 13. [598] Arts. 6 and 7(3)(a).
[599] Art. 9. [600] See p. 580 above. [601] Para. 30(a).
[602] Para. 30(b)–(d). The Implementation Plan also calls for the elimination of subsidies that contribute to illegal, unreported and unregulated fishing: para. 30(f).

## Birds

M. Bowman, 'International Treaties and the Global Protection of Birds', 11 JEL 87 and 281 (1999); D. Owen, 'The Application of the Wild Birds Directive Beyond the Territorial Sea of EC Member States', 13 JEL 39 (2001).

The international legal protection of birds is the express objective of three specific agreements: the 1950 Birds Convention, the 1970 Benelux Convention, and the regional EC 1979 Wild Birds Directive. Birds are also protected by the 1973 CITES, the 1971 Ramsar Convention, the 1979 Berne Convention, and agreements under the 1979 Bonn Convention, as well as many treaties of general application to flora and fauna adopted at the regional level. Several important bilateral treaties have also been adopted.[603]

**1950 Birds Convention** The only global instrument specifically designed to protect birds is the 1950 International Convention for the Protection of Birds (1950 Birds Convention),[604] which superseded the 1902 Convention.[605] The absence of any institutional or financial arrangements to ensure that the Convention is implemented has limited its effectiveness. The 1950 Birds Convention, which has attracted limited participation, is intended to protect birds in the wild by granting protection to all birds during their breeding season, to migratory birds during their return flight to nesting grounds between March and July, and to species in danger of extinction or of scientific interest throughout the year.[606] Subject to certain exceptions, the Convention prohibits the import, export, sale, offer for sale, giving or possession of any live or dead bird, or part, or eggs or their shells or broods killed or captured in breach of the Convention.[607] The Convention also outlaws certain methods likely to result in the mass killing or capture of birds or cause them unnecessary suffering.[608] Articles 6 and 7 set forth a number of exceptions, subject to certain administrative obligations including the grant of individual permits. Each party must

[603] See e.g. Convention for the Protection of Migratory Birds in the United States and Canada, Washington, 16 August 1916, 4 IPE 1638; Convention for the Protection of Migratory Birds and Game Mammals (Mexico–United States), 7 February 1936, 178 LNTS 309; and Convention for the Protection of Birds and Birds in Danger of Extinction, and Their Environment (Japan–US), Tokyo, 4 March 1972, 25 UST 3329. Other bilateral agreements include US/USSR (1976); US/Japan (1972); Japan/USSR (1973); and Australia/Japan (1974); Japan/China (1981); India/USSR (1985); and Australia/China (1986).

[604] Paris, 18 October 1950, in force 17 January 1963, 638 UNTS 185. The Convention has ten parties.

[605] Paris, 19 March 1902, IELMT 902:22.

[606] Arts. 1 and 2. In *Count Lippens* v. *Etat Belge, Ministre d'Agriculture*, 13 March 1964, 47 ILR 336, the Belgian Conseil d'Etat held that Art. 2 did not lay down a positive rule of law, but constituted 'an undertaking on the part of the contracting parties that each one of them will take such steps by way of legislation or regulation as may be necessary to implement it', and it created neither rights nor duties for the individual: *ibid.*, 339.

[607] Arts. 3 and 4. [608] Art. 5.

prepare a list of birds which may be captured or killed in its territory and a list of species of indigenous or migratory birds which may be kept in captivity, for the purpose of regulating trade in birds, to prevent their destruction, and to promote the creation of undisturbed water or land reserves.[609] In one of the earliest international provisions of this kind, parties are called upon to educate the public on the need to preserve and protect birds.[610]

**1970 Benelux Convention** The 1970 Benelux Convention on the Hunting and Protection of Birds[611] further provides for the harmonisation of dates for the opening and closing of hunting seasons, procedures and methods permitted for hunting, and the adoption of additional measures for the protection of particular species of birds.[612]

**1979 EC Wild Birds Directive** The 1979 EC Wild Birds Directive establishes a complex regulatory scheme for the protection of all species of birds and their eggs, nests and habitats in the European territories of the member states.[613] Member states must maintain the population of wild birds 'at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements, or to adapt the population of these species to that level'.[614] To this end, they must preserve, maintain or re-establish a sufficient diversity and habitat area for wild birds, including protected areas, re-establishment of destroyed biotopes and creation of biotopes.[615]

The Directive uses an Annex system to establish different levels of protection for various species. The 181 species listed in Annex I are subject to special habitat conservation measures to ensure their survival and reproduction, account being taken of species in danger of extinction, species vulnerable to habitat changes, species rarity, and any other reasons requiring particular attention.[616] For these species, the member states must classify the most suitable territories as special protection areas, taking into account protection requirements in their geographical sea and land area where the Directive applies.[617] In the *Santona*

[609] Arts. 8 to 11. [610] Art. 10.

[611] Brussels, 10 June 1970, in force 1 July 1972, 847 UNTS 255.

[612] Arts. 1, 2, 4, 7 and 8.

[613] Council Directive 79/409/EEC of 2 April 1979 on the Conservation of Wild Birds, OJ L103, 25 April 1979, 1 (as amended), Art. 1; see Case 247/85, *EC Commission* v. *Belgium* [1987] ECR 3029, on the scope of application of the Directive.

[614] Art. 2. [615] Art. 3. [616] Art. 4(1).

[617] Art. 4(1). The ECJ has ruled that Art. 4(1) or (2) of the Directive does not allow a member state, when designating a Special Protection Area and defining its boundaries, to (1) take account of the economic requirements mentioned in Art. 2 of the Directive, (2) take account of economic requirements as constituting a general interest superior to that represented by the ecological objective of that directive, and (3) take account of economic requirements which may constitute imperative reasons of overriding public

*Marshes* case, the ECJ ruled that in giving effect to its obligation to designate under Article 4(1) and (2) a member state was not entitled to subordinate ecological interests to other interests, such as economic and social interests, and that although Member States have

> a certain margin of discretion with regard to the choice of special protection areas, the classification of those areas is nevertheless subject to certain ornithological criteria determined by the directive, such as the presence of birds listed in Annex I, on the one hand, and the designation of a habitat as a wetland area, on the other.[618]

The Court noted:

> In this connection, it is common ground that the Santona marshes are one of the most important ecosystems in the Iberian peninsula for many aquatic birds. The marshes serve as a wintering area or staging post for many birds on their migrations from European countries to the southern latitudes of Africa and the Iberian peninsula itself. The birds observed in the area include various species that are becoming extinct, in particular the spoonbill, which feeds and rests in the Santona marshes in the course of its migrations. Moreover, it emerged from the case file and at the hearing before the Court that the area in question is regularly visited by 19 of the species listed in Annex I to the directive and at least 14 species of migratory birds.[619]

Similar measures must also be taken for the breeding, moulting and wintering areas of regularly occurring migratory species including wetlands of international importance.[620] These provisions so far as they relate to protection areas have been superseded by the coming into force of the 1992 Habitats Directive. Member states are additionally required to take steps to avoid pollution, deterioration of habitat or any disturbance affecting the birds in these special protection areas.[621]

Wild birds are protected from deliberate killing, capture, destruction of or damage to nests and eggs, taking of eggs, deliberate disturbance, and keeping of species of which hunting and capture are prohibited.[622] The sale and transport of wild birds or their parts is prohibited, except subject to certain exceptions for the twenty-six species listed in Annex III.[623] The Directive allows the hunting of

interest of the kind referred to in Art. 6(4) of the 1992 Habitats Directive: Case C-44/95, *R. v. Secretary of State for the Environment, ex parte Royal Society for the Protection of Birds* [1996] ECR I-3805.

618 Case C-355/90, *Commission v. Spain* [1993] ECR I-4221, paras. 10 and 26.

619 *Ibid.*, para. 27. The ECJ went on to find that Spain had also failed to take appropriate steps to avoid pollution or deterioration of habitats in the area of the Santona marshes, contrary to the requirements of Art. 4 of the Directive: *ibid.*, para. 58.

620 Art. 4(2).

621 Art. 4(4). On the Habitats Directive, see pp. 536–40 above.

622 Art. 5.

623 Art. 6.

the seventy-seven species listed in Annex II in accordance with its provisions,[624] provided that it is carried out in accordance with national measures in force, complies with the principles of wise use and ecologically balanced control of the species, and is compatible with the maintenance of regulation levels.[625] The Directive also limits the methods and means of capture and killing in accordance with Annex IV.[626]

The Directive allows limited rights of derogation, which have been strictly construed by the ECJ.[627] In *Commission* v. *Germany*, the Court held that a derogation must be based on at least one of the reasons listed exhaustively in Article 9(1) and must meet the criteria laid down in Article 9(2), the purpose of which was to limit derogations to what were strictly necessary and to enable the Commission to supervise them.[628] The Court has also made clear that the need to faithfully transpose Article 9 into national law 'becomes particularly important in a case where the management of the common heritage is entrusted to the member states in their respective territories'.[629] The Directive encourages research, and requires member states to ensure that the introduction of species of birds which are not wild does not prejudice local flora and fauna.[630] Member states must provide the EC Commission with a triennial report on implementation, and may introduce more stringent requirements.[631]

The Directive has been the subject of a significant body of case law before the ECJ, almost invariably involving cases brought by the EC Commission against individual member states for non-compliance with the provisions of the Directive, although frequently the Commission will have acted on the basis of information provided by environmental groups. The Court has held Germany, France, Belgium, Italy, the Netherlands and Ireland to be in violation.[632] Since some of the important substantive provisions of the Directive are similar, if not

[624] Art. 7. [625] Art. 7(4). [626] Art. 8.

[627] Art. 9. One of the grounds for derogation is 'serious damage' to crops, livestock, forests, fisheries and water: Art. 9(1)(a). In Case 247/85, *EC Commission* v. *Belgium* [1987] ECR 3029, the ECJ stressed that damage should be 'serious' to justify derogations.

[628] [1987] ECR 3503.

[629] Case C-339/87, *EC Commission* v. *Netherlands* [1993] 2 CMLR 360 at 386.

[630] Arts. 10 and 11.

[631] Arts. 12 and 14. On the introduction of measures which do not relate to an endangered species, see Case 169/89, *Re Gourmetterie Van den Burg* [1990] ECR 2143; see chapter 19, p. 990 below.

[632] See e.g. Case 236/85, *EC Commission* v. *Netherlands* [1987] ECR 3989; Case 247/85, *EC Commission* v. *Belgium* [1987] ECR 3029; Case 252/85, *EC Commission* v. *France* [1988] ECR 2243; Case 262/85, *EC Commission* v. *Italy* [1987] ECR 3073; Case 412/85, *EC Commission* v. *Germany* [1987] ECR 3503; Case C-288/88, *EC Commission* v. *Germany* [1990] ECR I-2721; Case C-3/96, *EC Commission* v. *Netherlands* [1998] ECR I-3031; Case C-166/97, *EC Commission* v. *France* [1999] ECR I-1719; Case C-96/98, *EC Commission* v. *France* [1999] ECR I-8531; Case C-38/99, *EC Commission* v. *France* [2000] ECR I-10941; Case C-374/98, *EC Commission* v. *France* [2000] ECR I-10799; and Case C-159/99, *EC Commission* v. *Italy* [2001] ECR I-4007.

identical, to those of the 1979 Berne Convention and the 1992 Habitats Directive, the Court's jurisprudence is of broader significance, particularly in respect of derogations and exceptions. In a later *Commission* v. *Germany* case, the EC Commission sought an injunction to stop works and a declaration from the Court that Germany was in breach of Article 4 of the Directive by planning or undertaking dyke-building works which were detrimental to the habitat of protected birds in a special protection area, and which would lead to a reduction of that special protection area.[633] The Commission argued that the first sentence of Article 4(4) of the Directive (Annex I species 'shall be the subject of special conservation measures') required member states to take positive steps to avoid deterioration or pollution of habitats as part of the management of special protection areas, without exception and without economic interests being taken into consideration. The Court accepted that member states could only reduce the extent of a special protection area on exceptional grounds corresponding to a general interest which was superior to the interest represented by the ecological objective of the Directive. The Court made it clear that the interests referred to in Article 2 (economic and recreational requirements) were not relevant to the establishment of such a general interest. However, the Court relied upon a superior general interest, the need to prevent flooding and to ensure coastal protection, and held the dyke works, which included the protection of a fishing port and the strengthening of coastal structures, to be sufficiently important to override the conservation provisions of the Directive. This finding was subject to the limitation, based upon the principle of proportionality, that the measures should be confined to the strict minimum necessary and should result in the smallest possible reduction of special protection areas. In reaching its conclusion, the Court was evidently influenced by the fact that the dyke would also have some positive consequences for the habitat of the birds, by allowing the formation of meadows of ecological importance.

## Other land animals[634]

**1973 Polar Bear Agreement** The 1973 Agreement on Conservation of Polar Bears[635] prohibits the taking of polar bears in the Arctic except for *bona fide* scientific or conservation purposes, and to prevent serious disturbance of the management of other living resources.[636] Taking is also permitted by local

[633] [1991] ECR I-883.

[634] See also Agreement on Conservation of Seals in the Wadden Sea Area, Bonn, 16 October 1990, in force 1 October 1991, www.wcmc.org.uk/cms/sea_text.htm.

[635] Oslo, 15 November 1973, in force 26 May 1976, 13 ILM 13 (1973); [000] states are party. The Convention replaces the interim Convention adopted at Washington on 9 February 1957, amended by Protocol adopted at Washington on 8 October 1963, by exchange of notes entering into force on 3 September 1969, and by a second Protocol adopted at Washington on 7 May 1976, a third Protocol in 1980 and a fourth Protocol on 12 October 1984.

[636] Arts. I and III(1)(a)–(c); 'taking' includes hunting, killing and capturing: Art. I(2).

people using traditional methods in the exercise of their traditional rights and wherever polar bears have or might have been subject to taking by traditional means by nationals.[637] Parties must protect the ecosystems of polar bears, including habitat components such as denning and feeding sites and migration patterns, and must manage populations in accordance with sound conservation practices on the basis of the best available scientific data.[638] Trade in polar bears or their parts is prohibited under the Convention, which also encourages research, actions for compliance by nationals of non-parties, and consultation.[639] The Convention establishes no institutions, but consultation meetings for the parties are held every four years, most recently in 1991.

**1979 Vicuna Convention**[640] The 1979 Convention for the Conservation and Management of the Vicuna,[641] which is premised in part upon the potential economic benefits of the vicuna, prohibits hunting and illegal trade in the vicuna and its products and derivatives in the territories of all parties, and provides for co-operation on research, technical assistance and training.[642] Internal and external trade was prohibited until 31 December 1989, but any party may allow trade under strict state control if the population of the vicuna 'would allow the production of meat, viscera and bones, as well as the processing of skins and wool into cloth', and in accordance with internationally recognised marks and in co-ordination with CITES.[643] Fertile vicunas and their semen or other reproductive material may only be exported to other parties for the purpose of research or repopulation.[644]

## Migratory species

N. D. Bankes, 'Migratory Caribou Convention', 18 *Canadian Yearbook of International Law* 285 (1980); C. de Klemm, 'Migratory Species in International Law', 29 *Natural Resources Journal* 935 (1989); S. Lyster, 'The Convention on the Conservation of Migratory Species of Wild Animals', 29 *Natural Resources Journal* 979 (1989); D. Navid, 'The International Law of Migratory Species: The Ramsar Convention', 29 *Natural Resources Journal* 1001 (1989); G. R. Munro, 'Extended Jurisdiction and the Management of Pacific Highly Migratory Species', 21 *Ocean Development and*

[637] Art. III(1)(d) and (c). [638] Art. II. [639] Arts. V, VII and VIII.

[640] See also Agreement for the Protection and Conservation of the Vicuna, Buenos Aires, 2 February 1981.

[641] Lima, 20 December 1979, in force 19 March 1982, IELMT 979:94; 2 SMTE 74 (unofficial translation), replacing the 1969 Convention for the Conservation of the Vicuna, La Paz, 16 August 1969.

[642] Arts. 2, 7 and 8. 'Illegal trade' is defined as 'any form of transaction relating to vicuna and/or its products (sale, barter, import, export, transport, etc.) without control or authorisation from the competent State authority': Art. 9.

[643] Art. 3. [644] Art. 4.

*International Law* 289 (1990); L. Glowka, 'Complementarities Between the CMS and CITES', 3 JIWLP 205 (2000).

Migratory species can be classified into four general categories: (1) marine species which breed on the shores of coastal states but migrate to sea during adult life (e.g. seals, sea turtles, anadromous fish); (2) highly migratory marine species which travel between adjacent areas on the EEZ and high seas (e.g. tuna, whales); (3) territorial species with a well-established migration pattern (e.g. ducks and geese); and (4) territorial or marine species which live in border areas and regularly cross jurisdictional boundaries (e.g. gorillas, elephants).[645] Since these migratory species do not respect national boundaries, they pose a particular challenge to an international legal order premised upon the territorial state. In order to apply conservation measures effectively, the only effective approach is by international legal regulation to apply 'concerted action of all states within the national jurisdictional boundaries of which such species spend any part of their life cycle'.[646] Several of the agreements described earlier apply to migratory species,[647] and the *raison d'être* for a host of others is the migratory nature of the species which is being conserved.[648] To date, the only treaty which has as its main objective the conservation of migratory species is the 1979 Bonn Convention.

**1979 Bonn Convention** The origins of the 1979 Convention on the Conservation of Migratory Species of Wild Animals (1979 Bonn Convention)[649] can be traced to Recommendation 32 of the 1972 Stockholm Action Plan and an initiative by the West German Government to prepare a draft migratory species convention which would remedy the lack of uniformity and limited application of the agreements in force at the time.[650] The 1979 Bonn Convention is potentially of global application and has seventy-nine parties. It is, according to Lyster, a particularly interesting agreement for three reasons: it covers an unusually broad range of threats to listed species; its provisions are 'unusually rigorous in their restrictions'; and it establishes a precedent in international wildlife law for providing subsidiary agreements which focus attention and efforts on particular species.[651]

The 1979 Bonn Convention has as its objective the conservation and effective management of migratory species, which are defined as:

[645] C. de Klemm, 'Migratory Species: A Review of Existing International Instruments', 15 *Environmental Policy and Law* 81 (1985).

[646] 1979 Bonn Convention, Preamble.

[647] 1971 Ramsar Convention, Preamble; 1979 Wild Birds Directive; 1992 EC Habitats Directive.

[648] E.g. the fisheries agreements; 1946 International Whaling Convention; 1966 Atlantic Tuna Convention.

[649] Bonn, 23 June 1979, in force 1 November 1983, 19 ILM 15 (1979); eighty states and the EC are party.

[650] S. Lyster, *International Wildlife Law* (2000), 278–9. [651] *Ibid.*, 297.

> the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries.[652]

Article III provides for the listing in Appendix 1 of migratory species where there is reliable evidence that the species is endangered.[653] 'Endangered' means that a migratory species is 'in danger of extinction throughout all or a significant portion of its range'.[654] Parties that are range states of Appendix I migratory species must then endeavour: to conserve and restore habitats; to prevent or minimise adverse effects of activities which seriously impede or prevent the migration of species; and to prevent, reduce or control factors that are endangering or are likely to further endanger the species.[655] Range state parties must also prohibit the taking of Appendix I migratory species, unless the taking is for scientific purposes, or to enhance the propagation or survival of a species, or to accommodate the needs of subsistence users, or where extraordinary circumstances require, and subject to notification of the secretariat of any such taking.[656]

Articles IV and V provide for the listing in Appendix II of migratory species (which could also be listed in Appendix I) which

> have an unfavourable conservation status and which require international agreements for their conservation and management, as well as those which have a conservation status which would significantly benefit from the international co-operation that could be achieved by an international agreement.[657]

An 'unfavourable conservation status' exists where:

1. the migratory species is not maintaining itself on a long-term basis as a viable component of its ecosystems; or
2. the range of the migratory species is either being reduced or likely to be reduced on a long-term basis; or
3. there is not, and will not be in the foreseeable future, a sufficient habitat to maintain the population of the migratory species on a long-term basis; or
4. the distribution and abundance of the migratory species do not approach historic coverage and levels to the extent that potentially suitable ecosystems exist and to the extent consistent with wise wildlife management.[658]

[652] Preamble and Arts. I(1)(a) and II(1). [653] Art. III(1) and (2). [654] Art. I(1)(e).
[655] Art. III(4). A 'range state' is one which 'exercises jurisdiction over any part of the range of that migratory species, or a state, flag vessels of which are engaged outside national jurisdictional limits in taking that migratory species': Art. I(1)(h). 'Range' means 'all the areas of land or water that a migratory species inhabits, stays in temporarily, crosses or overflies at any time on its normal migration route': Art. I(1)(f).
[656] Art. III(5) and (7). [657] Art. IV(1). [658] Art. I(1)(c) and (d).

In such circumstances, range states are required to endeavour to conclude agreements to benefit these species, with a view to restoring the migratory species concerned to a favourable conservation status or to maintain such a status.[659] The agreements should cover the whole of the range of the migratory species concerned, deal with more than one migratory species, and be open to accession to all range states even if they are not parties to the 1979 Bonn Convention.[660] Article V(4) sets out the basic characteristics of these agreements. So far, eleven such agreements have been adopted under the Appendix II procedure:

- the 1990 Agreement on the Conservation of Seals in the Wadden Sea Area;[661]
- the 1991 Agreement on Conservation of Bats in Europe;[662]
- the 1992 Agreement on Small Cetaceans in the North Sea and the Baltic;[663]
- the 1994 Memorandum of Understanding Concerning Conservation Measures for the Slender-Billed Curlew;[664]
- the 1995 African-Eurasian Migratory Waterbird Agreement;[665]
- the 1996 Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area;[666]
- the 1998 Memorandum of Understanding Concerning Conservation Measures for the Siberian Crane;[667]
- the 1999 Memorandum of Understanding Concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa;[668]

[659] Arts. IV(3) and (4) and V(1). [660] Art. V(2) and (3).

[661] Bonn, 16 October 1990, in force 1 October 1991, www.wcmc.org.uk/cms/sea_text.htm. The Agreement seeks to prohibit the taking of seals from the Wadden Sea, to preserve habitats, and to limit pollution (Arts. VI to VIII).

[662] 1991 Agreement on the Conservation of Populations of European Bats, London, 4 December 1991, in force 16 January 1994, www.wcmc.org.uk/cms/bat_text.htm. The Agreement, which is open to range states which are not parties to the 1979 Bonn Convention, establishes rules of special protection for bats and their habitats (Art. III). The Agreement allows specific reservations for particular species of bat (Art. VIII).

[663] See below.

[664] 1991 Memorandum of Understanding Concerning Conservation Measures for the Slender-Billed Curlew, in force 10 September 1994, www.wcmc.org.uk/cms/sbc_text.htm. Parties to the MOU agree to provide strict protection for the slender-billed curlew and identify and conserve the wetlands and other habitats essential for its survival. States are also required to implement the provisions of an Action Plan annexed to the MOU.

[665] 1995 Agreement on the Conservation of African-Eurasian Migratory Waterbirds, The Hague, 16 June 1995, in force 1 November 1999, 6 *Yearbook of International Environmental Law* 306 (1995). Parties are required to undertake conservation activities in accordance with an Action Plan to protect 172 species of waterbirds dependent on wetlands.

[666] See below.

[667] 1998 Memorandum of Understanding Concerning Conservation Measures for the Siberian Crane, Ramsar, 13 December 1998, in force 1 January 1999, www.wcmc.org.uk/cms/sib_text.htm. The MOU seeks to ensure the survival of the West and Central Asian populations of the Siberian crane which are on the brink of extinction.

[668] 1999 Memorandum of Understanding Concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa, Abidjan, 29 May 1999, in force 1 July 1999,

- the 2000 Memorandum of Understanding on the Conservation and Management of the Middle-European Population of the Great Bustard;[669]
- the 2001 Memorandum of Understanding on the Conservation and Management of Marine Turtles and Their Habitats of the Indian Ocean and South-East Asia;[670] and
- the 2001 Agreement on the Conservation of Albatrosses and Petrels.[671]

Further agreements are expected to be adopted on waterbirds of the Americas and Asia-Pacific, and for Sahelo-Sahahan mammals.

Range state parties must provide the secretariat with regular information on the migratory species listed in Appendices I and II for which they consider themselves to be range states, and on the implementing of measures.[672] Institutional arrangements comprise the conference of the parties, a Scientific Council and a secretariat.[673] The conference is the principal 'decision-making organ' of the Convention and has responsibility for reviewing implementation of the Convention, including reviewing and assessing the conservation status of migratory species, and making recommendations to the parties for improving the conservation status of migratory species and improving the effectiveness of the Convention.[674] Amendments to Appendices I and II are adopted at meetings of the conference of the parties by a two-thirds majority of parties present and voting, and they enter into force ninety days after the conference of the parties at which they were adopted for all parties, except for those which make a reservation within that ninety-day period.[675] The conference of the parties meets every three years and has met seven times, most recently in 2002, and added numerous species to Appendices I and II. The conference of the parties

39 ILM 1 (2000). The MOU signatories agree to work closely to improve the conservation of marine turtles and the habitats upon which they depend. States must endeavour to put in place measures to conserve and protect marine turtles at all stages of their life-cycle.

669 2000 Memorandum of Understanding Conservation and Management of the Middle-European Population of the Great Bustard, 5 October 2000, in force 1 June 2001, www.wcmc.org.uk/cms/Otis%20tarda_MoU.htm. The MOU seeks to improve the conservation status of the great bustard throughout its breeding, migratory and wintering range.

670 2001 Memorandum of Understanding on the Conservation of Marine Turtles and Their Habitats of the Indian Ocean and South-East Asia, Manila, 23 June 2001, in force 1 September 2001, www.oceanlaw.net/texts/turtles_mou2.htm. The objective of the MOU 'is to protect, conserve, replenish and recover marine turtles and their habitats, based on the best scientific evidence, taking into account the environmental, socio-economic and cultural characteristics of the signatory States'.

671 2001 Agreement on the Conservation of Albatrosses and Petrels, Canberra, 19 June 2001, www.wcmc.org.uk/cms/albatross_MoU.htm. The objective of the Agreement 'is to achieve and maintain a favourable conservation status for albatrosses and petrels' (Art. II(1)). This objective is to be implemented having regard to the 'precautionary approach' (Art. II(3)).

672 Art. VI. 673 Arts. VII, VIII and IX.

674 Art. VII. 675 Art. XI(1) and (4)–(6).

has also established a formal review process for selected Appendix I species with a view to recommending specific conservation action.

## Cultural and natural heritage and landscape

Five international agreements establish rules for the conservation of cultural and natural heritage and landscape. Although these are not primarily aimed at the conservation of biodiversity, nature or natural resources, their provisions are generally broad enough to allow them to contribute towards conservation efforts of that type.[676] The primary instrument is the 1972 World Heritage Convention, which was supplemented in 2001 by the Convention on Underwater Heritage,[677] and regional heritage treaties have also been adopted for Europe[678] and the Americas.[679] In 2000, the Council of Europe adopted the European Landscape Convention.[680]

**1972 World Heritage Convention** The 1972 Convention for the Protection of the World Cultural and Natural Heritage (1972 World Heritage Convention), adopted under the auspices of UNESCO, establishes a 'system of collective protection of the cultural and natural heritage of outstanding universal value, organised on a permanent basis and in accordance with modern scientific methods'.[681] Natural heritage' is defined to include: (1) natural features 'of outstanding universal value from the aesthetic or scientific point of view';

[676] On the relationship between cultural heritage and the environment, see chapter 1, pp. 17–18 above, and chapter 18, pp. 876–7 below (relationship with liability for environmental damage).

[677] 2001 Convention on Underwater Heritage, Paris, 2 November 2001, not yet in force, 41 ILM 40 (2002). The Convention's objectives are to ensure and strengthen the protection of underwater cultural heritage and to preserve underwater cultural heritage for the benefit of humanity (Art. 2). It does not apply to natural heritage (Art. 1(1)).

[678] 1969 European Convention on the Protection of Archaeological Heritage, London, 6 May 1969, in force 20 November 1970, 788 UNTS 227. A revised convention was adopted in Valetta on 16 January 1992, ETS No. 143. See also European Cultural Convention, Paris, 19 December 1954, in force 5 May 1955, 218 UNTS 139.

[679] Convention on the Protection of the Archaeological, Historical and Artistic Heritage of the American Nations, Santiago, 16 June 1976, in force 30 June 1978, 15 ILM 1350 (1976); see also 1935 Treaty on the Protection of Artistic and Scientific Institutions and Historic Monuments, in force 26 August 1935, 167 LNTS 289.

[680] 2000 European Landscape Convention, Florence, 20 October 2000, not yet in force, http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm. The aims of the Convention are 'to promote landscape protection, management and planning, and to organise European co-operation on landscape issues' (Art. 3), and to that end it provides for national measures (Arts. 4–6) and European cooperation (Arts. 7–11), including in relation to 'transfrontier landscapes' (Art. 9). Landscape is defined as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Art. 1(a)).

[681] Paris, 16 November 1972, in force 17 December 1975, 1037 UNTS 151, Preamble; 176 states are party.

(2) geological and physiological formations and areas 'which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation'; and (3) natural sites or areas 'of outstanding universal value from the point of view of science, conservation or natural beauty'.[682]

Each party identifies and delineates its own cultural and natural heritage sites, which constitute a world heritage for whose protection it is the duty of the international community as a whole to co-operate, but for whom the duty of protection, conservation, presentation and transmission to future generations belongs primarily to the individual party.[683] To that end, each party must adopt a general policy to integrate such protection into comprehensive planning programmes, to set up appropriate services, to foster training, to take necessary legal and other measures, and to submit reports to the general Conference of UNESCO on measures they have taken.[684] More specifically, each party is 'not to take any deliberate measures which might damage directly or indirectly the cultural and natural heritage' of the territory of other parties.[685]

In *Commonwealth of Australia and Another* v. *State of Tasmania and Others*,[686] the Australian High Court was required to interpret Articles 4 and 5 of the 1972 Convention, and by a narrow majority held that the provisions imposed an international obligation on Australia to take appropriate measures for the preservation of the world heritage area. The case arose following the nomination by the Commonwealth of Australia in November 1991, at the request of the Premier of the State of Tasmania, of three parks in south-west Tasmania for inclusion on the World Heritage List. Australia maintained the nomination despite the request for its withdrawal by the next Premier of Tasmania who took over following an election. In December 1982, the World Heritage Committee included the three parks in the World Heritage List under Article 11(2) of the Convention. The Government of Tasmania nevertheless authorised and commenced work on the construction of a hydro-electric dam which would have flooded a large part of the nominated area. In entering the parks on the List, the World Heritage Committee expressed its concern at the likely effect of the construction of the dam and recommended that 'the Australian authorities take all possible measures to protect the integrity of the property'. The Australian Government then adopted the World Heritage Properties Conservation Act 1983 and Regulations under the National Parks and Wildlife Conservation Act 1975 (Commonwealth) which would make the construction of the dam unlawful on

[682] Art. 2. 'Cultural heritage' includes monuments, groups of buildings and sites of outstanding universal value from the point of view of, *inter alia*, history, art, science, aesthetics, ethnology or anthropology: Art. 1.

[683] Art. 4. [684] Arts. 5 and 29. [685] Art. 6(3).

[686] Judgment of 1 July 1983, 68 ILR 266; T. Atherton and T. Atherton, 'The Power and the Glory: National Sovereignty and the World Heritage Convention', 69 *Australian Law Journal* 631 (1995).

the basis, *inter alia*, that it was necessary to give effect to the provisions of the 1972 Convention.

The case turned on the validity of the 1983 Act and the Regulations, and in particular whether they were within the constitutional power of the Commonwealth. Central to the case was the question of whether Articles 4 and 5 of the World Heritage Convention imposed any legal obligation upon Australia to protect the area entered on the List and, if so, what kind of obligation. A four-judge majority of the High Court held that Articles 4 and 5 imposed an international obligation on Australia to take appropriate measures for the preservation of the world heritage area; two dissenting judges took the view that Articles 4 and 5 imposed no obligation on a country with respect to its own heritage area; and one judge did not decide the point. The individual judgments bear careful consideration, not only because they throw some light on the provisions under scrutiny but also because they illustrate the different approaches to interpretation of treaty language and their consequences which are also relevant in respect of the provisions found in other international environmental agreements. The language used in the 1972 Convention is similar to that in many other environmental agreements, in particular for couching obligations in terms which are neither particularly clear nor framed so as to impose what might be considered to be mandatory and inflexible requirements.

Justice Mason, with the majority, considered that Articles 4 and 5 imposed binding obligations on Australia, and that Article 5 imposed a series of obligations, including the taking of legal measures, as

> an element in a general framework which has as its foundation (a) the responsibility of each state under Art. 3 to identify and delineate the different properties situated in its territory which answer the descriptions of 'cultural heritage' in Art. 1 and 'natural heritage' in Art. 2; and (b) the first sentence in Art. 4 which amounts to a recognition of the general or universal responsibility for the protection, preservation, etc. of the heritage and a declaration that it 'belongs primarily to' the state in which the heritage is situated. The sentence which follows is a strong and positive declaration of what each state will do in the discharge of the responsibility affirmed by the first sentence.[687]

Justice Mason held that Article 5 imposed obligations on each state which 'could not be read as a mere statement of intention: it was 'expressed in the form of a command requiring each party to endeavour to bring about the matters dealt with' in the subparagraphs.[688] For Judge Murphy, the Convention, in particular Article 5, imposed a real obligation, even taking into account the imprecise standards of obligation under international law.[689] Judge Brennan held that Articles 4 and 5 created a clear obligation upon Australia to act 'though the extent of that obligation may be affected by decisions taken by Australia in good

[687] 68 ILR 266 at 340. [688] *Ibid.* [689] *Ibid.*, 379.

faith'.[690] For Judge Deane, the absence of precision in Articles 4 and 5 did not prevent Australia from binding itself under the terms of the Convention and assuming real and substantive obligations in respect of the three parks.[691]

The minority included the Chief Justice, who concluded that, on 'the proper construction of the articles, the questions what a state party can do, how far its resources extend, what is possible and what is appropriate are clearly left to the state party itself to decide. [Articles 4 and 5] do not impose on any state Party an obligation to take any specific action.'[692] For Judge Wilson, Article 4 was at most a promise by each party to do what it can to advance the objectives of the Convention with 'no resort to the language of obligation',[693] and the purpose and functions of Article 5 were aspirational to set goals in order to encourage and guide the parties.[694]

Judge Dawson remained on the fence. He was prepared to 'assume for the purposes of the argument that [the provisions of the Convention] are obligatory', but that the terms of the Convention fell short of 'demonstrating the degree of international concern over its subject matter . . . sufficient to stamp it with the characteristics necessary to make it part of [Australia's] external affairs'.[695] Judge Dawson considered that the Convention reflected

> the extreme care which has been taken to affirm the right of individual parties to determine not only what constitutes the cultural and natural heritage situated upon its territory which is deserving of international attention, but also the right to determine whether it is possible or appropriate to endeavour to take measures suggested by the Convention for the protection, conservation and presentation of that heritage. The Convention recognises plainly that in this field of endeavour there can be no absolute imperatives and that difficult decisions must be made which involve the compromise of environmental, social and economic values. Those decisions are left to the individual parties to the Convention with the exhortation that they should endeavour, in so far as possible, and as appropriate for each country, to identify and conserve their heritage.[696]

The Convention is administered by the World Heritage Committee (Intergovernmental Committee for the Protection of the Cultural and Natural Heritage of Outstanding Universal Value), which comprises twenty-one parties representing an 'equitable representation of the different regions and cultures of the world', and a secretariat at UNESCO, and the General Assembly of state parties to the Convention.[697] Parties submit inventories of their properties to the World Heritage Committee, from which the Committee maintains a World Heritage List of sites, which now amounts to 721 sites, of which 554 are cultural, 144 are

[690] *Ibid.*, 423. [691] *Ibid.*, 454–5. [692] *Ibid.*, 301–2. [693] *Ibid.*, 390.
[694] *Ibid.*, 391: according to Judge Wilson, the use of the word 'endeavour' in Art. 5 fell short of creating an obligation: *ibid.*
[695] *Ibid.*, 497. [696] *Ibid.*, 497. [697] Arts. 8(1) and (2), 14 and 16(1).

natural, and 23 are cultural and natural.[698] Inclusion on the List requires the consent of the party or parties concerned.[699] From the World Heritage List the Committee establishes a subsidiary 'List of World Heritage in Danger', comprising sites threatened by 'serious and specific dangers' and for the conservation of which 'major operations' are necessary and for which assistance under the Convention is requested.[700] The Committee has established criteria for both lists. Properties included or potentially suitable for inclusion in the lists can receive international assistance to secure their protection, conservation, presentation or rehabilitation.[701]

The Convention establishes a World Heritage Fund as a trust fund of compulsory and voluntary contributions and other resources, the use of which is to be decided by the Committee.[702] Any party may request international assistance for cultural or natural heritage property identified on the List or the Danger List which has outstanding universal value situated within its territory.[703]

## Conclusions

The conservation of biodiversity probably presents greater regulatory challenges to international law than any other environmental issue. The threats to biodiversity come from a multitude of sources, requiring a comprehensive approach to regulation of a broad range of human activities. Moreover, the conservation of biodiversity illustrates clearly the range of difficulties which exist in developing and applying rules of international law to resources which frequently do not respect national boundaries or are found in areas beyond national jurisdiction, and which require full consideration to be given to the social, cultural, ecological and economic values which different people place on different species. The conservation of biodiversity has, for many environmentalists and for citizens, a particularly important symbolic value which also raises issues about the balance to be struck between the conservation of nature and the conduct of human behaviour; the role of law must, ultimately, be limited to reflecting the values which humans ascribe to other forms of life.

International rules to address the conservation of biodiversity have been developed over a long period and reflect a consistent effort to rein in the human impulse for economic and industrial development even if it results in the loss of species. The roots of international environmental law date back to nineteenth-century efforts to ensure the conservation of biodiversity for economic, environmental, aesthetic and recreational reasons, and, from the

[698] Art. 11(1) and (2). [699] Art. 11(3).

[700] Art. 11(4). These dangers include the threat of disappearance from accelerated deterioration, development projects, armed conflict, and natural disasters including changes in water level, floods and tidal waves: *ibid.*

[701] Art. 13(1). [702] Arts. 13(6) and 15 to 18; chapter 20, p. 1030 below.

[703] Arts. 19 and 20.

cumulative experience which has been built up at all levels, it is now possible to obtain a sense of the effectiveness of various approaches. Many of the lessons learned about governance and the conservation of biodiversity apply equally to other areas of international environmental law. Three lessons merit particular attention.

The first relates to the observation that international law can be most effective where it is applied to address clear objectives: a lack of precision in legal language is invariably seized upon to justify a permissive interpretation of text, and its application becomes more difficult to oppose on political or legal grounds than would be the case if the legal instruments were clear. At one end of the scale it is hard to be clearer than language which completely prohibits an activity, and the experience following the adoption of the moratorium on commercial whaling suggests that, so long as they are supported by the necessary political will, absolute prohibitions can work. Similar considerations apply where legal instruments adopt targets and timetables, setting forth, for example, permissible catches of a particular species over a given timeframe, although the effectiveness of this approach depends in large part on the existence and operation of effective monitoring and enforcement arrangements. At the other end of the scale, it seems clear that the use of general language which calls on states to 'encourage' certain practices, or to use their 'best endeavours' to protect biodiversity, is unlikely to achieve any tangible conservation benefits. Lying between these two opposites is the more usual language which might, for example, require a general prohibition on deliberate damage, destruction or disturbance but allow exceptions on the basis of, for example, overriding public interest (see, for example, the 1979 Berne Convention, Articles 6 and 9; and the 1992 EC Habitats Directive, Articles 12 and 16). Exceptions are frequently used to justify activities harmful to biodiversity which would otherwise be prohibited. If international law is to be effective, a far more rigorous approach needs to be applied to the interpretation and application of exceptions of this sort, and the burden of justifying an exception should be subjected to a higher threshold of proof.

The second important lesson relates to the need to adopt a comprehensive approach and to plug gaps. Recent moves towards adopting an ecosystem approach suggest that the limited effectiveness of regulating particular species or types of species is recognised, and a broader approach to the conservation of biodiversity is now underway. Nevertheless, there are still important gaps which need to be filled. In 1985, Simon Lyster wrote that there were no migratory bird treaties covering South America, Africa, or Asia beyond the former USSR, and that there were no Asian wildlife treaties;[704] these gaps still exist some twenty years later. On the other hand, the 1992 Biodiversity Convention does promise to fill the other important gap he identified, namely, the absence of a

[704] S. Lyster, *International Wildlife Law* (2002) n. 130, 303.

worldwide treaty for the protection of habitats and ecosystems. This Convention is particularly important because it is global, adopts an ecosystem approach, and introduces on a broad basis the linkage between conservation and financial resources, by allowing the implementation by developing countries of their obligations dependent upon the receipt of adequate financial resources.

The third lesson relates to implementation and enforcement. It is clear that the adoption of regulations and the application of innovative regulatory techniques will not in themselves conserve biodiversity: international obligations need to be implemented and enforced, locally, regionally and globally, through the joint efforts of citizens, governments and international organisations. This will ultimately require the vesting of greater authority in international organisations to allow them to set standards and quotas, monitor activities, and enforce obligations. Additionally, there is a need to strengthen existing enforcement mechanisms and, if necessary, develop new arrangements which could be modelled on the conciliatory schemes established under the Montreal Protocol in respect of ozone depletion and under consideration for the climate change regime. The limited success of many existing legal arrangements derives from the lack of appropriate arrangements to address non-compliance, and the inability to adopt sanctions which can be enforced. In this regard, there is also much to be said for making greater use of the sanctions available under national legal systems, drawing from the experience (at least in some countries) of using national law to apply international legal commitments devolved downwards from CITES conference decisions. The belated recognition that implementation requires the availability of dedicated financial resources marks a new and significant development; the creation of a biodiversity 'account' at the Global Environment Facility is an important step, building upon the use of trade measures in instruments such as CITES which have proved to be reasonably effective in achieving their objectives.

# 12

# Hazardous substances and activities

## Introduction

International environmental law has tended to regulate specific environmental media and/or resources rather than particular activities or products. There is, however, a significant emerging body of rules which regulate those activities or products considered by the international community, within a region or globally, to be hazardous or dangerous and to merit specific attention. This chapter describes those rules by reference to international regulation of five areas, namely: (a) accident prevention, preparedness and response; (b) the classification, international trade, and transportation of hazardous chemicals and pesticides; (c) the working environment; (d) radioactive materials; and (e) biotechnology. This chapter also identifies and outlines the main international regulations which address activities considered to be particularly damaging to the environment, such as energy, mining, transport and agriculture. It will be apparent that the past few years have seen significant developments, in particular the adoption of legally binding instruments on international trade in chemicals and pesticides (1998), on trade and marketing of living modified organisms (2000) and on the production and use of persistent organic pollutants (2001).

To develop a comprehensive understanding of the extent to which international law regulates hazardous activities and substances, it is necessary also to consider the disposal of and international trade in hazardous wastes (chapter 13); the disposal of hazardous wastes at sea or in freshwater (chapters 9 and 10); the environmental impact assessment of hazardous activities (including lists and annexes indicating categories of activities which require prior environmental assessment) (chapter 16); information on hazardous activities and substances (including activities in respect of which information must be made available to the public or for which environmental auditing or accounting is recommended) (chapter 17); the regional rules of the Antarctic and the EC (chapters 14 and 15); and the rules on international liability for environmental damage caused by hazardous activities and substances (chapter 18). The first hazardous substances the production of which was prohibited by

international law – certain ozone-depleting substances – are subject to the global regime described in chapter 8 in relation to the protection of the atmosphere.

This chapter describes particular aspects of the management of hazardous substances over their life cycle. It is clear that these rules have not been developed or applied in the framework of a co-ordinated regulatory strategy. The result is a patchwork of international regulations the applicability of which depends upon the nature and characteristics of a particular substance and the location of the activity which is manufacturing them or using them. Agenda 21 noted that globally harmonised hazard classification and labelling systems are not yet available, and the same is true of the rules governing manufacture and use. For hazardous substances and activities the absence of global rules is a real problem, since they may be easily transportable and do not, as a general matter, distinguish in their damaging effects between different peoples or environments. Harmonised rules establishing high standards of human and environmental protection are necessary but do not yet exist generally. Industrialised countries have put in place an extensive and complex body of binding legal obligations under regional agreements, EC law and OECD acts. The extent to which many of these rules apply to the activities of their registered corporations in developing countries is not clear; Agenda 21 recommended that companies should demonstrate a commitment, in respect of toxic chemicals, 'to adopt standards of operation equivalent to or not less stringent than those existing in the country of origin'.[1] In the 1990s, the increased concern of developing countries about hazardous substances was directed principally towards adopting national and international laws to stop the 'dumping' of hazardous wastes in their territories, although the 1991 Bamako Convention applies also to hazardous substances banned in the country of export. More recently, international efforts have been directed towards the adoption of binding international rules on trade in hazardous chemicals and pesticides (other than waste) and the production and use of 'persistent organic pollutants', as reflected in the 1998 Chemicals Convention and the 2001 POPs Convention.

As will be seen, hazardous substances and activities are not regulated by any single international organisation or treaty which establishes principles and rules of general application to all such substances or activities. The international community has, however, adopted broad policy guidelines. Principle 6 of the 1972 Stockholm Declaration declared that the 'discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems'. According to Principle 14 of the Rio Declaration, 'states should effectively co-operate to discourage or prevent the relocation and

[1] See below. On the OECD's guidelines for multinationals, see chapter 3, pp. 102–4 above.

transfer to other states of any activities and substances that cause severe environmental degradation or are found to be harmful to human health'. As set out in the concluding section of this chapter, Agenda 21 and the WSSD Plan of Implementation have elaborated upon this general objective.

Rules developed after the 1972 Stockholm Conference arise from a range of international acts with differing legal qualities, with competence devolved to different international organisations. This has contributed to a certain lack of coherence, and reactive and fragmented rules which may be difficult to identify or interpret. Moreover, there is no general definition under international law as to what constitutes a hazardous or dangerous activity or substance, and many industrial and other activities which may, over time, pose significant long-term environmental threats are not subject to specific international environmental regulation. Examples include transport, mining, agriculture and energy, for which dedicated international rules are virtually non-existent.

Numerous international agreements internationalise the definition of hazardous or dangerous substances and activities and at least four approaches are discernible. The most common approach defines hazardous substances and activities by reference to their inherent characteristics, including their toxicity, flammability, explosiveness and oxidisation.[2] A second approach characterises activities as hazardous by reference to a listing system which identifies certain activities or projects on the basis that they are, *per se*, likely to have significant effects on the environment.[3] A third approach defines hazardous substances by reference to national laws. Finally, a fourth approach (which is increasingly utilised) is reflected in those efforts which do not seek to establish definitions of general application but instead regulate specific substances.[4]

## Accident prevention, preparedness and response

Several international agreements promote international co-operation on accident prevention, preparedness and response in relation to hazardous activities or substances. These may relate to the provision of information in certain emergency situations[5] or might have been adopted to address particular hazards,

[2] 1996 EC Seveso Directive, pp. 622–3 below; 1992 Industrial Accidents Convention, pp. 623–5 below; EC Council Directive 67/548, as amended, chapter 15, pp. 784–6 below; and the various instruments relating to transport, p. 637 below; 1993 Lugano Convention, chapter 18, pp. 933–7 below, Art. 2(1) and (2) and Annex I; 1993 ILO Accidents Convention, Art. 3(a).

[3] 1985 EC EIA Directive (as amended), chapter 16, pp. 807–13 below; 1991 Espoo Convention, pp. 814–17 below; World Bank Operational Directive 4.01, pp. 821–2 below.

[4] 1985 Vienna Convention and 1987 Montreal Protocol, chapter 8, pp. 344–57 above; 1986 Asbestos Convention, pp. 639–40 below; 1998 Chemicals Convention, pp. 635–6 below; 2000 Biosafety Protocol, pp. 653–8 below; 2001 POPs Convention, pp. 628–30 below.

[5] OECD Council Decision on Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage (Preamble, Appendices I–III), 8 July 1988, 28 ILM 247

and liability, and supports research and development and exchange of information and technology.[37] The Convention is administered by the competent authorities of each party, annual meetings of the conference of the parties, and a secretariat provided by the UNECE.[38] Negotiations are currently underway to establish a civil liability regime.[39]

## Chemicals, pesticides and other dangerous substances

R. Lutz, V. Nanda, D. Wirth, D. Magraw and G. Handl, 'International Transfer of Hazardous Technology and Substances: Caveat Emptor or State Responsibility? The Case of Bhopal, India', 79 *Proceedings of the American Society of International Law* 303 (1985); R. Brickman *et al.*, *Controlling Chemicals: The Politics of Regulation in Europe and the United States* (1985); F. B. Cross and B. S. Winslett, '"Export Death": Ethical Issues and the International Trade in Hazardous Products', 25 *American Business Law Journal* 487 (1987); 'The Regulation of Hazardous Exports: A Symposium', 12 *Columbia Journal of Environmental Law* 1 (1987); D. A. Bagwell, 'Hazardous and Noxious Substances', 62 *Tulane Law Review* 433 (1988); G. Handl and R. Lutz, 'An International Policy Perspective on the Trade of Hazardous Materials and Technologies', 30 *Harvard International Law Journal* 351 (1989); M. Baender, 'Pesticides and Precaution: The Bamako Convention as a Model for an International Convention on Pesticide Regulation', 24 NYUJILP 557 (1991); OECD, *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* (1992); G. Rose, 'Prior Informed Consent: Hazardous Chemicals', 1 RECIEL 64 (1992); W. Howarth, 'Poisonous, Noxious, or Polluting: Contrasting Approaches to Environmental Regulation', 56 MLR 171 (1993)

According to Agenda 21 there are approximately 100,000 chemical substances in commerce, many of which appear as pollutants and contaminants in food, commercial products and the various environmental media, but for a great number of which there is insufficient scientific information for the assessment of risks.[40] Many aspects of pesticide regulation fall within the general regulatory framework for chemicals, and are often categorised within the sub-group of hazardous chemicals but not necessarily named as pesticides. However, pesticides must be distinguished from hazardous chemicals because they are often highly toxic, produced and used in large quantities, and widely applied over large areas of land directly to the environment and over foodstuffs in such a way as to limit individual control over them. Studies have shown that fertiliser use worldwide increased by almost 250 per cent in the twenty years between 1966–8

[37] Arts. 12 to 16 and Annexes X and XI. Information is to be subject to rules of confidentiality: Art. 22.

[38] Arts. 17 to 20. Annex XII sets out tasks for mutual assistance to be subject to the conference of the parties' programme of work.

[39] Chapter 18, p. 937 below.

[40] Agenda 21, paras. 19.1 and 19.11.

and 1986–8 and that worldwide pesticide use increased by 13 per cent in the period 1975 to 1984. Moreover, declines reported in some countries were offset by the increased potency of pesticides used.[41] Treaties and other international acts which have as their objective the international regulation of chemicals,[42] pesticides[43] and other hazardous substances have addressed four related issues: registration and classification (including labelling and packaging); production and use; international trade; and transport.

### *Registration and classification (including labelling and packaging)*

International rules and practices for the registration and classification of hazardous substances are extensive as a result of the activities of the ILO, UNEP, the WHO, the FAO, the OECD and the EC. Space limitations foreclose the possibility of a detailed assessment of the numerous instruments which have been developed, most of which are not legally binding but nevertheless provide evidence of widely accepted international standards and practices.

The main registration and classification schemes are those applied: by UNEP, the ILO and the WHO, under the International Programme in Chemical Safety (IPCS);[44] by UNEP under the International Register of Potentially Toxic Chemicals (IRPTC);[45] by the WHO;[46] under the auspices of the EC;[47] and by the UN ECOSOC.[48] In addition, the 1990 Convention Concerning Safety in the Use of Chemicals at Work requires states to establish systems and criteria for the classification of chemicals according to the type of hazards they present, in accordance with national or international systems.[49] With regard to production,

[41] See UNEP, *Environmental Data Report* (1991), 142.

[42] For a definition of chemicals, see n. 102, p. 633, and n. 118, p. 635 below.

[43] For a definition of pesticides, see n. 86, p. 632 below.

[44] Established in 1980 to establish the scientific health and environmental risk assessment basis for safe use of chemicals (normative functions) and to strengthen national capabilities for chemical safety (technical co-operation) (www.who.int/pcs/).

[45] UNEP Governing Council Decisions, Revised Objectives and Strategies of the International Register of Potentially Toxic Chemicals, UNEP/GC/DEC/15/28 (1989). The Register includes details of more than 500 substances, including information on their physical and chemical characteristics, methods of use, and effects on man and the environment.

[46] WHO, *Recommended Classification of Pesticides by Hazard: Guidelines to Classification* (2000–2).

[47] Council Directive 67/548/EEC (as amended), which requires the EC Commission to draw up an inventory of substances available on the EC market: chapter 14, pp. 784–6 below, Art. 1(3). The list is known as the European Inventory of Existing Commercial Chemical Substances (EINECS).

[48] Recommendations on Tests and Criteria for the Classification of Dangerous Goods, ST/SG/AC.10/11/Rev.1 (1991).

[49] Convention Concerning Safety in the use of Chemicals at Work (ILO Convention No. 170), Geneva, 25 June 1990, Art. 6.

UNEP and the FAO have developed a range of guidelines on various aspects of pesticide production and use, including on crops;[50] registration and control;[51] packaging and storage;[52] labelling;[53] retail distribution;[54] national legislation;[55] prior informed consent;[56] and obsolete stocks.[57] The OECD Council has also adopted a wide range of binding and non-binding Acts.[58]

Other schemes which apply include that developed by the *Codex Alimentarius* Commission, which was established in 1962 to implement the joint FAO/WHO Food Standards Programme. The purposes of the Programme include protecting the health of consumers; promoting co-ordination of food standards work undertaken by international governmental and non-governmental organisations; and preparing and finalising regional or global standards. The Commission now has more than 130 members, and amongst the various standards it has developed are those setting maximum limits for pesticide residues.[59] The *Codex Alimentarius* has since been supplemented by the Consolidated List of Products whose consumption and/or sale has been banned, withdrawn, severely restricted or, in the case of pharmaceuticals, not approved by governments, which has been prepared by the UN Secretary General at the request of the General Assembly in 1982.[60]

[50] UNEP Environmental Guidelines for Pesticide Use on Industrial Crops, 1982, UNEP EMG#1.

[51] FAO Guidelines on Environmental Criteria for the Registration of Pesticides, 1985; FAO Guidelines for the Registration and Control of Pesticides, 1985, Addenda, 1988.

[52] FAO Guidelines for the Packaging and Storage of Pesticides, 1985.

[53] FAO Guidelines on Good Labelling Practices for Pesticides, 1995 (revised).

[54] FAO Guidelines for Retail Distribution of Pesticides with Particular Reference to Storage and Handling at the Point of Supply to Users in Developing Countries, 1988.

[55] FAO Guidelines for Legislation on the Control of Pesticides, 1989.

[56] FAO Guidelines on the Operation of Prior Informed Consent, 1990.

[57] FAO Guidelines on the Prevention of Accumulation of Obsolete Pesticide Stocks, 1995.

[58] These include: 1981 and 1989 OECD Council Recommendations on Mutual Acceptance of Data in the Assessment of Chemicals and Good Laboratory Practices (OECD C(81)30); 1973 OECD Decision/Recommendation on Protection of the Environment by Control of Polychlorinated Biphenyls (OECD C(73)1); 1982 OECD Council Decision on Minimum Pre-Marketing Set of Data in Assessment of Chemicals (OECD C(82)196); 1987 OECD Decision/Recommendation on Further Measures for the Protection of the Environment by Control of Polychlorinated Biphenyls; the 1987 Decision/Recommendation on the Systematic Investigation of Existing Chemicals; 1991 Decision/Recommendation on the Co-operative Investigation and Risk Reduction of Existing Chemicals; 1992 Recommendation Concerning Chemical Accident Prevention, Preparedness and Response (OECD C(92)1); 1996 Recommendation on Implementing Pollutant Release and Transfer Registers (OECD C(96)41).

[59] Chapter 3, pp. 95–6 above; see FAO/WHO, *Procedural Manual of the Codex Alimentarius Commission* (2000, 11th edn).

[60] UNGA res. 37/137 (1982); see also Res. 38/149 (1983) and Res. 39/229 (1984).

### *Production and use*

Although international law has long prohibited the production and use of certain weapons,[61] it has only recently moved to prohibit, on environmental grounds, the production and use of certain industrial substances and products.[62] In 1998, the parties to the 1979 LRTAP Convention adopted a Protocol on Persistent Organic Pollutants, which aims to eliminate the production and use of certain POPs within the ECE region.[63] The 2001 Stockholm Convention on Persistent Organic Pollutants (2001 POPs Convention) globalises that objective, aiming to protect human health and the environment from persistent organic pollutants, and to that end it imposes measures to reduce or eliminate releases from the production and use of certain POPs.[64] The Convention is precautionary in approach, and initially targets twelve POPs: Annex A lists those which are targeted for elimination, and Annex B lists those which are to be restricted.[65]

Article 3(1) requires parties to eliminate the production and use of all the chemicals listed in Annex A, in accordance with that Annex, and to restrict production and use of chemicals listed in Annex B. Annexes A and B identify 'specific exemptions' in relation to the production and/or use of some but not all of the chemicals, and Annex B additionally identifies certain 'acceptable purposes'.[66] Article 3(2) requires parties to permit imports of chemicals listed on Annex A or Annex B for the purposes of environmentally sound disposal (in accordance with Article 6(1)(d)) or for a use which is permitted for the importing party under Annex A or B.[67] It also requires parties to allow exports only for environmentally sound disposal, or to a party which is permitted to

[61] E.g. the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons, 13 January 1993, in force 29 April 1997.

[62] 1987 Montreal Protocol, in respect of certain ozone-depleting substances; chapter 8, pp. 345–57 above.

[63] Chapter 8, pp. 334–5 above.

[64] Stockholm, 22 May 2001, not yet in force, 40 ILM 532 (2001) (www.pops.int). The Convention will enter into force with fifty ratifications (currently twenty-three). POPs are considered to be especially hazardous because of their toxicity, persistence, mobility (they evaporate and can travel long distances) and propensity to accumulate in fatty tissue. See generally P. L. Lallas, 'The Stockholm Convention on Persistent Organic Pollutants', 95 AJIL 692 (2001); J. A. Mintz, 'Two Cheers for Global POPs: A Summary and Assessment of the Stockholm Convention on Persistant Organic Pollutants', 14 *Georgetown International Environmental Law Review* 319 (2001).

[65] Annex A lists: aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene, and polychlorinated biphenyls (PCBs). Annex B lists DDT.

[66] Production or use pursuant to a 'specific exemption' or 'acceptable purpose' must be carried out in a manner that minimises human exposure or releases into the environment: Art. 3(6). Pursuant to Art. 4, a register is established to list 'specific exemptions' under Annexes A and B, except those that may be exercised by all parties.

[67] Art. 3(2)(a).

use that chemical under Annex A or B, or to a state which is not a party to the Convention but which has provided an annual certification to the exporting party.[68] Finally, Article 3(2) also provides that a party may only export an Annex A chemical for which production and use exemptions are no longer in effect for it for the purpose of environmentally sound disposal.[69] Parties must take measures to regulate the prevention of production and use of new industrial chemicals which exhibit the characteristics of persistent organic pollutants, taking into account the criteria set forth in Annex D.[70] These criteria are also to be taken into account when assessing other pesticides or industrial chemicals already in use but not listed in Annexes A or B.[71]

With regard to unintentional production, Article 5 requires parties to take certain measures to reduce releases from anthropogenic sources of the chemicals listed in Annex C, including action plans to identify and address releases, the use of substitutes, and the use of 'best available techniques' and 'best environmental practices'. The Convention also commits parties to develop implementation plans and provides for information exchange, public awareness and information, research and monitoring, and the provision of technical assistance to developing countries and economies in transition.[72] Developed countries undertake to provide new and additional financial resources to enable developing countries and economies in transition to meet the 'agreed full incremental costs' of implementing measures, and to that end a financial mechanism is 'defined'.[73] As with earlier conventions relating to climate change and biodiversity, it is recognised that the extent to which developing countries will effectively implement their commitments will depend on the effective implementation by developed country parties of their commitments relating to financial resources, technical assistance and technology transfer.[74] The Convention also sets forth reporting requirements and commits the conference of the parties to establish a non-compliance mechanism as soon as practicable.[75] The conference of the parties is entrusted with implementation of the Convention (and must evaluate the effectiveness of the Convention four years after its entry into force), and

[68] Art. 3(2)(b). The certificate must specify the intended use of the chemical and state that the importing state is committed to protecting human health and the environment and complying with Art. 6(1) and (where appropriate) Annex B, Part II, para. 2. Art. 6(1) defines measures to reduce or eliminate releases from stockpiles or wastes, and Art. 6(2) calls for co-operation with the 1989 Basel Convention.

[69] Art. 3(2)(c).

[70] Art. 3(3). The criteria relate to: chemical identity; persistence; bioaccumulation; potential for long-range environmental transports; and adverse effects.

[71] Art. 3(4). [72] Arts. 7 and 9–12.

[73] Art. 13(2) and (6). The GEF is designated on an interim basis: Art. 14; see chapter 20, pp. 1032–4 below.

[74] Art. 13(4). [75] Arts. 15 and 17.

is assisted by a secretariat (UNEP).[76] Provision is also made for adoption and amendment of the Convention and, in particular, its Annexes.[77]

### *International trade*

International trade in chemicals, pesticides and banned or severely restricted products and substances has been a legally and politically complex subject. It has also been a source of tension between developed and developing countries as substances banned from consumption or sale in developed countries have found their way on to the markets of some developing countries. Initially, some international organisations addressed this by means of non-binding guidelines. These were followed by regional commitments established by the OECD and the EC and the commitments reflected in the 1991 Bamako Convention. In 1998, under the auspices of the FAO and UNEP, a convention of potentially globally application was adopted.

By way of background, the UN has frequently considered the issue of the regulation of products harmful to health and the environment, usually by placing the emphasis on the need to regulate their international traffic. In 1983, the General Assembly adopted a resolution which provided the basis for the principle of 'prior informed consent', declaring that:

> products that have been banned from domestic consumption and/or sale because they have been judged to endanger health and the environment should be sold abroad by companies, corporations or individuals only when a request for such products is received from an importing country or when the consumption of such products is officially permitted in the importing country.[78]

The principle of 'prior informed consent' has subsequently been defined as 'the principle that international shipment of a chemical that is banned or severely restricted in order to protect human health or the environment should not proceed without the agreement, where such agreement exists, or contrary to the decision, of the designated national authority in the importing country'.[79]

[76] Arts. 16 and 19–20.

[77] Arts. 21 and 22. By Art. 8, a party may propose a chemical for listing in Annexes A, B and/or C, which is reviewed by a POPs Review Committee, which may prepare a risk profile in accordance with the criteria set forth in Annex E and, as appropriate, a risk management evaluation (on the basis of information provided by parties and observers relating to the considerations specified in Annex F). In deciding whether to list the chemical in Annex A, B and/or C, the conference of parties must take due account of the recommendations of the POPs Review Committee, including any scientific uncertainty, and act in a precautionary manner.

[78] UNGA Res. 37/137 (1983), para. 1.

[79] Adopted by UNEP Governing Council Decision 14/27 of 27 June 1987, amended by UNEP Governing Council Decision 15/30 of 25 May 1989, para. 1(g).

The prior informed consent procedure, which requires the formal obtaining and disseminating of the decisions of importing countries on whether they wish to receive further shipments of chemicals which have been banned or severely restricted, has been used in UNEP and FAO non-binding instruments, and integrated into the legally binding arrangements for international trade in hazardous waste established by, for example, the 1989 Basel Convention,[80] the 1991 Bamako Convention[81] and the 1993 EC Regulation.[82] The 1983 UN General Assembly resolution also resolved that:

> all countries that have severely restricted or have not approved domestic consumption and/or sale of specific products, in particular pharmaceuticals and pesticides, should make available full information on these products with a view to safeguarding the health and environment of the importing country, including clear labelling in a language acceptable to the importing country.[83]

In 1990, the General Assembly endorsed the utilisation and implementation of the 'prior informed consent schemes for chemicals and pesticides in international trade', and requested the UN Regional Economic Commissions to contribute to the prevention of illegal traffic in toxic and dangerous products and wastes by monitoring and ensuring regional assessment of illegal traffic and its environmental and health consequences.[84] The resolution also called on the Secretary General to disseminate the UN Consolidated List, ensure the more effective involvement of non-governmental organisations in its utilisation, and study sustainable alternatives to banned and severely restricted products and unregistered pesticides. This was followed by the 1985 FAO Code of Conduct and the 1987 UNEP Guidelines, which now adopt the approach taken in, and will be replaced by, the 1998 Chemicals Convention once it has entered into force.

### 1985 FAO Code of Conduct

The most widely used 'soft' instrument, which applies only to pesticides, has been the voluntary International Code of Conduct on the Distribution and Use of Pesticides adopted by the FAO Conference in 1985 (1985 FAO Code).[85] The Code defines and clarifies the responsibilities of all public and private entities involved in the distribution and use of pesticides, including conditions

[80] Chapter 13, pp. 691–5 below.
[81] Chapter 13, pp. 695–6 below.
[82] Chapter 13, pp. 699–703 below.
[83] Note 78 above, para. 2.
[84] UNGA Res. 44/226 (1990); see also the Report of the UN Secretary General on 'Products Harmful to Health and the Environment', A/44/276 (1989).
[85] 23 FAO Conference Res. 10/85 (1985) (www.chem.unep.ch/pic/). The Code was amended in 1989 to include the principle of prior informed consent in Art. 9: FAO Conference Res. 6/89 (1989).

for international trade.[86] The Code establishes basic rules on pesticide management, testing, reducing health hazards, and adoption of regulatory and technical requirements, including registration and recording of import data and use.[87] It recommends that the availability and use of pesticides should be subject to national rules and regulations, and restricted as necessary.[88] It recommends that industry should test all pesticide products to evaluate safety for human health and the environment, and submit the test results to independent evaluation before the product can be traded.[89] Governments and national authorities should prohibit repackaging, decanting or dispensing in food or beverage containers and should establish a legal basis for the acceptance of pesticide residues in accordance with recommendations of the *Codex Alimentarius* Commission.[90] The FAO Code also includes provisions on labelling, packaging, storage and advertising.[91]

Central to the FAO Code are the provisions on information exchange and prior informed consent, adopted by the 1989 amendments. As amended, the FAO Code recommends that governments should notify the FAO as soon as possible of actions taken to ban or severely restrict the use or handling of a pesticide and should provide information on its identity, control action taken and its reasons, and any additional information available.[92] The FAO will then notify the designated national authorities of other countries.[93] Exporting countries must ensure that the national authorities of importing countries are provided with relevant information about banned or severely restricted pesticides at the time of first export following the control action (including the information provided to the FAO at the time of notification of control action), and an indication that an export of the chemical concerned is expected or about to occur. This information should be provided prior to export.[94] The prior informed consent procedure ('PIC procedure') applies to pesticides that are banned or

[86] Pesticides are defined as 'any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport, or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or which may be administered to animals for the control of insects, arachnids or other pests in or on other bodies. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant, or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport': Art. 2.

[87] Arts. 3 to 6. [88] Art. 7. [89] Art. 8(1). [90] Art. 8(2) and (3).

[91] Arts. 10 and 11. [92] Art. 9(1) and (2). [93] Art. 9(1).

[94] Art. 9(3)–(5). The Code defines a banned pesticide as one 'for which all registered uses have been prohibited by final government regulatory action, or for which all requests for registration or equivalent action for all uses have, for health or environmental reasons, not been granted', and severely restricted is identified as 'a limited ban' for which 'virtually all registered uses have been prohibited by final government regulatory action but certain specific registered use or uses remain authorised': Art. 2.

severely restricted for reasons of health or the environment. It provides that no pesticide in these categories should be exported to an importing country participating in the PIC procedure contrary to that country's decision made in accordance with the FAO's procedures for PIC.[95] The PIC procedure is implemented by the FAO and governments of importing and exporting countries. The FAO ensures that control actions are taken in conformity with the Code definitions, maintains a database (with UNEP) of control actions and decisions taken by all member governments, and informs national authorities and relevant international organisations of notifications received under the Code and decisions communicated to it regarding the use and importation of a pesticide included in the PIC procedure.[96] Importing countries participating in the PIC procedure must decide on the acceptability of a pesticide subject to control action and advise the FAO on the decision, ensure that their measures are not discriminatory against imported pesticides, and ensure that the decision is not inconsistent with WTO rules.[97] Exporting countries must advise pesticide exporters and industry of the decisions of participating importing countries and take measures 'to ensure that exports do not occur contrary to the decision of participating importing countries'.[98] The Code does not establish any new institutional arrangements to apply the provisions on information exchange and prior informed consent: the FAO and other international organisations are called upon to give full support to the observance of the Code, and governments must monitor its observance.[99]

### 1987 UNEP London Guidelines

The UNEP London Guidelines for the Exchange of Information on Chemicals in International Trade (1987 UNEP London Guidelines) apply to all chemicals, including pesticides.[100] The Guidelines are complementary to the UN and WHO instruments and the FAO Code of Conduct, and the latter remains (until the entry into force of the 1998 Convention) the primary guidance for the management of pesticides internationally.[101] The Guidelines are designed to assist governments to increase chemical safety and to protect human health and the environment against potential harm by calling on importing and exporting states to exchange information on chemicals in international trade.[102]

[95] Art. 9(7). [96] Art. 9(8).

[97] Art. 9(10); on the GATT, see chapter 19, pp. 946–85 below.

[98] Art. 9(11). [99] Art. 12(5) and (6).

[100] Adopted by UNEP Governing Council Decision 14/27 of 27 June 1987, amended by UNEP Governing Council Decision 15/30 of 25 May 1989.

[101] London Guidelines, Introduction, para. 7.

[102] Guideline 2(a). 'Chemical' is defined as 'a chemical substance whether by itself or in a mixture or preparation, whether manufactured or obtained from nature and includes such substances used as industrial chemicals and pesticides': para. 1(a). The Guidelines are not intended to apply to pharmaceutical or radioactive materials, small quantities of research chemicals, personal or household effects, and food additives: para. 3.

General principles adopted by the London Guidelines include the requirement that regulations and standards should not create unnecessary obstacles to international trade, should be non-discriminatory, and should develop legislative and regulatory structures, creating national registers of toxic chemicals, and improving information collection and dissemination.[103]

Part II of the Guidelines addresses notification of and information on banned and severely restricted chemicals and the operation of the PIC procedure. Participation in the PIC procedure, which is voluntary, is effected by communication to the IRPTC, which maintains a list of participating countries, those which do not participate, and those which have not responded, as well as a list of chemicals included in the PIC procedure.[104] All exporting countries are expected to participate in the PIC procedure.[105] Under the PIC procedure, each participating country designates a national authority as a point of contact for information exchange, with the IRPTC acting as a centre for the channelling of notifications and information.[106] States must notify the IRPTC of actions to ban or severely restrict chemicals as soon as practicable after such action is taken, whereupon the IRPTC will notify participating states.[107] On the basis of the notifications received, the IRPTC identifies all chemicals banned or severely restricted by five or more countries, which will be introduced immediately into the PIC procedure if banned or severely restricted by ten or more countries.[108] Chemicals banned or severely restricted by five to ten countries are introduced into the PIC procedure only if found by an expeditious informal consultation procedure to have met the definitions of chemicals which have been banned and severely restricted for human health or environmental reasons.[109]

A Decision Guidance Document is prepared for each chemical placed into the PIC procedure, comprising a summary of the control action, summary information on the chemical, and a response form to allow participating countries to register their decision with the IRPTC.[110] If a chemical which is banned or severely restricted in the country of export is to be exported, information concerning the export should be provided to the importing country, including an estimate of the amount to be exported annually and any other shipment-specific information which is available.[111] Additional Guidelines are provided on channels of notification and information, feedback and confidential data, as well as on the role of national authorities.[112]

By 1998, 155 countries had designated national authorities for the implementation of the PIC procedure. Its implementation, however, proved to be more complicated than had been expected, due to difficulties in the collection and interpretation of data on national regulatory decisions, and by mid-1998

[103] Guideline 2(c), (d) and (f). [104] Guideline 7.1(e) and (f). [105] Guideline 7.1(b).
[106] Guidelines 9 and 12. [107] Guideline 6. [108] Annex II, para. 1(b).
[109] Annex II, para. 1(b)(ii). [110] Annex III. [111] Guideline 8.
[112] Guidelines 9 to 12; see also Annex II (Procedure for Initial Identification of Chemicals for Inclusion in the Prior Informed Consent Procedure) and Annex III (Information to be Included in the PIC Decisions Guidance Document).

little more than a couple of dozen chemicals had been identified for which the procedure would apply.

### *1998 Chemicals Convention*

The objective of the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998 Chemicals Convention) is:

> to promote shared responsibility and co-operative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.[113]

The Convention is not expected to enter into force until late 2003 or 2004. In the meantime, the Conference of Plenipotentiaries adopting the Convention decided to change – with immediate effect – the voluntary FAO and UNEP PIC procedures into line with the procedure established by the Convention and to operate it as an 'interim PIC procedure'.[114] The Convention draws upon the FAO and UNEP voluntary schemes in applying a prior informed consent procedure (PIC procedure) for chemicals listed in Annex III to the Convention, which is applicable to banned or severely restricted chemicals and severely hazardous pesticide formulations,[115] subject to certain exceptions.[116] Each party is to designate a national authority.[117] With regard to chemicals,[118] a party which has banned or severely restricted a chemical (taken a 'final regulatory

[113] Rotterdam, 10 September 1998, not yet in force (thirty-six out of fifty required ratifications), Art. 1.

[114] Final Act, UNEP.FAO/PIC/CONF/5, 17 September 1998, Annex I, para. 2.

[115] Art. 3(1). A 'banned chemical' is 'a chemical all uses of which within one or more categories have been prohibited by final regulatory action, in order to protect human health or the environment': Art. 2(b). A 'severely restricted chemical' is a chemical virtually all use of which within one or more categories has been prohibited by final regulatory action in order to protect human health or the environment, but for which certain specific uses remain allowed': Art. 2(c). A 'severely hazardous pesticide formulation' means a chemical formulated for pesticidal use that produces severe health or environmental effects observable within a short period of time after single or multiple exposure, under conditions of use': Art. 2(d).

[116] By Art. 3(2), the Convention does not apply to: narcotic drugs and psychotropic substances; radioactive materials; wastes; chemical weapons; pharmaceuticals, including human and veterinary drugs; chemicals used as food additives; food; and chemicals in quantities not likely to affect human health or the environment provided they are imported.

[117] Art. 4.

[118] A 'chemical' is 'a substance whether by itself or in a mixture or preparation and whether manufactured or obtained from nature, but does not include any living organism':

action') is to notify the secretariat, which will then forward the information to all parties.[119] With regard to pesticides, any party that is a developing country or a country with an economy in transition and that is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory, may propose to the secretariat the listing in Annex III of the severely hazardous pesticide formulation.[120] The secretariat will then forward the proposal to the Chemical Review Committee, which will review the information and recommend to the conference of the parties whether the formulation should be subject to the PIC procedure and, accordingly, listed in Annex III.[121] The Convention already lists twenty-five chemicals (or categories of chemicals). It will be for the conference of the parties to add further chemicals to Annex III (chemicals not listed but included in the voluntary PIC procedure shall be included).[122] Articles 10 and 11 establish the PIC procedure in respect of imports and exports of chemicals listed in Annex III.[123] The export of banned or severely restricted chemicals which are not so listed is governed by a separate notification procedure.[124] Without prejudice to the requirements of the importing party, exported chemicals which are listed in Annex III or which are banned or severely restricted must be labelled to ensure 'adequate availability of information with regard to risks and/or hazards to human health or the environment, taking into account relevant international standards'.[125]

The Convention makes provision for general information exchange and technical assistance, as well as implementation of the Convention.[126] A conference of the parties is responsible for reviewing and evaluating implementation of the Convention, assisted by a secretariat (FAO and UNEP), and will appoint the Chemical Review Committee and establish a non-compliance mechanism.[127] Provision is also made for adoption and amendment of the Convention and its Annexes.[128]

Art. 2(a). It consists of two categories: pesticide (including severely hazardous pesticide formulations) and industrial.

[119] Art. 5(1) and (2). Notifications under the amended London Guidelines or the Code of Conduct need not be submitted: Art. 5(2). Annex I identifies information requirements for Art. 5 notifications.

[120] Art. 6(1). [121] Art. 6(3)–(5).

[122] Arts. 7 and 8. Amendments to Annex III are to be adopted by consensus: Art. 22(5)(b). Provision is also made for removal of chemicals from the list: Art. 9. The criteria for listing (and removing) chemicals and pesticides is set forth in Annexes II and IV.

[123] Chapter 17, p. 841 below.

[124] Art. 12. The notification must include the information set out in Annex V.

[125] Art. 13(2). A party may also require that chemicals subject to environmental or health labelling requirements in its territory are, when exported, subject to labelling requirements that ensure adequate availability of information with regard to risks and/or hazards to human health or the environment, taking into account relevant international standards: Art. 13(3).

[126] Arts. 14–16. [127] Arts. 17–19. [128] Arts. 21–22.

### Other regional developments

EC law has established a system of notification and information for imports from and export to third countries of certain chemicals which are banned or severely restricted on health or environmental grounds, applying the PIC procedure.[129] The EC also requires the export of certain items and technologies having dual uses, including for use in chemical and other prohibited weapons.[130] The 1991 Bamako Convention takes a more draconian approach, rejecting the regulated trade approach of the FAO Code and the London Guidelines: it bans all imports from non-parties into Africa of 'hazardous substances which have been banned, cancelled or refused registration by government regulatory action, or voluntarily withdrawn from registration in the country of manufacture, for human health or environmental reasons'.[131]

## *Transport*

International regulations for the transport of hazardous substances and goods establish standards and guidelines to govern the conditions under which such transport is to take place. These conditions relate to labelling, packaging, shipping and marking, and different standards and rules have been put in place to cover different modes of transport. Apart from the general Recommendations adopted by ECOSOC,[132] rules have been adopted to govern the transportation of hazardous goods and substances by road,[133] by rail,[134] by sea,[135] by air[136] and by inland waterways.[137] Special rules have been promulgated by the IAEA to govern the transport of radioactive materials.[138]

[129] Council Regulation (EC) No. 2455/92 concerning the export and import of certain dangerous chemicals, OJ L251, 29 August 1992, 13 (as amended most recently by Commission Regulation (EC) No. 300/2002, OJ L52, 22 February 2002, 1).

[130] Council Regulation (EC) No. 1334/2000 setting up a Community regime for the control of exports of dual-use items and technology, OJ L159, 30 June 2000, 1 (as amended).

[131] 1991 Bamako Convention, Arts. 2(1)(d) and 4(1); chapter 13, p. 696 below.

[132] ECOSOC Recommendations on the Transport of Dangerous Goods, Geneva, 26 April 1957,.12th edition, 2001, ECOSOC Res. 645/G/XXIII, ST/SG/AC.10/1/Rev.7 (1991).

[133] See e.g. European Agreement Concerning the International Carriage of Goods by Road (1957 ADR), Geneva, 30 September 1957 (619 UNTS 77, as amended (1297 UNTS 406) and restructured with effect from 1 July 2001).

[134] Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID), www.unece.org/trans/danger/publi/adr/adragree_e.pdf.

[135] International Maritime Dangerous Goods Code (IMDG Code), as amended, IMO (mandatory – with effect from 1 January 2004 – following May 2002 amendments to SOLAS Convention).

[136] ICAO Technical Instruction for the Safe Transport of Dangerous Goods by Air, DOC.9284-AN/905 (ICAO TI); Convention Concerning the Safe Transport of Dangerous Goods by Air (Annex 18 to the 1944 ICAO Convention) (updated 1999).

[137] See e.g. Agreement on International Carriage of Dangerous Goods by Inland Waterways (2000 ADN), 25 May 2000.

[138] IAEA, Regulations for the Safe Transport of Radioactive Material (2000).

## The working environment

The principal international organisation in the development of international rules to protect the working environment has been the ILO, under whose auspices at least nine international agreements have been negotiated, adopted and implemented, and all but one of which are in force. These relate to: nuclear hazards; benzene; carcinogenic substances; hazards due to air pollution and noise; occupational health services; asbestos; construction safety; chemicals generally; and the prevention of industrial accidents.[139] Although these agreements are primarily intended to protect humans rather than the environment, their application contributes to the protection of the environment, and many contain innovative provisions which have been incorporated into other environmental agreements.

The ILO's first Convention addressed nuclear hazards,[140] and was followed in 1971 by the Convention Concerning Protection Against Hazards of Poisoning Arising from Benzene (1971 Benzene Convention), which now has twenty-eight parties.[141] The 1971 Benzene Convention applies to all activities exposing workers to benzene and products containing benzene, and requires harmless or less harmful substances to be used instead of benzene or products containing benzene whenever they are available, and a prohibition on their use as a solvent or diluent in most situations.[142] The Convention fixes maximum benzene concentration in the air; requires occupational hygiene and technical measures, regular medical examinations, and labelling requirements; and requires pregnant women and children under eighteen not to be exposed to benzene and benzene products.[143]

The 1974 Convention Concerning Prevention and Control of Occupational Hazards Caused by Carcinogenic Substances and Agents commits its twenty-five parties to determine the carcinogenic substances and agents in respect of which occupational exposure is to be prohibited or subjected to authorisation or other control and to protect workers against the risk of exposure to such substances and agents.[144]

The 1977 Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration (1977 Working Environment Convention), which has twenty-five parties, applies to all economic activities and requires parties to adopt national laws or regulations to protect against hazards in the working environment from air pollution, noise and vibration.[145] The Convention does not set individual

[139] See p. 621 above. [140] See p. 646 below.
[141] Geneva, 23 June 1971, in force 27 July 1973, 2 UNTS 45.
[142] Arts. 1, 2 and 4(2). [143] Arts. 6(2), 9(1), 11 and 12.
[144] Geneva, 26 June 1974, in force 10 June 1976, 1010 UNTS 5.
[145] Geneva, 20 June 1977, in force 11 July 1979, 1 SMTE 482 (ILO Convention No. 148), Arts. 1(1) and 4(1).

standards of general application, but requires national authorities to specify exposure limits on the basis of criteria established and regularly revised in the light of national and international knowledge and data, with a general objective of keeping the working environment 'as far as possible' free from these hazards.[146]

The 1985 Convention Concerning Occupational Health Services, which has fifteen parties, requires the parties to formulate, implement and regularly review a coherent national policy, and to provide occupational health services for workers in all areas of economic activity.[147] Occupational health services must identify and assess health risk, ensure surveillance of factors affecting health, advise on the planning and organisation of work and on health, safety and hygiene, provide surveillance of workers' health, organise first aid and emergency treatment, and analyse accidents and occupational diseases.[148] Personnel providing occupational health services must be professionally independent from employers and workers, and all workers are entitled to be informed of health hazards.[149]

The 1986 Convention Concerning Safety in the Use of Asbestos, which has ten parties, applies to all activities exposing workers to asbestos, and requires parties to adopt laws or regulations to protect workers' health.[150] The Convention gets very close to a complete ban on asbestos and products containing asbestos, requiring where necessary and whenever possible the replacement of asbestos or products containing asbestos by other materials which have been scientifically evaluated as harmless or less harmful, and the total or partial prohibition of the use of asbestos and products containing asbestos in certain work processes.[151] The Convention prohibits the use of crocidolite and products containing the fibre, and the spraying, of all forms of asbestos,[152] requires labelling of containers containing asbestos and products containing asbestos, and the prescription of exposure limits fixed in the light of technological progress and technological and scientific knowledge.[153] Removal of asbestos may only be carried out by qualified employers or contractors, subject to the drawing up of a work plan, and disposal of waste containing asbestos must not pose a health risk to workers or the population in the vicinity.[154]

The 1988 Convention Concerning Safety and Health in Construction applies to all construction activity, and establishes a general obligation to ensure that

[146] Arts. 8 and 9.

[147] Geneva, 26 June 1985, in force 17 February 1988, 2 SMTE 126 (ILO Convention No. 155). Arts. 2 and 3.

[148] Art. 5. [149] Arts. 10 and 13.

[150] Geneva, 24 June 1986, in force 16 June 1989, 2 SMTE 359 (ILO Convention No. 162). Art. 3(1). See also EC Council Directive 83/477/EEC (OJ L263, 24 September 1983, 25) and EC Council Directive 87/217/EEC of 19 March 1987 on the prevention and reduction of environmental pollution by asbestos (OJ L85, 28 March 1987, 40).

[151] Art. 10. [152] Arts. 11 and 12. [153] Arts. 14 and 15. [154] Arts. 17 and 19.

all work places are safe and without risk of injury to the safety and health of workers.[155] Of particular relevance to broader environmental concerns are the provisions on health hazards requiring preventive measures to be taken to prevent exposure of workers to chemical, physical or biological hazards which are liable to be dangerous to health.[156] To that end, hazardous substances must be replaced by harmless or less harmful substances wherever possible, or technical measures are to be applied to the plant, machinery, equipment or process, or other effective measures such as the use of personal protective equipment and clothing are to be used.[157] Adequate measures must also be provided where workers enter areas in which a toxic or harmful substances may be present, and waste should not be destroyed on a construction site in a manner liable to injure health.[158]

The 1990 Convention Concerning Safety in the Use of Chemicals at Work establishes rules for all economic activity on the classification of chemicals according to the inherent hazards they pose for health and physical safety, as well as rules designed to protect workers from these hazards, including marking and labelling, and the maintenance of chemical safety data sheets by employers.[159] Under the Convention, all chemicals must be marked, and hazardous chemicals must be marked in a way easily understandable to workers to provide essential information regarding their classification, the hazards they present and the safety precautions to be taken.[160] Employers must be provided with chemical safety data sheets for hazardous chemicals, and suppliers have particular responsibilities for the classification, marking and labelling of chemicals and hazardous chemicals, as well as the preparation of the safety sheets.[161] The responsibilities of employers include the obligation to ensure that chemicals which are not classified, identified and assessed or labelled and marked in accordance with the Convention are not used, and to ensure that workers are not exposed to chemicals 'to an extent which exceeds exposure limits or other exposure criteria for the evaluation and control of the working environment' established by the national authority in accordance with national or international standards.[162] The employer must also assess, monitor and record the exposure of workers to hazardous chemicals, and assess the risks arising from the use of chemicals at work and protect workers against such risks by choosing chemicals or technologies that eliminate or minimise risk as mentioned previously.[163] Other obligations relate to the disposal of hazardous chemicals and containers which may contain residues in a manner which eliminates or

[155] Geneva, 18 June 1988, not yet in force, 2 SMTE 440, Art. 13. [156] Art. 28(1).
[157] Art. 28(2). [158] Art. 28(3) and (4).
[159] Geneva, 24 June 1990, not yet in force (ILO Convention No. 170). The Convention defines 'chemicals' as 'chemical elements and compounds, and mixtures thereof, whether natural or synthetic': Art. 2(a).
[160] Art. 7(1) and (2). [161] Arts. 8 and 9. [162] Arts. 10 and 12(a).
[163] Arts. 12(b) and (c) and 13.

minimises risk in accordance with national law and practice, and to provide information and training.[164] The Convention also requires exporting states which have banned or restricted the use of certain hazardous chemicals to communicate the fact and the reasons underlying it to the national authorities of any importing country.[165]

## Radioactive substances

V. Lamm, *The Utilization of Nuclear Energy and International Law* (1984); A. O. Adede, *The IAEA Notification and Assistance Conventions in Case of a Nuclear Accident: Landmarks in the History of the Multilateral Treaty-Making Process* (1987); P. Cameron, L. Hancher and W. Kuhn, *Nuclear Energy After Chernobyl* (1988); A. Boyle, 'Chernobyl and the Development of International Environmental Law', in W. Butler (ed.), *Perestroika and International Law* (1990), 203; G. Handl, 'Transboundary Nuclear Accidents: The Post-Chernobyl Multilateral Legislative Agenda', 15 *Ecology Law Quarterly* 203 (1988); P. Sands, *Chernobyl: Law and Communication: Transboundary Nuclear Air Pollution* (1988); L. de la Fayette, 'International Environmental Law and the Problem of Nuclear Safety', 5 JEL 31 (1993); J. Goldblat, 'The Nuclear Non-Proliferation Regime: Assessment and Prospects', 256 *Recueil des Cours* 9 (1995); L. Boisson de Chazournes and P. Sands (eds.), *International Law, the International Court of Justice and Nuclear Weapons* (1999). See also the *Nuclear Law Bulletin* (published by the OECD).

The international regulation of radioactive substances commenced with the establishment in 1955 by the UN General Assembly of the Scientific Committee on the Effects of Atomic Radiation (UNSCEAR),[166] followed by the creation of the International Atomic Energy Agency.[167] The other principal international institutions exercising competence in the field of radioactive substances are the European Atomic Energy Agency (EURATOM), established in 1957,[168] and the Nuclear Energy Agency of the OECD, also established in 1957.[169]

Specialised international treaty obligations concerning nuclear materials commenced with the adoption of treaties on liability for nuclear damage[170] and the protection of workers. Subsequent agreements have been adopted on atmospheric nuclear testing;[171] the use and proliferation of nuclear weapons;[172]

[164] Arts. 14 and 15. [165] Art. 19; see above.
[166] UNGA Res. 913 (X), 3 December 1955.
[167] 23 October 1956, in force 29 July 1957, 276 UNTS 3, subsequently amended; see chapter 3, p. 100 above.
[168] Chapter 15, p. 734 below. [169] Chapter 3, p. 102 above.
[170] Chapter 18, pp. 905–12 below. [171] Chapter 8, pp. 319–21 above.
[172] Treaty on the Non-Proliferation of Nuclear Weapons, 1 July 1968, in force 5 March 1970, 729 UNTS 161 ('nuclear weapon parties' agree not to transfer to 'non-nuclear weapon

border area co-operation; co-operation on nuclear safety and research; the protection of nuclear material; and nuclear emergencies. Disposal of radioactive waste is also regulated,[173] and some regions have been designated by states as nuclear-free zones. Under the auspices of the IAEA, two international conventions have been adopted, on Nuclear Safety (1994) and on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997).

### *Nuclear safety*

The IAEA is required by its Statute to 'establish or adopt . . . standards of safety for protection of health and minimisation of danger to life and property' (including such standards for labour conditions).[174] It has adopted, with the assistance of the International Commission on Radiological Protection (ICRP) and other organisations, instruments on nuclear safety which are binding upon itself and must be applied in respect of its own research operations, but which are not binding upon its member states or third parties. This compares unfavourably with EURATOM[175] and the OECD's Nuclear Energy Agency, which have the power to adopt binding acts. In practice, however, many IAEA standards are relied upon by states in developing and implementing national legislation and standards. The instruments which the IAEA may adopt include Safety Fundamentals, Safety Standards, Safety Guides, Safety Practices, and Safety Reports.[176] Five Codes of Practice and more than sixty volumes of Nuclear Safety Standards (NUSS) have been adopted, relating to government organisation, siting, design, operation and quality assurance. Significant instruments include the Basic Safety Standards which have been adopted for Radiation Protection,[177] the Regulations for Safe Transport of Radioactive Material,[178] the Radioactive Waste Safety Standards,[179] and the Safety Standards Governing Radiological Emergency.[180] In September 1991, the General Conference of the IAEA invited

parties' any nuclear weapons or devices, or to assist the latter to manufacture, acquire or control such weapons or devices, and 'non-nuclear weapon parties' undertake to submit themselves to verification safeguards under the auspices of and in agreement with the IAEA). In 1995, the Treaty's application was extended indefinitely: 1995 Review and Extension Conference of Parties to NPT, Annex, Decision 3, 34 ILM 959 (1995).

[173] Chapter 13, pp. 684–6 below.

[174] IAEA Statute, Art. III(A)(6).

[175] Chapter 15, pp. 793–4 below.

[176] P. Szasz, 'The IAEA and Nuclear Safety', 1 RECIEL 165 at 168 (1992).

[177] International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources (1996) (supersedes IAEA Safety Series No. 9, 1982).

[178] TS-R-1 (2000) (supersedes ST-1 (1996) and Safety Series No. 6 (1985) and No. 80); see n. 204, p. 646 below.

[179] See WS-R-2, Predisposal Management of Radioactive Waste, Including Decommissioning (2000); WS-R-1, Near Surface Disposal of Radioactive Waste (1999); on radioactive waste, see chapter 13, pp. 681, 697–9 and 707–8 below.

[180] GS-R-2, Preparedness and Response for a Nuclear or Radiological Emergency (2002).

its Director General to prepare an outline of the possible elements of a nuclear safety convention.[181] An Expert Group subsequently identified a tentative list of obligations to be included in a nuclear safety convention, including a legislative framework for the regulation of civil nuclear facilities and activities of the nuclear fuel cycle; education and training of employees; emergency plans; safety (including siting, design, construction, commissioning and decommissioning); safe operation and maintenance; continuous safety surveillance; safe management and disposal of waste; and the sharing of information.[182]

In June 1994, the Convention on Nuclear Safety was adopted under the auspices of the IAEA.[183] The Convention has three objectives: to achieve and maintain a high level of nuclear safety worldwide: to establish and maintain effective defences in nuclear installations against potential radiological hazards to protect individuals, society and the environment from harmful effects of ionising radiation; and to prevent accidents with radiological consequences and to mitigate such consequences should they occur.[184] Parties are required to establish a national regulatory body and to establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations, providing, *inter alia*, for the establishment of applicable national safety requirements and regulations, a system of licensing, a system of regulatory inspection and assessments, and the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation.[185] Parties must give effect to 'general safety considerations' by prioritising safety, and must ensure adequate financial and human resources; implement quality assurance programmes; carry out comprehensive and systematic safety assessments; ensure that radiation exposure to workers and the public is kept as low as reasonably achievable (and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits); and establish on-site and off-site emergency preparedness plans.[186] In relation to safety, siting should be evaluated by reference to factors likely to affect safety for the projected lifetime of the installation and for impacts on individuals, society and the environment; design and construction should provide for 'several reliable levels and methods of protection' against the release of radioactive materials, technologies incorporated

[181] IAEA GC(XXXV)/res./553 (1991).

[182] Report of the Expert Group on Outline of the Possible Elements for an International Convention on Nuclear Safety, 13 December 1991, reprinted in Report by the Director General on Implementation of General Conference Resolution GC(XXXV)/res./553, GOV/2567 (1992).

[183] Vienna, 17 June 1994, in force 24 October 1996; fifty-three states and Euratom are party; M. Kamminga, 'The IAEA Convention on Nuclear Safety', 44 ICLQ 872 (1995).

[184] Art. 1. A 'nuclear installation' is 'any land-based civil nuclear power plant under its jurisdiction including such storage, handling and treatment facilities for radioactive materials as are on the same site and are directly related to the operation of the nuclear power plant': Art. 2(i).

[185] Arts. 7 and 8. [186] Arts. 10–16.

in the design and construction should be proven by experience or qualified by testing or analysis, and the design should allow for reliable, stable and easily manageable operation. Minimum standards are to be applied with regard to operation, including the principle that the generation of radioactive waste resulting from the operation of a nuclear installation should be kept to the minimum practicable for the process concerned, in terms of activity and volume.[187] These obligations are characterised by their generality, by the failure to make reference to any of the IAEA's own international standards, and by the absence of any commitment to established and broadly accepted environmental requirements, such as environmental impact assessment.

Three years later, also under IAEA auspices, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997 Joint Safety Convention) was adopted. Its objectives are to achieve and maintain a high level of safety worldwide in spent fuel and radioactive waste management, to ensure that during all stages of spent fuel and radioactive waste management there are effective defences against potential hazards to protect against harmful effects of ionising radiation, and to prevent accidents.[188] The Convention applies to spent fuel management when the spent fuel results from the operation of civilian nuclear reactors, including certain discharges: it does not cover spent fuel held at reprocessing facilities as part of a reprocessing activity, or waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle, or the safety of management of spent fuel or radioactive waste within military or defence programmes (unless the contracting party declares otherwise).[189] The 1997 Convention addresses the safety of spent fuel management[190] and of radioactive waste management[191] (addressing general requirements, existing facilities, siting, design and construction, safety assessment, operation, disposal of spent fuel and institutional measures after closure). With regard to general safety provisions, it includes similar provisions to the 1994 Convention in relation to the adoption of a legislative and regulatory framework, a regulatory body and responsibilities of the licence holder, as well as requirements in relation to human and financial resources, quality assurance and operational radiation procedure, emergency preparedness and decommissioning.[192]

It is noteworthy that, unlike the 1994 Convention, the 1997 Convention refers to international standards: in relation to radiation protection, for example, it requires each party to ensure that 'no individual shall be exposed, in normal situations, to radiation doses which exceed national prescriptions for dose

[187] Art. 17–19.

[188] Vienna, 5 September 1997, in force 18 June 2001, 36 ILM 1431 (1997), Art. 1; thirty-one states are party.

[189] Art. 3. [190] Arts. 4–10. [191] Arts. 11–17. [192] Arts. 18–26.

limitation which have due regard to internationally endorsed standards on radiation protection'.[193] In this regard, the 1997 Convention also requires a party involved in transboundary movement to 'take the appropriate steps to ensure that such movement is undertaken in a manner consistent with the provisions of this Convention and relevant binding international instruments', and commits parties to a system of prior notification and consent.[194]

### *Transport*

Beyond the requirements of the 1997 Joint Safety Convention governing transboundary movements of spent fuel and radioactive waste, the provisions of the 1980 Convention on the Physical Protection of Nuclear Material apply to nuclear material used for peaceful purposes when being transported internationally and, to a more limited extent, the domestic use, storage and transport of nuclear material used for peaceful purposes.[195] The Convention requires parties to ensure as far as practicable that nuclear material in international transport is protected in accordance with the requirements set forth in Annex I, and that nuclear material shall not be exported, imported or permitted transit through the territory unless assurances have been received that the nuclear material will be protected at Annex I levels.[196] The party responsible for receiving such assurances must identify and inform in advance transit states, as well as states whose airports or seaports the nuclear material is expected to enter.[197] Parties must identify and share information on their central authority having responsibility for the physical protection of nuclear material, co-operate in the event of theft, robbery or other unlawful taking, and co-operate and consult on the design, maintenance and improvement of physical protection systems.[198] The Convention establishes a range of offences to be made punishable by each state, including theft or robbery or threats to use nuclear material to cause death or injury or property damage (but not environmental damage), and provides for jurisdiction over offences, and rules on detention, prosecution and extradition, as well as assistance between parties in criminal proceedings.[199] Interestingly, and rarely, the Convention has a dispute settlement clause providing for the compulsory jurisdiction of the ICJ.[200]

In 1993, the IMO Assembly adopted a Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks On Board

[193] Art. 24(1)(ii) and (2)(ii). [194] Art. 27; chapter 13, pp. 697–9 below.

[195] Vienna and New York, 3 March 1980, in force 8 February 1987, IELMT 980:18, Art. 2(1) and (2); eighty-six states and Euratom are party.

[196] Arts. 3 and 4(1) to (3). These provisions do not apply to domestic activities. Annex I sets out 'Levels of Physical Protection to be Applied in International Transport of Nuclear Materials as Categorised in Annex II'.

[197] Art. 4(5). [198] Art. 5. [199] Arts. 7 to 14. [200] Art. 17.

Ships (INF Code).[201] The INF Code recommends how certain materials should be carried, including specifications for ships. The material covered by the Code includes irradiated nuclear fuel, plutonium and high-level radioactive wastes, and the Code applies to all ships carrying INF cargo except warships, naval auxiliary ships or other ships used only on government non-commercial service. The Code became legally binding with effect from 1 January 2001.[202] Non-binding instruments adopting guidelines and recommendations for maritime aspects of radioactive substances have also been adopted by the IMO[203] and the IAEA.[204]

### *Protection of workers and the public*

Beyond the IAEA Safety Standards,[205] the 1960 ILO Convention (No. 115) Concerning the Protection of Workers Against Ionising Radiations aims to ensure effective protection of workers against ionising radiations.[206] Their exposure must be restricted to the lowest practicable level, and parties must fix maximum permissible doses of radiation which may be received and maximum permissible amounts which can be taken into the body for workers directly engaged in radiation work, as well as others who may be exposed.[207] The Convention provides for warnings to be used to indicate radiation hazards, the instruction of workers on precautions, the monitoring of workers and workplaces, and regular medical examinations.[208]

### *Border area co-operation*

Several bilateral and other treaties promote consultations and other information sharing on the construction of nuclear power plants in border areas.[209] A typical example is the 1980 Agreement Between Spain and Portugal on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity

[201] IMO Res. A.748(18) (1993). The Code's regulations address, *inter alia*, damage stability, fire protection, structural consideration, cargo securing arrangements, radiological protection equipment and management, training and shipboard emergency plans.

[202] IMO Res. MSC.88(71) (27 May 1999).

[203] IMO Code of Safety for Nuclear Merchant Ships, IMO Res. A.491(XII), Part A (19 November 1981).

[204] Regulations for the Safer Transport of Radioactive Material (2000).

[205] See p. 642 above.

[206] Geneva, 22 June 1960, in force 17 June 1962, 431 UNTS 41, Art. 3(1). On EC rules adopted under EURATOM, see chapter 15, pp. 793–4 below.

[207] Arts. 5, 6(1), 7 and 8. [208] Arts. 9 to 12.

[209] See e.g. France–Belgium Agreement on Radiological Protection Concerning the Installations of the Nuclear Power Station of the Ardennes, 7 March 1967, 588 UNTS 227; Guidelines for Nordic Co-operation Concerning Nuclear Installations in the Border Areas, 15 November 1976; Denmark–Federal Republic of Germany, Agreement Relating to Exchange of Information on Construction of Nuclear Installations Along the Border, 4 July 1977, 17 ILM 274 (1978).

of the Frontier, which provides that 'the competent authorities of the constructor country shall notify the neighbouring country of applications for licences for the siting, construction or operation of nuclear installations in the vicinity of the frontier which are submitted to them'.[210] More generally, Article 17 of the 1994 Nuclear Safety Convention and Article 13 of the 1997 Joint Safety Convention commit parties to consult with other parties in the vicinity of a proposed nuclear installation or facility, insofar as they are likely to be affected by that installation or facility. Together with the general requirements of international law relating to prevention and notification, as well as environmental assessment, there is now sufficient treaty and other state practice to indicate that customary international law requires states that are planning nuclear activities which might entail a significant risk of transfrontier pollution to give early advice to any state affected and to enter into good faith consultations at the request of such a state.[211]

### *Emergencies*

Following the Chernobyl accident, treaties on emergency notification and assistance were negotiated at the IAEA. The 1986 IAEA Convention on Early Notification of a Nuclear Accident (1986 Notification Convention)[212] was modelled on existing IAEA guidelines[213] and supplemented the bilateral and other treaties already adopted.[214] The 1986 Notification Convention has been followed by numerous bilateral and regional arrangements, including EC rules. The 1986 IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986 Assistance Convention)[215] was also modelled on

[210] Agreement Between Portugal and Spain on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity of the Border, Lisbon, 31 March 1980, in force 13 July 1981, Art. 2.

[211] See e.g. 1982 ILA Montreal Rules, Arts. 6 and 7; 1987 IDI Resolution, Art. 8(1); on the principle of good-neighbourliness, see chapter 6, pp. 249–51 above; on the provision of information see chapter 17, pp. 838–40 below.

[212] 26 September 1986, in force 27 October 1986, 25 ILM 1370 (1986); see chapter 17, pp. 845–7 below.

[213] IAEA Guidelines on Reportable Events, Integrated Planning and Information Exchange in a Transboundary Release of Radioactive Material, IAEA Doc. INFCIRC/321 (January 1985).

[214] See e.g. Federal Republic of Germany–Luxembourg, Agreement on the Exchange of Information in Case of Accidents Which Could Have Radiological Consequences, 2 March 1978, 29 IPE 251; France–Switzerland, Agreement on the Exchange of Information in Case of Accidents Which Could Have Radiological Consequences, 18 October 1979, 27 IPE 382; Finland–USSR, Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to Nuclear Facilities, 7 January 1987, IAEA LegSer No. 15, 187; Sweden–USSR, Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to Nuclear Facilities, 1 January 1988, IAEA LegSer No. 15, 407; see generally the list cited in E. Brown Weiss, P. C. Szasz and D. B. Magraw, *International Environmental Law: Basic Instruments and References* (1992).

[215] Vienna, 26 September 1986, in force 26 February 1987, 25 ILM 1377 (1986).

existing IAEA guidelines[216] and bilateral and other regional arrangements.[217] It is intended to 'facilitate prompt assistance in the event of a nuclear accident or radiological emergency to minimise its consequences and to protect life, property and the environment from the effects of radioactive releases'.[218] The 1986 Assistance Convention applies whether or not the accident occurred within the requesting state's territory or jurisdiction, and requires requesting states to specify the scope and type of assistance they require and to provide any information.[219] Once a state has received a request for information, it must promptly decide and notify the requesting state whether it is in a position to render the assistance requested and the scope and terms of assistance it might provide, and to identify and notify the IAEA of experts, equipment and material which could be made available, and the terms on which it will provide assistance.[220] The IAEA's responsibilities include making available appropriate resources for emergency purposes, transmitting information about resources, and if requested co-ordinating available assistance at the national level.[221] The 1986 Assistance Convention also includes administrative provisions on the direction and control of assistance, competent national authorities, reimbursement of costs, confidentiality of information, and rules on privileges, immunities, claims and compensation relating to persons or property injured or damaged in the course of providing assistance.[222] The 1986 Assistance Convention clearly marks a step in the right direction, and should remove many of the administrative barriers which frequently limit the effectiveness of international assistance in emergency situations. Nevertheless, it has been criticised for emphasising the protection of the assisting state: Argentina, for example, noted that under Article 10(2) the state receiving assistance is to be held responsible for all damage suffered by the assisting state, but the assisting state apparently assumes no responsibility for any damage which it might cause.[223] Furthermore, Article 7, on the reimbursement of costs, has the result that a state which caused a nuclear accident and which agrees to provide assistance to another affected state has the right to require reimbursement of assistance costs. This seems to be unsatisfactory, and led the representative of Luxembourg to conclude that the fundamental question of responsibility had not been properly resolved.[224]

[216] Guidelines for Mutual Emergency Assistance Arrangements in Connection with a Nuclear Accident or Radiological Emergency, IAEA Doc. INFCIRC/310 (January 1984).

[217] See e.g. Nordic Mutual Emergency Assistance Agreement in Connection with Radiation Accidents, 17 October 1963, 525 UNTS 75.

[218] Art. 1(1). [219] Arts. 1(1) and 2(2). [220] Art. 2(3) and (4).

[221] Art. 2(6). [222] Arts. 3, 4, 6, 7, 8 and 10.

[223] See comment of the representative of Argentina at the Final Plenary Meeting of Governmental Experts, 15 August 1986, IAEA Doc. GC(SPL.I)/2, Annex V, 18 (1986).

[224] *Ibid.*, 28.

### *Nuclear weapons and testing, and nuclear-free zones*

The acquisition, use and testing of nuclear weapons has been addressed by a number of international conventions. They have also been the subject of various proceedings before the ICJ which, ironically perhaps, have made a rather significant contribution to the development of international environmental law.[225]

Aside from the 1968 Treaty on the Non-Proliferation of Nuclear Weapons,[226] the objectives of the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water include the desire to 'put an end to the contamination of man's environment by radioactive substances'.[227] To that end, the parties have undertaken to prohibit, and not to participate in or encourage, any nuclear weapon test or other nuclear explosion at any place under their jurisdiction or control in the atmosphere, outer space, or under water or in any other environment if it causes radioactive debris to be present outside the territorial limit of the state under whose jurisdiction or control it is conducted.[228] The 1963 Treaty allows underground nuclear tests, and does not establish institutional arrangements or mechanisms for verification and compliance. In 1991, an amendment conference was convened to widen the scope of the treaty to include underground testing and establish compliance controls as part of a comprehensive test ban treaty, but no amendments were adopted.[229] The 1996 Comprehensive Nuclear Test Ban Treaty (1996 CTBT) commits parties 'not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control', and to refrain from 'causing, encouraging, or in any way participating in the carrying out of any nuclear weapon test explosion or any other nuclear explosion'.[230] The 1996 Treaty establishes a comprehensive verification and inspection system.

The 1971 Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Sub-Soil Thereof prohibits the placing of nuclear weapons or any other types of weapons of mass destruction, as well as related structures and facilities, on the seabed and ocean floor and in the subsoil beyond the outer limit of the seabed zone.[231] The Treaty establishes a verification procedure leading ultimately to the reference of disputes to the UN Security Council.[232] The UN

[225] *Australia* v. *France*, *New Zealand* v. *France* (1974), chapter 6, p. 242 above, and chapter 18, pp. 879–81 below; *New Zealand* v. *France* (1995), chapter 6, p. 245 above, and chapter 16, p. 800 below; Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons* (1996), chapter 6, pp. 245–6 above.

[226] See p. 641 above.

[227] 5 August 1963, in force 10 October 1963, 480 UNTS 43, Preamble.

[228] Art. I(1). [229] PTBT/CONF.13/Rev.1 (1991).

[230] New York, 24 September 1996, not yet in force, 35 ILM 1439 (1996).

[231] 11 February 1971, in force 18 May 1972, UKTS 13 (1973), Art. 1(1). [232] Art. III.

General Assembly has called on the UN Conference on Disarmament to agree on an international convention prohibiting the use or threat of use of nuclear weapons under any circumstances.[233]

The 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America prohibits the testing, use, manufacture, production, acquisition, receipt, storage, installation, deployment or possession of any nuclear weapons by the parties in their territories.[234] The Treaty does not prejudice the right of parties to use nuclear energy for peaceful purposes and to carry out, subject to certain conditions, explosions of nuclear devices for peaceful purposes.[235] Compliance with the Treaty is to be ensured by the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL) and by a control system, including IAEA safeguards, to verify that devices and facilities intended for peaceful uses of nuclear energy are not being used in the testing or manufacture of weapons, that the prohibited activities are not being carried out, and that explosions for peaceful purposes are compatible with the Treaty.[236]

The 1985 South Pacific Nuclear Free Zone Treaty is designed to keep the South Pacific region 'free of environmental pollution by radioactive wastes and other radioactive matter'.[237] Under the Treaty, each party agrees not to manufacture, acquire, possess or control any nuclear explosive device anywhere inside or outside the South Pacific Nuclear Free Zone; to prevent the stationing of nuclear explosive devices in their territory; to prevent the testing of nuclear explosive devices; and to prevent the dumping of radioactive wastes or matter in the Zone.[238] Parties may only provide source or special fissionable material or related equipment or material to non-nuclear weapon states which are subject to safeguards under Article III(1) of the 1968 NPT or to nuclear weapon states subject to safeguard agreements with the IAEA.[239] The Treaty establishes a control system which includes the application of IAEA safeguards to verify the non-diversion of nuclear material from peaceful nuclear activities to nuclear explosive devices.[240] Protocol 1 to the Treaty allows France, the United Kingdom and the United States to undertake to apply the prohibitions under Articles 3, 5 and 6 of the Treaty which relate to manufacture, stationing and testing to territories for which they are internationally responsible situated within the Zone.[241] Parties to Protocol 2 to the Treaty, which is open to signature by France, the People's Republic of China, the United Kingdom, the former USSR and the United States, undertake not to use or threaten to use any nuclear

[233] UNGA Res. 43/76 (1988).
[234] 14 February 1967, in force 22 April 1968, 6 ILM 521 (1967), Arts. 1(1) and 4.
[235] Arts. 17 and 18. [236] Arts. 7 to 16.
[237] Rarotonga, 6 August 1985, in force 11 December 1986, 24 ILM 142 (1988), Preamble.
[238] Arts. 3 and 5 to 7. Parties are free to decide whether to allow visits by ships or aircraft and transit of airspace and navigation by ships in their territorial sea or archipelagic waters: Art. 5(2).
[239] Art. 4(a). [240] Art. 8(2)(c) and Annex 2. [241] Protocol 1, Art. 1.

explosive device against parties to the Treaty or any territory for which a state that has become a party to Protocol 1 is internationally responsible.[242] Parties to Protocol 3, which is open to signature to the same five states, agree not to test any nuclear explosive device anywhere within the zone.[243]

The 1996 Treaty on the Nuclear-Weapon-Free Zone in Africa (1996 Pelindaba Treaty) establishes an African nuclear-weapon-free zone and commits parties to renounce research on, or to develop, manufacture, stockpile or otherwise acquire, possess or have control over, any nuclear explosive device by any means anywhere, to prevent the stationing of nuclear explosive devices in its territory, and to prohibit the testing of nuclear explosive devices.[244] Parties also commit to declare, dismantle, destroy or convert nuclear explosive devices and the facilities for their manufacture.[245] Going beyond other regional arrangements, the 1996 Pelindaba Treaty also commits parties to give effect to the 1991 Bamako Convention, to prohibit the dumping of radioactive wastes and other radioactive matter anywhere within the African nuclear-weapon-free zone, and to apply measures of physical protection equivalent to those provided for in the 1980 Convention on Physical Protection of Nuclear Material and in IAEA recommendations and guidelines.[246] Three Protocols address the non-use of nuclear weapons, the prohibition on weapons testing, and the application of IAEA safeguards.

The 1996 Pelindaba Treaty was adopted following a call by the UN General Assembly on all states not to test, manufacture, use or deploy nuclear weapons in Africa, and to refrain from transferring such weapons, scientific data or technical assistance, either directly or indirectly, in any way which could assist in the manufacturing or use of nuclear weapons.[247] The UN General Assembly has also endorsed, in principle, the concept of a nuclear-weapons-free zone in South Asia and urged the states of South Asia to continue to make all efforts to establish a nuclear-weapons-free zone in their region.[248]

## Biotechnology

P.-T. Stoll, 'Controlling the Risks of GMOs: The Cartagena Protocol on Biosafety and the SPS Agreement', 10 *Yearbook of International Environmental Law* 82 (1999); B. Eggers and R. Mackenzie, 'The Cartagena Protocol on Biosafety', 3 *Journal of International Economic Law* 525 (2000); R. Pomerance, 'The Biosafety Protocol: Cartagena and Beyond', 8 NYUELJ 3 (2000); M. Scheyli, 'Das Cartagena-Protokoll über biologisches Sicherheit zur Biodiversitätskonvention', 60 ZaöRV 771 (2000); L. Boisson de Chazournes and U. Thomas, 'The Biosafety Protocol:

[242] Protocol 2, Art. 2. China and the USSR have ratified this Protocol.
[243] Protocol 3, Art. 1. China and the USSR have ratified this Protocol.
[244] Cairo, 1 April 1996, not yet in force, Arts. 1 and 3–5. [245] Art. 6.
[246] Arts. 7 and 10. [247] UNGA Res. 2033 (XX) (1965). [248] UNGA Res. 45/53 (1990).

Regulatory Innovation and Emerging Trends', *Revue suisse de droit international* 513 (2000); A. H. Qureshi, 'The Cartagena Protocol on Biosafety and the WTO: Coexistence or Incoherence?', 49 ICLQ 835 (2000); V. Köster, 'A New Hot Spot in the Trade–Environment Conflict', 31 *Environmental Policy and Law* 82 (2001); D. Katz, 'The Mismatch Between the Biosafety Protocol and the Precautionary Principle', 13 *Georgetown International Environmental Law Review* 949 (2001); C. Bail, R. Falkner and H. Marquard (eds.), *The Cartagena Protocol on Biosafety* (2002); J. Bourrinet and S. Maljean-Dubois (eds.), *Le Commerce international des organismes génétiquement modifiés* (2002).

The regulation of genetically modified organisms and biotechnology is among the most contentious issues currently subject to international regulation. Biotechnology is described by Agenda 21 as 'a set of enabling techniques for bringing about specific man-made changes in di-oxyribonucleic acid (DNA), or genetic material in plants, animals and microbial systems'.[249] The subject caused considerable difficulties during the negotiation of the 1992 Biodiversity Convention and in the preparations for UNCED.[250] The main issue was the appropriate balance to be struck between the objectives of ensuring, on the one hand, that developments in the field of biotechnology do not cause adverse effects for human health and the environment and, on the other hand, that new international regulatory arrangements do not place undue limits on the development, dissemination and use of biotechnology. The concern expressed about excessive regulation was reflected in the written statement submitted by the United States at UNCED, specifically in reference to Chapter 16 of Agenda 21, which set out its understanding that 'biotechnology is in no way an intrinsically unsafe process'.[251]

### *Biodiversity Convention*

Prior to the adoption of Article 19 of the 1992 Biodiversity Convention, international law was, essentially, limited to laws regulating the introduction of alien species into regions.[252] The Biodiversity Convention was the first international legal instrument outside the EC to indicate that biotechnology was a matter of concern for the international community and that consideration should be given to adopting regulations.[253] The Biodiversity Convention merely provides a basis upon which more detailed regulations might subsequently be adopted in a protocol setting out 'appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use

[249] Agenda 21, para. 16.1. [250] Chapter 11, p. 521 above.
[251] Report of UNCED, A/CONF.151/26/Rev.1 (vol. II), 19 (1993).
[252] Chapter 11, pp. 521–3 above.
[253] 'Biotechnology' is defined as 'any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific uses': Art. 2.

of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity'.[254] It also requires each party to provide to a party into whose territory genetically modified organisms are to be introduced any available information on the use and safety regulations it requires in handling living modified organisms, and on the potential adverse impact of the specific organisms concerned.[255]

### *2000 Biosafety Protocol*

The Cartagena Protocol on Biosafety was adopted on 29 January 2000 and is expected to enter into force in 2003.[256] Article 1 sets forth its objective:

> In accordance with the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development, the objective of this Protocol is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.

Parties must 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.[257] They are free to take action that is more protective of biological diversity provided that such action 'is consistent with the objective and the provisions of [the] Protocol and is in accordance with [the] Party's other obligations under international law'.[258]

The scope of the Protocol is limited to the transboundary movement, transit, handling and use of 'living modified organism' (LMO) that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health.[259] LMOs which are pharmaceuticals for humans that are addressed by other relevant international agreements or organisations, or LMOs in transit through a state's territory or destined for contained use, are not subject to the Protocol.[260] The Preamble reaffirms the

[254] Art. 19(3). [255] Art. 19(4).

[256] 39 ILM 1027 (2000); in force 11 September 2003 (thirty-seven ratifications, fifty needed: Art. 37). On the background, see chapter 11, p. 523 above.

[257] Art. 2(1) and (2). [258] Art. 2(4).

[259] Art. 4. An LMO is 'any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology': Art. 3.

[260] Arts. 5 and 6. 'Contained use' is defined in Art. 3 to mean 'any operation, undertaken within a facility, installation or other physical structure, which involves living modified organisms that are controlled by specific measures that effectively limit their contact with, and their impact on, the external environment'.

parties' commitment to the 'precautionary approach' contained in Principle 15 of the Rio Declaration, expresses their awareness of growing public concern over potential adverse effects on biological diversity and human health, and recognises the 'great potential' of biotechnology. As to the relationship with trade agreements, the Preamble cryptically states:

> *Recognizing* that trade and environment agreements should be mutually supportive with a view to achieving sustainable development,
>
> *Emphasizing* that this Protocol shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreements,
>
> *Understanding* that the above recital is not intended to subordinate this Protocol to other international agreements . . .

The principal mechanism for regulating LMOs is the advance informed agreement (AIA) procedure, to govern transboundary movement of LMOs for intentional introduction into the environment of the party of import.[261] This category of LMO does not include LMOs intended for direct use as food or feed, or for processing (LMO-FFPs) or to LMOs which the meeting of the parties to the Protocol decides are not likely to have adverse effects on biological diversity and human health.[262] Prior to the first intentional transboundary movement of an LMO, the party of export or the exporter must notify the national authority of the importing party.[263] The party of export must ensure that there is a legal requirement for the accuracy of information provided by the exporter.[264] On receipt of the notification, the importing party must provide a written acknowledgment to the notifier within ninety days, informing the notifier whether to proceed in accordance with the domestic regulatory framework of the importing party (which must be consistent with the Protocol) or with the decision procedure specified in Article 10.[265] If the importing party proceeds in accordance with Article 10, it must inform the notifier, in writing, within ninety days of the receipt of the initial notification, whether the intentional transboundary movement may proceed: (a) only after the importing party has given its written consent; or (b) after no less than ninety days

[261] Art. 7(1). Importing parties may opt to apply a simplified procedure to LMO imports instead of the 'advance informed agreement' procedure, 'provided that adequate measures are applied to ensure the safe intentional transboundary movement of living modified organisms in accordance with the objective of [the] Protocol': Art. 13.

[262] Art. 7(2) and (4).

[263] Pursuant to Art. 19(1), each party must designate one or more competent national authorities. The information includes, *inter alia*, contact details for the exporter and importer, the name and identity of the LMO and its genetic characteristics, a description of the modification, details of the intended use of the LMO and suggested methods for safe handling, storage, transport and use of the LMO.

[264] Art. 8.

[265] Art. 9(1)–(3). This recognises that many developing countries lack a regulatory framework for LMO imports.

without a subsequent written consent.[266] If the importing party informs the notifier that import can only proceed with the importing party's consent, the importing party has a period of 270 days from the initial notification in which to make a decision on import. The decision must be notified to the exporter and to the Biosafety Clearing-House established as part of the clearing-house mechanism under Article 18(3) of the Protocol.[267] Before making a decision on import of an LMO, the importing party must perform a risk assessment 'in a scientifically sound manner, in accordance with Annex III and taking into account recognised risk assessment techniques'.[268] Following the risk assessment, the importing party may approve or prohibit the import. Approval may be subject to conditions. The importing party may also request additional relevant information in accordance with its domestic regulatory framework or Annex I, or extend the decision-making period by a defined period of time.[269] Provision is made for the application of a precautionary approach by the importing party in Article 10(6), which provides:

> Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of the living modified organism in question . . . in order to avoid or minimize such potential adverse effects.

The provision does not appear to preclude the possibility that an importing party could prohibit the import of an LMO even where there was no convincing scientific evidence demonstrating the potential for adverse effects to biological diversity or human health as a result of the import. An alternative decision-making procedure applies in respect of LMO-FFPs. Under Article 11, parties taking a final decision regarding domestic use, including placing on the market, of an LMO that may be subject to transboundary movement for direct use as food or feed, or for processing, are simply required to inform other parties through the Biosafety Clearing-House within fifteen days of making the decision. A party may take decisions on the import of LMO-FFPs in accordance with its domestic regulatory framework, provided this framework is consistent with the objective of the Protocol.[270] Alternatively, developing country parties, or parties with economies in transition, which lack a domestic regulatory framework, may declare through the Biosafety Clearing-House that decisions prior

[266] Art. 10(2). [267] Art. 10(3).

[268] Art. 15(1). Annex III details general principles of risk assessment, the methodology to be used and points to consider in the assessment. The risk assessment may be undertaken by the importing party, or the exporter can be required to carry out the risk assessment: Art. 15(2) and (3).

[269] Art. 10(3). [270] Art. 11(4).

to the first import of an LMO-FFP will be taken following a risk assessment undertaken in accordance with Annex III and within a predictable timeframe, not exceeding 270 days.[271] Again, lack of scientific certainty will not prevent a party from taking a decision designed to avoid or minimise the potential adverse effects of the LMO-FFP on the environment or human health.[272]

Where risks to biological diversity or human health are identified in the risk assessment process under the Protocol, the parties agree to establish and maintain appropriate mechanisms, measures and strategies to regulate, manage and control those risks.[273] Measures based on risk assessment must be imposed 'to the extent necessary to prevent adverse effects of the living modified organism on the conservation and sustainable use of biological diversity, taking also into account risks to human health, within the territory of the Party of import'.[274] Parties must also take appropriate measures to prevent unintentional transboundary movements of LMOs, including requiring a risk assessment to be carried out prior to the first release of an LMO.[275] New scientific evidence permits an importing party to review a previous decision regarding an intentional transboundary movement. The revised decision and accompanying reasons must be notified to any exporters that have previously notified movements of the LMO referred to in the decision, as well as to the Biosafety Clearing-House.[276] A party of export or a notifier may also seek a review of an importing party's decision in respect of an LMO import if it considers that a change in circumstances has occurred that may influence the outcome of the risk assessment upon which the decision was based or if additional relevant scientific or technical information has become available.[277]

Article 14 of the Protocol permits parties to enter into bilateral, regional and multilateral agreements and arrangements regarding intentional transboundary movements of LMOs which are consistent with the objective of the Protocol and do not result in a lower level of protection than that provided for by the Protocol. Parties may also enter into bilateral, regional and multilateral agreements and arrangements with non-parties to permit transboundary movements of LMOs which are consistent with the objective of the Protocol.[278] Intentional transboundary movements that take place pursuant to such agreements and arrangements are exempted from the provisions of the Protocol.[279] These provisions were included despite opposition from the European Union and developing countries, which saw them as a way for non-parties, such as the United States,[280] to circumvent the protective provisions of the Protocol. Parties entering into bilateral agreements with non-parties are required, however, to 'encourage' non-parties to adhere to the Protocol and to contribute

[271] Art. 11(6). [272] Art. 11(8). [273] Art. 16(1). [274] Art. 16(2). [275] Art. 16(3).
[276] Art. 12(1). [277] Art. 12(2). [278] Art. 24(1). [279] Art. 14(3).
[280] As the United States is not a party to the Convention on Biological Diversity, it cannot become a party to the Protocol: Art. 37(1). The United States participated in the negotiations for the Biosafety Protocol as an observer.

appropriate information to the Biosafety Clearing-House on LMOs released in, or moved into or out of, areas within their national jurisdictions.[281]

Article 18 requires parties to take the necessary measures to require that LMOs that are subject to intentional transboundary movement within the scope of the Protocol are handled, packaged and transported under conditions of safety, taking into consideration relevant international rules and standards.[282] During the negotiations for the Protocol, the most controversial aspect of Article 18 was its provisions relating to documentation requirements for exports of various types of LMOs, particularly LMO-FFPs. The compromise agreed upon provides for parties to require that documentation accompanying LMO-FFPs clearly identifies that they 'may contain' living modified organisms.[283]

Article 20 establishes a Biosafety Clearing-House. Its functions are to facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, LMOs, and to assist parties (especially developing countries, countries with economies in transition and countries that are centres of origin and centres of genetic diversity) in implementing the Protocol. Subject to commercial confidentiality requirements (under Article 21), parties must provide the Biosafety Clearing-House with specified information, which is publicly accessible.[284]

Under Article 17, parties must take appropriate measures to notify affected or potentially affected states, the Biosafety Clearing-House and international organisations of a release that leads, or may lead, to an unintentional transboundary movement of an LMO that is likely to affect biological diversity or human health.[285] Under Article 25, transboundary movements of LMOs carried out in contravention of a party's domestic measures implementing the Protocol are deemed to be illegal, and the affected party may request the party of origin to dispose of the LMO in question by repatriation or destruction, as appropriate.[286]

The limited capabilities of developing countries with respect to known and potential risks associated with LMOs was a factor in the adoption of the Protocol. Article 22 requires parties to co-operate in the development and/or strengthening of human resources and institutional capacities in biosafety within developing countries. Financial assistance may be provided for capacity-building through the financial mechanism established under Article 21 of the Convention, and the needs of parties with economies in transition are also to be

[281] Art. 24(2).

[282] Art. 18(1). [283] Art. 18(2)(a); on labelling, see chapter 17, p. 861 below.

[284] Art. 20(3). A pilot phase of the Biosafety Clearing-House has been initiated prior to entry into force of the Protocol: http://bch.biodiv.org/pilot/Home.asp; on information exchange, see chapter 17, p. 832 below.

[285] Art. 17(1).

[286] Art. 25(1) and (2). The Protocol includes an enabling provision for the adoption of detailed rules on liability: see chapter 18, p. 938 below.

taken into account for capacity-building.[287] Further, Article 26 allows parties, in making decisions on the import of LMOs, to take into account 'socio-economic considerations' arising from the impact of LMOs on the conservation and sustainable use of biological diversity, provided such consideration is consistent with the party's international obligations.

The Protocol will utilise the institutional arrangements established under the Convention, with the conference of the parties serving as the meeting of the parties to the Protocol.[288] The meeting of the parties is to keep the implementation of the Protocol under regular review and may consider and adopt, as required, amendments to the Protocol and its Annexes, as well as any additional Annexes, that are deemed necessary for the implementation of the Protocol.[289] Parties must report on implementing measures.[290] The meeting of the parties is directed to establish a non-compliance mechanism, and to evaluate the effectiveness of the Protocol, after five years.[291]

### *EC law*

The first international legal acts regulating biotechnology were adopted by the EC in the form of two 1990 Directives, which identify many of the issues and approaches addressed in the Biosafety Protocol. Council Directive 90/219/EEC addresses the contained use of genetically modified micro-organisms,[292] and Council Directive 2001/18/EC (replacing Directive 90/220/EEC) addresses the deliberate release into the environment of genetically modified organisms.[293] Both were adopted following the determination by the EC that, having regard to the environment, the adoption of measures for the evaluation and best use of biotechnology was a priority.[294] Their adoption reflected EC concern that biotechnology might pose certain threats to the environment or to human health which require its regulated development.

Directive 90/219 established common measures for the contained use of genetically modified micro-organisms (GMMs) with a view to protecting human health and the environment.[295] The Directive required member states to ensure that 'all appropriate measures are taken to avoid adverse effects on

[287] Art. 22(2) (the financial mechanism established in Art. 21 of the Convention is designated as the financial mechanism for the Protocol: Art. 28(2)); see chapter 20, p. 1035 below.
[288] Arts. 29–31. [289] Art. 29(4). [290] Art. 33. [291] Arts. 34 and 35.
[292] Council Directive 90/219/EEC of 23 April 1990, OJ L117, 8 May 1990, 1 (amended by Directive 94/51/EC (OJ L297, 18 November 1994) and Directive 98/81/EC (OJ L330, 5 December 1998)).
[293] Directive 2001/18/EC, OJ L106, 17 April 2001, 1 (repealing Council Directive 90/220/EEC of 23 April 1990, OJ L117, 8 May 1990, 15 (as amended)).
[294] Fourth Environmental Action Programme, OJ C328, 7 December 1987, 1.
[295] Art. 1. 'Micro-organism' is defined as 'any microbiological entity, cellular or non-cellular, capable of replication or of transferring genetic material, including viruses, viroids, animal and plant cells in culture'; 'genetically modified micro-organism' (GMM) is defined as

human health and the environment which might arise from the contained use of GMMs' and to that end require the user to carry out an assessment of the contained uses as regards the risks to human health and the environment that these contained uses may incur.[296] The assessment is to result in the classification of the contained uses in one of four classes, applying the procedure set out in Annex III.[297] The user is generally then to apply the principles of containment and other protective measures set out in Annex IV, corresponding to the class of the contained use, in order to keep workplace and environmental exposure to any GMMs to 'the lowest reasonably practicable level, and so that a high level of safety is ensured'.[298] The Directive provides for notification of first and subsequent uses depending on the class.[299] Each member state designates a competent authority which is charged with fulfilling certain functions, including in relation to emergency plans and notification in the event of an accident.[300] A member state may, where appropriate, provide that the public shall be consulted on aspects of the proposed contained use, subject to certain requirements as to confidentiality.[301]

Directive 2001/18 updates and 'strengthens' the risk assessment and decision-making process established by Directive 90/220 on the release of genetically modified organisms (GMOs) into the environment, in particular, requiring information to be made available to the public and by introducing rules on mandatory labelling and traceability. Under Directive 90/220, the commercial releases of eighteen GMOs had been authorised in the EU by Commission decision (usually by a qualified majority vote in the Regulatory Committee), although in two cases the member state concerned did not implement the decision. The Commission granted no authorisations after October 1998 and, as at December 2002, fourteen applications were pending. Moreover, in eight cases (involving Austria, Luxembourg, France, Greece and Germany), member states invoked the Article 16 'safeguard clause' (under Directive 90/220) to temporarily ban the placing on the market of genetically modified maize and oilseed rape products.[302] Against this background, Directive 2001/18 has as its objective, in

'a micro-organism in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination': Art. 2(a) and (b). The Directive does not apply to certain categories of activity: Arts. 3 and 4.

[296] Art. 5(1) and (2). The user is to use, as a minimum, the elements of assessment and the procedure set out in Annex III, Sections A and B: Art. 5(2).

[297] Art. 5(3). [298] Art. 6(1). [299] Arts. 7–10 and Annex V.

[300] Arts. 11–12 and 14–15. Provision is also made for: consultation with other member states likely to be affected in the event of an accident; for notification to the EC Commission; and for information exchange: Art. 16.

[301] Arts. 13 and 19.

[302] In each case, the Scientific Committee on Plants determined that the information submitted by the member states did not justify the ban. See also Case C-6/99, *Association Greenpeace France and Others* v. *Ministère de l'Agriculture et de la Pêche and Others* [2000] ECR I-1651, in which the ECJ decided that, if, after an application for placing a GMO

accordance with the precautionary principle, the protection of human health and the environment when:

- carrying out the deliberate release into the environment of genetically modified organisms for any other purposes than placing on the market within the Community;
- placing on the market GMOs as or in products within the Community.[303]

Member states have a general obligation, in accordance with the precautionary principle, to ensure that all appropriate measures are taken to avoid adverse effects on human health and on the environment which might arise from the deliberate release or the placing on the market of GMOs, and that GMOs may only be deliberately released or placed on the market in conformity with the Directive.[304] The Directive distinguishes between deliberate release of a GMO for a purpose other than placing on the market (Part B) and placing on the market as or in GMOs (Part C). In respect of both, there must be a notification, which before being submitted must be subject to an environmental risk assessment.[305] The assessment will assess the potential adverse effects on human health and on the environment, which may occur directly or indirectly through gene transfer from GMOs to other organisms, on a case-by-case basis and in accordance with the criteria set forth in Annex II, taking into account the environmental impact according to the nature of the organism introduced and the receiving environment.[306] Member states designate the competent authority for complying with the requirements of this Directive, including for the examination of notifications, inspections and other control measures to ensure compliance with this Directive (including termination, remediation and the

on the market has been forwarded to the Commission, no member state has raised an objection or if the Commission has taken a favourable decision, the competent authority which forwarded the application, with a favourable opinion, to the Commission must issue the consent in writing, allowing the product to be placed on the market. However, if in the meantime the member state concerned has new information which leads it to consider that the product for which notification has been received may constitute a risk to human health and the environment, it will not be obliged to give its consent, provided that it immediately informs the Commission and the other member states about the new information in order that a decision may be taken in the matter.

303 Art. 1. An 'organism' means 'any biological entity capable of replication or of transferring genetic material' and a 'genetically modified organism' (GMO) means an 'organism, with the exception of human beings, in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination': Art. 2(a) and (b). The Directive does not apply to certain organisms or to carriage by rail, road, inland waterway, sea or air: Art. 3.

304 Art. 4(1).

305 Art. 4(2), and including the information set forth in Annex III. This provision also aims to phase out antibiotic resistance markers in GMOs which may have adverse effects on human health and the environment, by December 2008 at the latest.

306 Art. 4(3).

provision of information in respect of any unauthorised release or placing on the market, to initiate remedial action if necessary).[307]

Articles 5 to 11 (Part B) deal with deliberate release for a purpose other than placing on the market, distinguishing between standard and differentiated procedures.[308] The standard procedure comprises a system of notification (including the results of the environmental risk assessment) to the competent authority and a decision as to consent by the national authority, after having considered any observations by other member states in accordance with Article 11. The differentiated procedure may be applied where there has been 'sufficient experience . . . of releases of certain GMOs in certain ecosystems and the GMOs concerned meet the criteria set out in Annex V', and involves a decision by the commission assisted by relevant committees.[309] Part B also provides for modifications and new information, consultation with the public, and the reporting of releases.[310]

Articles 12 to 24 (Part C) impose more onerous obligations for placing on the market as or in a GMO. The system comprises a procedure for notification to the competent authority of the member state where the GMO is to be placed on the market for the first time.[311] The competent authority then examines the notification for compliance with the Directive and prepares an assessment report as to whether the GMO should be placed on the market and if so under what conditions.[312] The assessment report is sent to the notifier and the EC Commission, which circulates it to the other member states for comment. Under the standard procedure, the national authority may then grant a consent of up to ten years (where there has been no objection from a member state or the Commission) or it may refuse consent.[313] Where an objection is raised and maintained by a competent authority or the Commission (under Articles 15, 17 and 20), it will then be for the Commission to adopt the decision, which is communicated to the requesting national authority, which then puts it into effect.[314] If the decision is positive then the GMO may be placed on the market,

[307] Art. 4(4) and (5). Member states must also ensure traceability in accordance with Annex IV.

[308] Arts. 6 and 7 (not applicable under certain conditions for medicinal substances and compounds for human use consisting of, or containing, a GMO or combination of GMOs).

[309] Art. 7. [310] Arts. 8–10.

[311] Art. 13(1). The procedure does not apply to certain GMOs as or in products as far as they are authorised by Community legislation: Art. 12(1). The notification must include the information required by Annexes III and IV and the environmental risk assessment: Art. 13(2).

[312] Art. 14(1)–(3)

[313] Art. 15 (the consent may be renewed under certain conditions: Art. 17). Art. 16 provides for criteria and information for specified GMOs.

[314] Art. 18(1). The decision is to be adopted and published within 120 days in accordance with the procedure laid down in Art. 30. The Commission is assisted by a Scientific Committee and a Committee on Ethics: Arts. 28 and 29.

and may then circulate freely within all member states.[315] GMOs placed on the market as or in products must be labelled and packaged in accordance with the Directive; however, where adventitious or technically unavoidable traces of authorised GMOs cannot be excluded, a minimum threshold may be established by the Commission below which such products will not have to be labelled.[316] Without prejudice to confidentiality requirements, the Directive also requires the Commission to make certain information publicly available, including some assessment reports, and the public is entitled to make comments to the Commission, which are to be forwarded to the competent authorities.[317]

As with Article 16 of the previous Directive, Article 23 establishes a 'safeguard clause', whereby a member state may provisionally restrict or prohibit the use and/or sale of the GMO as or in a product on its territory if it has 'detailed grounds for considering that a GMO as or in a product which has been properly notified and has received written consent . . . constitutes a risk to human health or the environment', provided that those grounds arise 'as a result of new or additional information made available since the date of the consent and affecting the environmental risk assessment or reassessment of existing information on the basis of new or additional scientific knowledge'.[318]

The Directive also requires member states to establish effective, proportionate and dissuasive penalties applicable to breaches of their laws giving effect to the Directive.

## Other hazardous activities

States and other members of the international community have accepted that the activities and substances identified in the preceding sections of this chapter pose sufficient risks to the environment and to human health to warrant the development and adoption of particularised international rules. Certain other activities are increasingly recognised as posing sufficient threats to the environment at the local, national, regional and global levels to warrant their special consideration by international organisations with a view to the

[315] Art. 22.

[316] Art. 21 (also Art. 26). On 25 July 2001, the Commission presented a proposal for a regulation on traceability and labelling (COM (2001) 182 final), on which political agreement was reached on 10 December 2002. The Regulation is expected to be adopted in early 2003, and may be challenged by the United States and other states as being incompatible with WTO rules on free movement of goods. See chapter 19, pp. 985–7 below.

[317] Arts. 24 and 25.

[318] The member state must inform the Commission and other member states, and a decision will be taken within 60 days, under Art. 30(2). A member state must also take emergency measures, such as suspension or termination of the placing on the market, in the event of severe risk: Art. 23(1).

development of international rules. Apart from rules on noise pollution,[319] new international environmental norms are increasingly likely to be developed at the regional and global levels to address energy, mining, agriculture, transport and tourism. These may follow the approach taken by existing rules and guidelines adopted under the auspices of UNEP, the OECD and the EC.

### *Energy*

Energy generation other than by nuclear sources has been the subject of limited attention, and even less action, by international organisations. Apart from the ECOSOC Committee on New and Renewable Sources of Energy (which has a limited mandate and no power to make binding or other acts),[320] no UN body has responsibility for non-nuclear energy sources. The environmental risks posed by energy use from fossil fuel sources (including coal, gas and oil), as well as non-renewable sources such as hydro-power, remain essentially unregulated at the international level and beyond the scope of a concerted or coherent international regulatory regime. To the extent that fossil fuel use in energy generation is 'regulated' by international law, it is as an incidental aspect of the rules governing mainly atmospheric pollution (in particular $SO_2$, $NO_x$ and greenhouse gas obligations), waste, and the use of environmental impact assessments (and even then only in respect of very large plants and not overall energy policy).

There is, however, a growing recognition that the significant impact which energy policy and use has on the environment requires it to be the subject of its own institutional arrangements and substantive rules, which would be designed to develop national energy strategies, reduce the use of fossil fuel and wastage in energy distribution, develop renewable and other non-fossil fuel sources, and use energy more efficiently in homes and industry.[321] Energy was one of the most controversial issues addressed at UNCED. Despite the opposition of some states, the majority of states managed to ensure that some energy-related topics, including energy efficiency and the development and application of new and renewable sources of energy, were addressed in Agenda 21.[322] At the WSSD, no agreement was reached on fixing a specified

[319] See e.g. OECD Council Recommendation on Noise Prevention and Abatement, OECD C(74)217, 14 November 1974; OECD Council Recommendation on Noise Abatement Policies, OECD C(78)73 (Final), 3 July 1978; and OECD Council Recommendation on Strengthening Noise Abatement Policies, OECD C(85)103, 20 June 1985. See also the rules adopted by the EC (chapter 15, pp. 783–4 below), the ILO (pp. 638–9 above) and the ICAO (chapter 3, p. 99 above).

[320] See chapter 3, pp. 91–3 above.

[321] See IUCN, UNEP and WWF, *Caring for the Earth* (1991), 89–95.

[322] Chapter 8 above.

target for the use of renewable sources of energy.[323] In the meantime, the main global forum for addressing energy issues has, in effect, been the conference of the parties to the Climate Change Convention and the 1997 Kyoto Protocol, which is charged with keeping under review the commitments adopted under the Convention and developing new commitments on limiting emissions of greenhouse gases from fossil fuel sources.[324] Guidance on the content of more specific future international energy-related legislation may be found in non-binding Recommendations adopted by the OECD on various aspects of energy's impact upon the environment[325] and on the reduction of sulphur emissions from fuel plants,[326] and acts of the EC, which has adopted a range of measures on energy efficiency and conservation.[327]

The 1994 Energy Charter Treaty establishes a legal framework to promote long-term co-operation in the energy field.[328] Recognising that state sovereignty and sovereign rights over energy resources must be exercised in accordance with and subject to the rules of international law, it commits parties to 'strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area', in pursuit of sustainable development and taking into account parties' obligations under those international agreements concerning the environment to which they are party.[329] It commits parties to strive to take precautionary measures 'to prevent or minimize environmental degradation', and recognises that the polluter should, in principle, bear the cost of pollution, including transboundary pollution.[330] To those ends, it requires parties, *inter alia*, to: take account of environmental considerations throughout the formulation and implementation of their energy policies; more fully reflect environmental costs and benefits; encourage co-operation in international environmental standards; develop and use renewable energy sources; promote public awareness of the environmental impacts of energy systems;

[323] Para. 19(c) of the Plan of Implementation merely commits states to give 'a greater share of the energy mix to renewable energies'; and para. 19(e) calls on states to 'with a sense of urgency, substantially increase the global share of renewable energy sources'.

[324] Chapter 8, pp. 366–77 above.

[325] OECD Council Recommendation on Energy and the Environment, OECD C(74)222, 14 November 1974; OECD Council Recommendation on Reduction of Environmental Impacts from Energy Production and Use, OECD C(76)162 (Final), 12 October 1976; OECD Council Recommendations on Reduction of Environmental Impacts from Energy Use in the Household and Commercial Sectors. OECD C(77)109 (Final), 21 September 1977; and OECD Council Recommendation on Environmentally Favourable Energy Options and their Implementation, OECD C(85)102, 20 June 1985.

[326] OECD Council Recommendation, Guidelines for Action to Reduce Emissions of Sulphur Oxides and Particulate Matter from Fuel Combustion in Stationary Sources, OECD C(74)16 Final, 15 IPE 7627; see chapter 8, pp. 327 and 336–8 above.

[327] See chapter 15, pp. 767–8 below.

[328] Energy Charter Protocol on Energy Efficient and Related Environmental Aspects, Lisbon, 17 December 1994, in force 8 April 1998, 33 ILM 446 (1995), Art. 1.

[329] Arts. 18 and 19(1). [330] *Ibid.*

promote energy-efficient and environmentally sound technologies, practices and processes; and promote the transparent assessment at an early stage and prior to decision, and subsequent monitoring, of environmental impacts of environmentally significant energy investment projects. The Charter also has a Protocol on Energy Efficiency and Related Environmental Aspects which aims to promote energy efficiency policies consistent with sustainable development, to create conditions which induce producers and consumers to use energy as economically, efficiently and environmentally soundly as possible, and to foster co-operation in the field of energy efficiency.[331] It commits parties to establish energy-efficiency policies, to create a legal and regulatory framework which promotes energy efficiency, to develop, implement and update programmes, and to co-operate internationally.[332]

### *Mining*

Despite its significant adverse environmental effects, mining has been the subject of few international rules (beyond environmental impact assessment and human rights requirements[333]), with the significant exception of obligations imposed in the Antarctic region[334] and in relation to deep seabed mining.[335] The impact of mining begins to be felt at the exploration stage, but becomes more significant during the extraction and metallurgical phases, where significant effects may occur for flora and fauna, sedimentation of rivers, acid and toxic drainage from tailings dumps and accidental overflow of waters, and in the pollution and toxic waste generated by the smelting process.[336] Like energy, mining is regulated by international law only to the extent that it is incidentally addressed by rules developed more specifically to address the protection of flora and fauna, the disposal of wastes, air pollution and environmental impact assessments. Future international legislation on mining might be guided by the principles developed under non-binding guidelines such as those adopted by UNEP.[337]

[331] Lisbon, 17 December 1994, in force x April 1998, 33 ILM 446 (1995), Art. 1.

[332] Arts. 3(2) and 8(1).

[333] See M. Orellana, *Indigenous Peoples, Mining and International Law* (International Institute for Environment and Development, Mining, Minerals and Sustainable Development Project, 2002).

[334] See 1988 CRAMRA and 1991 Antarctic Environment Protocol, chapter 14, pp. 716–26 below.

[335] Chapter 9, p. 446 above.

[336] See T. Wilde, 'Environmental Policies Towards Mining in Developing Countries', 10 JENRL 327 at 329–30 (1992).

[337] UNEP, 'Conclusions of the Study of Legal Aspects Concerning the Environment Related to Offshore Mining and Drilling Within the Limits of National Jurisdiction', UNEP/GC/Dec./10/14VI, 31 May 1982, 7 *Environmental Policy and Law* 50; UNEP Environmental Guidelines: Restoration and Rehabilitation of Land and Soils After Mining Activities, UNEP EMG No. 8, 1983.

In 1989, the ICJ was presented with an opportunity to consider some of the environmental aspects of mining in the *Case Concerning Certain Phosphate Lands in Nauru*,[338] brought by Nauru against Australia. The issues raised by the case, which was settled by agreement between the parties in September 1993, included the extent of certain legal obligations on the use of natural resources, including the obligation to rehabilitate mined lands, and the land rights of indigenous inhabitants. Nauru is a central Pacific island with a land mass of twenty-one square kilometres and a population of approximately 6,000 which achieved independence in 1968. Despite its small size, it is rich in phosphate, which was discovered there in 1900, and subsequently the island became an important source of the substance for phosphate-poor countries like Australia and New Zealand.

From 1947 until 1968, Nauru had been a territory administered under a UN General Assembly-approved Trusteeship Agreement between Australia, New Zealand and the United Kingdom. By the time it reached independence in 1968, large amounts of the phosphate had been mined and large parts of the island had been rendered uninhabitable. In May 1989, Nauru submitted an application to the ICJ asking it to declare Australia's responsibilities for breaches of international legal obligations relating to its phosphate mining activities in Nauru. Nauru claimed, *inter alia*, that Australia had violated the 1947 Trusteeship Agreement and Article 76 of the UN Charter by contributing to the physical destruction of the island as a unit of self-determination accompanied by a failure to rehabilitate the land; had violated the principle of self-determination, occasioned by the literal disposal of the territorial foundation of the unit of self-determination accompanied by a failure to provide an adequate sinking fund to cover the costs of rehabilitating the mined lands; and had breached the obligation to respect the right of the Nauruan people to permanent sovereignty over natural resources, because a major resource was being depleted on grossly inequitable terms and the extraction of phosphate involved a physical reduction of the homeland of the people of Nauru. Nauru asked the Court to declare that Australia had incurred an international legal responsibility for breach of these and other obligations, and requested primarily a declaration of Australia's liability. Included among the five forms of loss identified as the basis of relief was the cost of rehabilitation of the phosphate lands worked out before 1 July 1967.

In June 1992, the Court found by nine votes to four that it had jurisdiction over the application and that the application was admissible, with the exception of one claim.[339] Some of the grounds raised by Australia, and the findings by the Court in respect thereof, are of some relevance to broader issues of international environmental law, including the waiver of environmental claims,

[338] *Case Concerning Nauru* v. *Australia* (Preliminary Objections) (1992) ICJ Reports 240.
[339] *Ibid.*

the time period within which such claims should be brought, the conditions in which good faith principles will have been violated, and the issue of joint and several liability. Each merits consideration. Australia's second objection to admissibility, that Nauru had waived all claims relating to rehabilitation of the lands before various organs of the UN and before the Trusteeship Council, was rejected on the facts.[340] The Court also rejected Australia's objection of inadmissibility on the grounds that termination of the Trusteeship by General Assembly Resolution 2347 (XXII) of 19 December 1967 precluded allegations of breaches of the Trusteeship Agreement being examined by the Court. While the resolution had 'definitive legal effect' and did not expressly reserve any rights which Nauru might have with regard to rehabilitation of the phosphate lands, the Court did not view Resolution 2347 as discharging the administrative authority in respect of Nauru's rights. The Court took this view because 'everyone was aware of subsisting differences of opinion between the Nauru local government council and the administering authority with regard to rehabilitation of the phosphate lands worked out before 1 July 1967 as evidenced by statements made by France, Liberia, the USSR and India in the Trusteeship Council and elsewhere.[341] Australia's fourth objection, that Nauru's claim was inadmissible on the ground that it had not been submitted within a reasonable time, was also rejected by the Court. The Court recognised that 'even in the absence of any applicable treaty provision, delay on the part of the claimant state may render an application inadmissible', but held that 'international law does not lay down any specific time-limit in that regard'.[342] The Court rejected Australia's fifth objection, namely, that Nauru had failed to act consistently and in good faith in relation to rehabilitation, or that Nauru's conduct amounted to an abuse of process.[343]

The major issue raised in the Preliminary Objections phase concerned Australia's sixth objection, and it is of some relevance to international environmental law in that in many environmental claims it may not be possible to identify all the defendants in a particular case, or to find a court which has jurisdiction over each of them, or to be able to determine with any certainty the extent to which each state might have contributed to a particular form of environmental damage. Australia argued that the application was inadmissible as the Nauru claim was in substance against the administering authority and any judgment on the question of breach of the Trusteeship Agreement would involve the responsibility of third states (the United Kingdom and New Zealand) which had not consented to the Court's jurisdiction in the case. By nine votes to four, the

[340] *Ibid.*, 247–50. [341] *Ibid.*, 252–3.

[342] *Ibid.*, 253–4; the Court found that it would have 'to ensure that Nauru's delay in seising it will in no way cause prejudice to Australia with regard to both the establishment of the facts and the determination of the content of the applicable law': *ibid.*, 255.

[343] *Ibid.*, 255.

Court rejected this argument.[344] It found that Australia, New Zealand and the United Kingdom constituted the administering authority, that the authority did not have international legal personality distinct from the three states, and that of those states Australia had played 'a very special role' established by the various Agreements and by practice.[345] The Court distinguished between the question of whether the liability of the states would be 'joint and several',[346] which was a matter for the Merits phase, and the question of whether Australia could be sued alone: nothing in the character of the Trusteeship Agreement debarred the Court from considering a claim of a breach of Australia's obligations.[347] As to the lack of consent granted by New Zealand and the United Kingdom, the Court held that a finding

> regarding the existence or the content of the responsibility attributed to Australia by Nauru might well have implications for the legal situation of the two other states concerned, but no finding in respect of that legal situation will be needed as a basis for the Court's decision against Australia. Accordingly the Court cannot decline to exercise its jurisdiction.[348]

In August 1993, Australia offered Nauru A$107 million in full and final settlement of the claim, which sum was accepted by Nauru with an undertaking to discontinue proceedings and bring no further claims.[349] The Court did not have the opportunity to consider the merits, including the possibility of assessing the costs of rehabilitation. Nevertheless, it set out certain principles of some significance for the development of international environmental law. First, for the waiver of any claim, including an environmental claim, to be effective it will need to be made in a clear and express form. Secondly, acts of international institutions (in this case, a General Assembly resolution) which have definitive legal effects will not discharge rights which might exist in regard to environmental and other claims in the face of clearly expressed differences of opinion which exist between states supporting such an act. Thirdly, provided

[344] *Ibid.*, 1256–62. President Sir Robert Jennings, Vice President Oda, and Judges Ago and Schwebel entered strongly dissenting opinions on this issue: *ibid.*, 301–2, 302–25, 326–8 and 329–43. See also the Separate Opinion of Judge Shahabuddeen: *ibid.*, 270–300. While also dissenting on Australia's second, third, fourth and fifth objections, Judge Oda nevertheless stated that he was 'not denying the importance of the preservation of an environment from any damage that may be caused by the development or exploitation of resources, particularly in the developing regions of the world': *ibid.*, 325.

[345] *Ibid.*, 258.

[346] According to which 'any one of the three would be liable to make full reparation for damage flowing from any breach of obligations of the Administering Authority, and not merely a one-third or some other proportionate share': *ibid.*, 258.

[347] *Ibid.*, 258–9.

[348] *Ibid.*, 1261–2. This finding 'does not settle the question whether reparation would be due from Australia, if found responsible, for the whole or only part of the damage Nauru alleges it has suffered': *ibid.*, 262.

[349] 32 ILM 1471 (1993).

that certain minimum steps are taken to maintain a legal position and promote a legal claim, the passage of time will not necessarily render a claim inadmissible. Fourthly, and particularly of significance in the environmental field, the question of whether states have 'joint and several liability' is to be distinguished from the question of whether one of those states may be sued alone in respect of a claim of a breach of an international legal obligation, and the possibility that attributing responsibility to one state might have implications for the legal situation of other states concerned does not establish a bar to proceedings being brought against that one state.

### *Agriculture*

The impact of agriculture on the environment is well documented. Threats which are incidentally subject to international legal regulation include expanding farms which destroy forests and wetlands; soil erosion; the use of pesticides which damage flora and fauna; and chemical run-off and consequential contamination of freshwater resources from excessive fertiliser use.[350] Agricultural practices are significantly influenced and affected by the rules of international law addressing the use of pesticides, the protection of watercourses, environmental assessment, and the conservation of biodiversity, including forests. Nevertheless, agriculture is not subject to a co-ordinated regime of legal obligations which apply specific rules at the regional or global level, and which might prepare and implement strategies to use agricultural land optimally, control the use of fertilisers and pesticides, and promote proper land husbandry. While specific agreements address drought and desertification[351] and the humane treatment of animals,[352] only non-binding instruments on the regulation of agricultural practices have been adopted by UNEP and the FAO. These address the use of environmental impact assessment on agricultural activities,[353] and other environmental aspects of agricultural practices.[354] EC legislation is also

[350] World Resources Institute and International Institute for Environment and Development, *World Resources 1988–9* (1989), 135–7.

[351] Chapter 11, pp. 524–7 above.

[352] See European Convention for the Protection of Animals During International Transport, Paris, 30 December 1986, ETS No. 65, and Additional Protocol, Strasbourg, 10 May 1979, ETS No. 103; European Convention for the Protection of Animals Kept for Farming Purposes, Strasbourg, 10 March 1976, ETS No. 102.

[353] FAO, Comparative Legal Study on Environmental Impact Assessment and Agricultural Development, FAO Paper 2 (1982).

[354] Environmental Guidelines for the Formulation of National Soil Policies, UNEP EMG No. 7 (1983); Environmental Guidelines for Agricultural Mechanization, UNEP EMG No. 10 (1986); Environmental Guidelines for Agroforestry Projects, UNEP EMG No. 11 (1986); UNEP Environmental Guidelines for Farming Systems Research, UNEP EMG, No. 12 (1986).

limited,[355] and it remains to be seen how the WTO Agreement on Agriculture's exemption of environmental programmes from rules limiting governmental subsidies will be applied.[356]

### *Transportation*

Transportation is a major contributor to fossil fuel use and a significant source of urban air pollution, sulphur dioxide emissions and greenhouse gas emissions. Roads and railways also make use of land in ways which can be particularly damaging to biodiversity. The regulation of environmental aspects of air and sea transport is a matter for the ICAO and the IMO respectively, but transportation by road and rail is not addressed by any UN body, or subject to a body of international rules which would allow the development of an integrated transport policy which takes account of the environmental consequences of the different modes of transport and the elaboration and implementation of fuel efficiency standards, emission standards, and waste-minimisation standards. In this regard, only the UNECE and the EC[357] have adopted binding standards which may provide a basis for the adoption of minimum standards in other regions and globally.

### *Tourism*

Finally, in recent years, tourism has begun to be the subject of a new body of rules aimed at addressing environmental degradation from this source. The adverse environmental effects of tourism and related recreational activities have led to the adoption of national environmental standards, and at the international level restrictions have been imposed on tourism in the Antarctic region,[358] and non-binding guidelines adopted by UNEP and the OECD.[359]

## UNCED and WSSD

Agenda 21 includes two chapters on toxic and dangerous products: Chapter 19 on 'Environmentally Sound Management of Toxic Chemicals, Including Prevention of Illegal International Traffic in Toxic and Dangerous Products'; and Chapter 16 on 'Environmentally Sound Management of Biotechnology'.

[355] EC Council Directive 86/278/EEC, OJ L181, 4 July 1986, 6 (use of sewage sludge in agriculture).
[356] 1994 Agreement, Annex 2.
[357] See respectively chapter 8, p. 324 above, and chapter 15, pp. 758–9 below.
[358] Chapter 14, p. 723 below.
[359] OECD Council Recommendation: Environment and Tourism, OECD C(79)115, 8 May 1979; 1982 UNEP Environmental Guidelines for Coastal Tourism, UNEP EMG No. 6.

The WSSD addresses both subjects and also addresses the need to develop sustainable agriculture,[360] promote eco-tourism,[361] and foster sustainable mining practices (in accordance with national regulations and taking into account significant transboundary impacts).[362]

### *Toxic and dangerous products*

Chapter 19 of Agenda 21 proposed six programme areas on: (1) the international assessment of chemical risks; (2) the harmonisation and classification of labelling of chemicals; (3) information exchange on toxic chemicals and chemical risk; (4) risk reduction programmes; (5) the management of chemicals; and (6) the prevention of illegal international traffic in toxic and dangerous products.

The first programme area sought to expand and accelerate international assessment of chemical risks by assessing several hundred priority chemicals or groups, including major pollutants and contaminants of global significance, and producing guidelines for acceptable exposure to a greater number of toxic chemicals.[363] Agenda 21 called also for a strengthening of the programmes within the Integrated Programme on Chemical Safety (IPCS) of the UN and FAO in collaboration with the OECD, based on the precautionary approach, and the development of criteria for setting priorities for chemicals of global concern.[364] The second programme area called for the harmonisation of systems for the classification and labelling of chemicals by the year 2000, including material safety data sheets and easily understandable symbols.[365] The objective of the third programme area was the exchange of information on chemical safety, use and emissions standards to achieve, by the year 2000, full implementation of the 'prior informed consent procedure' of the UNEP London Guidelines and the FAO Code of Conduct, including possible 'mandatory applications through legally binding instruments'.[366]

The objectives of the fourth programme area were to eliminate unacceptable or unreasonable risks and to reduce the risks posed by toxic chemicals by employing a wide range of risk reduction options, taking precautionary measures derived from a life cycle analysis which covers manufacturing, trade, transport, use and disposal.[367] Mechanisms include the use of cleaner products and technologies; emission inventories; product labelling; use limitations; economic incentives; phasing out or banning of certain toxic chemicals; identifying national needs for standard-setting in the context of the *Codex Alimentarius*; policies on accident prevention, preparedness and response; reducing over-dependence

[360] Plan of Implementation, para. 38; see also para. 39 (land degradation).
[361] Para. 41. [362] Para. 44(b). [363] Para. 19.13.
[364] Paras. 19.14(a) and 19.17(a). [365] Paras. 19.27 and 19.29.
[366] Para. 19.38. [367] Paras. 19.48 and 19.49(a).

on the use of agricultural chemicals; and preparation of on-site and off-site emergency response plans.[368] General measures of international co-operation include support for large industrial enterprises (including transnational corporations) to introduce policies which demonstrate a commitment to 'adopt standards of operation equivalent to or not less stringent than those existing in the country of origin'.[369]

The fifth programme proposed to strengthen national capabilities by further developing the basic elements for sound management of chemicals. These were identified as: (1) adequate legislation; (2) information gathering and dissemination; (3) capacity for risk assessment and interpretation; (4) establishment of risk management policy; (5) capacity for implementation and enforcement; (6) capacity for rehabilitation of contaminated sites and poisoned persons; (7) effective education; and (8) a capacity to respond to emergencies.[370] To that end, the programme proposed the preparation of guidelines; support for developing national legislation and implementation; the adoption of right-to-know programmes, including toxic emissions inventories; the implementation of UNEP's programme on Awareness and Preparedness for Emergencies at the Local Level (APELL); and the preparation by UNEP of principles for accident prevention, preparedness and response, building on ILO, OECD and UNECE work.[371] Finally, the sixth programme called for the strengthening of international co-operation to prevent illegal transboundary movement of toxic and dangerous products, building on General Assembly Resolutions 42/183 and 44/226. The programme does not call for the development of a binding international agreement or the strengthening of the UNEP and OECD non-binding instruments.[372]

The WSSD Plan of Implementation renews these Agenda 21 commitments, aiming to ensure by 2020 that 'chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment, using transparent science-based risk assessment and management procedures, taking into account the precautionary approach'. To that end, the Plan calls for ratification and implementation of the 1998 Chemicals Convention and the 2001 POPs Convention, the implementation of a new globally harmonised system for classification and labelling (by 2008) and the development of national pollutant release and transfer registers.[373]

### *Management of biotechnology*

Chapter 16 of Agenda 21 has a general objective of fostering internationally agreed principles to ensure environmentally sound management of

[368] Para. 19.49. [369] Para. 19.52(d).
[370] Para. 19.56. [371] Para. 19.61. [372] Paras. 19.66 to 19.76.
[373] Para. 22. The Plan also focuses on heavy metals, in particular mercury and its compounds.

biotechnologies through six programme areas to enhance protection of the environment and to develop international co-operation. From the international legal perspective, the most notable programme area is the fourth, which seeks to enhance safety and to develop co-operation through internationally agreed principles on risk assessment and management of all aspects of biotechnology. The final text of this programme reflected the sharp divisions between states on the desirability of international measures, and the concern of the United States that UNCED should not suggest that biotechnology was inherently unsafe. The programme contained little of substance to guide future efforts on developing internationally agreed principles, calling simply for 'consideration of the need for and feasibility of an international agreement', now reflected in the 2000 Biosafety Protocol, which the WSSD Plan of Implementation calls on all states to ratify and implement.[374]

## Conclusions

The rules of international law relating specifically to hazardous substances and activities are set out in a multitude of sources which are often inaccessible and difficult to comprehend easily. Since the first edition of this book appeared, there have been a number of significant developments, reflected in particular in the consolidation and development of existing instruments and the adoption of new international conventions relating to chemicals and pesticides (1998), biosafety (2000) and persistent organic pollutants (2001). These instruments reflect a commitment to establish and implement global minimum standards which are legally binding and (relatively) accessible, and which give effect to a more precautionary approach to international regulation. They also reflect a commitment to make use of a mix of regulatory approaches, including trade mechanisms, prohibitions and information requirements (labelling in particular), but not the more innovative economic instruments adverted to in the UNCED proceedings. In the medium term, it is plain that efforts will focus on encouraging broad support for these instruments and their implementation, including through the new non-compliance mechanisms which will shortly emerge. Notwithstanding these important developments, much remains to be done. There has been some progress in consolidating arrangements so as to remove disparities in, for example, legal obligations relating to transport. But the proliferation of classification and registration schemes has not been addressed, and there has been no easing of the task of collecting and disseminating information and ensuring ease of use by those who need it most, citizens and workers. As the WSSD Plan of Implementation recognises, the absence of a comprehensive scheme of classification and registration needs to be addressed as a matter of urgency; and international minimum standards in respect of each,

[374] Para. 16.35(c); Plan of Implementation, para. 42(t).

as well as labelling and packaging, need to be developed and applied. Other gaps also exist. In most regions of the world there are no international rules of general application on emergency preparedness and response, and the ILO's Convention on Emergency Preparedness should be accorded high priority as an instrument to be applied in the various regions.

Finally, notwithstanding certain claims as to the similarity of their hazard characteristics, in certain respects the international regulation of radioactive substances and biotechnology have followed different paths. It remains to be seen whether the 2000 Biosafety Protocol will provide the effective environmental regulation which ensures that the limitations of international nuclear regulation are not repeated, in particular the need to ensure that the international organisation (or organisations) given primary competence over biotechnology is not endowed with a dual promotional and regulatory function. These are fundamentally incompatible objectives which national agencies are not normally granted, and they have served to undermine the effective functioning of the IAEA.