
Polar Environmental Protection and International Law: The 1991 Antarctic Protocol

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Abstract

The 1991 Protocol on Environmental Protection to the Antarctic Treaty has created for the first time an integrated environmental protection regime in Antarctica. Negotiated at a time when there was considerable debate over whether mining should be permitted in Antarctica and not long after the Treaty parties had concluded negotiations for a specific Antarctic minerals regime, its entry into force in 1998 is a testament to the international goodwill to cooperatively manage Antarctica and the robustness of the Antarctic Treaty system. The Protocol is also another milestone in the international management of Antarctica and generally for international environmental law. While the 1959 Antarctic Treaty initially sought to neutralise sovereignty and promote scientific cooperation, increasingly an environmental focus in Antarctic management has begun to prevail. The result is a comprehensive environmental law regime which increasingly controls all activities undertaken on the continent and the surrounding Southern Ocean. Antarctica is a unique model for development and implementation of international environmental law with successes often replicated in other global or regional law instruments. This permits some important lessons to be drawn from the Antarctic experience for the development of international environmental law and treaty-making generally.

1 Introduction

The 1991 Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protocol)¹ is the most significant addition to the Antarctic Treaty System since

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¹ 30 ILM (1991) 1455 (hereinafter 'Environmental Protocol').

the adoption of the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).² The entry into force of the Environmental Protocol on 14 January 1998³ created for the first time an integrated environmental protection regime in Antarctica, incorporating many of the mechanisms established under the 1964 Agreed Measures on the Conservation of Antarctic Fauna and Flora,⁴ and Recommendations subsequently adopted by the Antarctic Treaty Consultative Parties (Treaty parties).⁵ It was negotiated at a time when there was considerable debate over whether mining should be permitted in Antarctica and not long after the Treaty parties had concluded negotiations for a specific Antarctic minerals regime.⁶ That the parties could so quickly about-turn and adopt a new instrument which not only sought to prohibit mining but also comprehensively protect the Antarctic environment is a testament to their goodwill to cooperatively manage Antarctica and the robustness of the Treaty system.

The Environmental Protocol is another milestone in the international management of Antarctica and generally for international environmental law. Since the adoption of the Antarctic Treaty in 1959,⁷ Antarctica has effectively been subject to international control under a regime which places strict limitations on the exercise of national sovereignty and jurisdiction,⁸ but which has increasingly adopted an environmental focus over the nearly 40 years of its operation. The result is that Antarctica, unlike any other region, is the subject of a comprehensive environmental law regime which increasingly is controlling all activities undertaken there. In this respect, Antarctica represents a unique model for development and implementation of international environmental law. Initiatives attempted in Antarctica are often replicated in other global or regional law instruments.⁹ While it may be impossible to replicate Antarctic conditions to other parts of the globe, whether because of the

² 19 ILM (1980) 841.

³ The Environmental Protocol entered into force under the mechanism provided for in Article 23; however, note that Annex V to the Protocol has yet to enter into force and that a different procedure for its entry into force applies to that found in the Protocol: see Article 9.

⁴ Reproduced in W. M. Bush, *Antarctica and International Law: A Collection of Inter-State and National Documents*, vol. 1 (1982) 146.

⁵ The Antarctic Treaty, 402 UNTS 71. Article IX makes provision for regular meetings at which both original parties, and those which have demonstrated interest in Antarctica — such as by conducting substantial scientific research there — may adopt a range of responses to current Antarctic issues: the parties which attend these meetings are commonly referred to as ‘Antarctic Treaty Consultative Parties’ (hereinafter ‘Treaty parties’) and the meetings are commonly referred to as Antarctic Treaty Consultative Meetings or ‘ATCM’ (hereinafter ‘Treaty meetings’).

⁶ See Convention on the Regulation of Antarctic Mineral Resource Activities, 27 ILM (1988) 868.

⁷ 402 UNTS 71.

⁸ For a general overview of these issues, see the discussion in Sir Arthur Watts, *International Law and the Antarctic Treaty System* (1992) chapters 5 and 7.

⁹ See the remarks by Scovazzi, ‘The Antarctic Treaty System and the New Law of the Sea: Selected Questions’, in F. Francioni and T. Scovazzi (eds), *International Law for Antarctica* (2nd ed., 1996) 377, at 393–394.

unique status of the sovereignty claims, or the polar climate and environment,¹⁰ it is possible to draw some important lessons from the Antarctic experience for the development of international environmental law and treaty-making generally.

Against this background, this article reviews some of the more important provisions of the Environmental Protocol in light of the practice both prior to and since its implementation. As with any international instrument, a crucial factor in its success or failure will lie in its interpretation and implementation by the Treaty parties. While it still remains too early in the life of the Protocol to make a complete assessment of this process, it is possible to make some preliminary observations.¹¹ It will be against this backdrop that comments will be made on the impact of the Protocol upon international environmental law.

2 Core Provisions of the Environmental Protocol

Since its adoption in 1991 there was debate amongst Treaty parties as to how the Environmental Protocol would be interpreted. At their 1995 meeting, Chile submitted a Working Paper which sought to address the need for operational definitions of terms used in the Protocol.¹² The Working Paper noted:

We know that the legislation and norms applied to the deterioration of the environment varies from country to country, and in relation to different environmental problems and to different ecological characteristics of the territory to which it is applied. The operational requirements could contemplate common minimum requirements, applicable by all Parties.¹³

Chile went on to propose that the Transitional Environmental Working Group, a body established by the Treaty parties to deal with transitional issues prior to entry into force of the Environmental Protocol, should take responsibility for determining 'operational definitions of the terms found in the Protocol'.¹⁴ The Chilean proposal

¹⁰ While there are clear parallels, a major distinction is that the Arctic is substantially free of sovereignty disputes and has a permanent and indigenous population: see Rothwell, 'The Arctic Environmental Protection Strategy and International Environmental Cooperation in the Far North', 6 *Yearbook of International Environmental Law* (1995) 65–105; and G. Osherenko and O. R. Young, *The Age of the Arctic* (1989).

¹¹ The Antarctic Protocol was the subject of extensive comment in the period immediately following its adoption; see the discussion in Francioni, 'The Madrid Protocol on the Protection of the Antarctic Environment', 28 *Texas International Law Journal* (1993) 47–72; Joyner, 'The 1991 Madrid Environmental Protocol: Rethinking the World Park Status for Antarctica', 1 *RECIEL* (1992) 328–339; Blay, 'New Trends in the Protection of the Antarctic Environment: The 1991 Madrid Protocol', 86 *AJIL* (1992) 377–399; Redgwell, 'Environmental Protection in Antarctica: The 1991 Protocol', 43 *ICLQ* (1994) 599–634; Orrego Vicuña, 'The Effectiveness of the Protocol on Environmental Protection to the Antarctic Treaty', in O. S. Stokke and D. Vidas (eds), *Governing the Antarctic* (1996) 174–202; Pineschi, 'The Madrid Protocol on the Protection of the Antarctic Environment and its Effectiveness', in Francioni and Scovazzi, *supra* note 9, at 261–291; and Cordonnery, 'Environmental Protection in Antarctica: Drawing Lessons from the CCAMLR Model for the Implementation of the Madrid Protocol', 29 *ODIL* (1998) 125–146.

¹² See XIX ATCM/WP 19 'The Need for Operational Definitions of the Terms Used in the Protocol to the Antarctic Treaty on the Protection of the Environment' (submitted by Chile, 8 May 1995).

¹³ *Ibid.*

¹⁴ *Ibid.*

was rejected by the Treaty parties, who noted that, while some of the terms could be better defined, they were deliberately vague and eventually would be the subject of interpretation by the parties.¹⁵ A cautious approach was therefore adopted towards any 'agreed' interpretation of the Environmental Protocol, recognizing that ultimately it was an individual matter for each party.

A Protection of Dependent and Associated Ecosystems

The core provisions of the Environmental Protocol are found in Articles 2 and 3. Article 2 provides:

The Parties commit themselves to the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and hereby designate Antarctica as a natural reserve, devoted to peace and science.

The designation of Antarctica as a natural reserve is a significant development and in the context of past debates over the future of the continent, particularly symbolic.¹⁶ However, the designation of a whole continent and surrounding maritime space as a natural reserve is without precedent and, given there is no accepted international practice associated with such a declaration,¹⁷ it may be best to justify it in political terms.¹⁸

Article 3(1) further provides that fundamental consideration shall be given to 'the protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research'. The level of this commitment is further demonstrated in Article 3 where a series of fundamental principles dealing with the Antarctic environment are accepted for the 'planning and conduct of all activities in the Antarctic Treaty area'.

The 'ecosystem' approach of the Environmental Protocol is clearly demonstrated by its repeated reference to the 'protection of the Antarctic environment and dependent and associated ecosystems'.¹⁹ However, these terms are not defined which leaves open for interpretation how wide an ecosystem approach the Treaty parties either individually or collectively may take. The Environmental Protocol does, however, indicate that it is legitimate to take into account activities which occur beyond the limits of the Antarctic Treaty if such activities impact upon the Antarctic environment

¹⁵ *Final Report of the Nineteenth Antarctic Treaty Consultative Meeting* (Seoul, 8–19 May 1995) para. 39.

¹⁶ This especially reflects proposals for the designation of Antarctica as a 'World Park': see Rothwell, 'A World Park for Antarctica? Foundations, Developments and the Future', 3 *Antarctic and Southern Ocean Law and Policy Occasional Paper* (1990); Mosley, 'The Natural Option: The Case for an Antarctic World Park', in S. Harris (ed.), *Australia's Antarctic Policy Options* (1984) 307–326.

¹⁷ The closest parallel may be the designation of some islands under the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, 1037 UNTS 151, i.e. Heard and McDonald Islands, and Lord Howe Island (Australia).

¹⁸ Watts, *supra* note 8, at 277; cf. Redgwell, *supra* note 11, at 606.

¹⁹ See, e.g., Environmental Protocol, Preamble and Articles 3, 6, 8, 10 and 16.

and its dependent and associated ecosystems.²⁰ At present, how far beyond the limits of the Antarctic Treaty area the Environmental Protocol may reach is unknown. It would not seem difficult, however, to make the link between activities taking place to the north of Antarctica and environmental impact south of 60°S. Given the current global debate over climate change for example it could be argued that activities taking place in other continents have the clear potential to impact upon the Antarctic environment. In the case of the marine environment there is likewise an argument that activities taking place in areas to the north of Antarctica and the Southern Ocean have the potential to cause marine environmental impact, especially the discharge of land-based pollutants.

B Environmental Principles

The other core environmental provisions of the Protocol are to be found in Article 3(2), which provides:

- that activities in the Antarctic Treaty area are to be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems;
- that activities in the Antarctic Treaty area shall be planned and conducted so as to avoid effects on weather patterns and air and water quality, significant changes in the environment, impacts on populations of species of fauna and flora, further jeopardy to endangered or threatened populations, and degradation or risk to areas of significance;
- that activities which are undertaken shall be based on prior assessments of their potential impact and of their value for scientific research;
- that monitoring shall take place of ongoing activities to allow for assessment of their impact and to facilitate early detection of possible unforeseen effects.²¹

These environmental principles are wide-ranging and have the potential, if strictly implemented, to impact upon all activities undertaken in Antarctica and the Southern Ocean from the simplest biological research project on Antarctic lichen to the construction of new scientific bases.²² The result is that for the first time a standard for the assessment of all human activity has been created which will have the effect of overriding previous fragmentary Recommendations and a variety of national

²⁰ See Environmental Protocol, Article 3(2)(e) which provides: 'regular and effective monitoring shall take place to facilitate early detection of the possible unforeseen effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment and dependent and associated ecosystems.' Bush has taken the view that this provision 'recognizes that major if not the greatest threats to the Antarctic environment flow from activities taking place outside the Antarctic Treaty area rather than from activities within the area': Bush, *supra* note 4, Binder II, Part AT91C, D.AT04101991A.1, 6–7. Antarctic Treaty, Article VI provides that the Treaty applies 'to the area south of 60 degrees South Latitude, including all ice shelves ...'.

²¹ For comment on how the provisions of Article 3 mirrors similar provisions found in CRAMRA, see Watts, *supra* note 8, at 278; Blay, *supra* note 11, at 389; cf. Redgwell, *supra* note 11, at 607–608.

²² For comment, see De Cesari, 'Scientific Research in Antarctica: New Developments', in Francioni and Scovazzi, *supra* note 9, 413, at 415 and 422.

standards which had been established.²³ Ultimately, however, the interpretation of Article 3 will be very dependent upon the approach of the Committee for Environmental Protection (CEP), a new body created to provide specialist advice and recommendations to Treaty parties regarding the Protocol, and the legislative regimes and policy mechanisms adopted by individual Treaty parties. This will remain a contentious issue, given the considerable scope for varying national interpretations which will reflect not only national environmental laws and policies but also the particular Antarctic policies of the Treaty parties.

C Prohibition on Mining

One of the most important impacts of the Environmental Protocol was to end the debate over whether mining in Antarctica was acceptable. Article 7 provides that: 'Any activity relating to mineral resources, other than scientific research, shall be prohibited.' Such a definitive statement would seem to bring to an end any possibility of mining while the Protocol is in force, or until such time as amendment is adopted.²⁴ Nevertheless, some important questions do remain as to the scope of this prohibition.

1 Area of Application

First, to which area does the prohibition extend? Article 7 does not indicate to which area it applies, though Article 4 of the Environmental Protocol supplements the Antarctic Treaty, which applies to the area south of 60°S, including all ice shelves.²⁵ However, the Treaty also provides that high seas rights within the area are not affected. Does this limitation have any significance for the Protocol? At the time of the Treaty's negotiation in 1959 seabed mining was a reality; however, it was limited to continental shelf areas as governed by customary international law and the 1958 Geneva Convention on the Continental Shelf.²⁶ Seabed mining within the continental shelf was not then a high seas activity at the time the Treaty entered into force. Mining of the seabed was also not a right under the 1958 Geneva Convention on the High Seas,²⁷ and it was not until 1967 that serious consideration began to be given to deep seabed mining.²⁸ Interpreting Article 7 of the Environmental Protocol as extending to prohibiting mining on the continental shelf and deep seabed surrounding the Antarctic continent and Antarctic islands up to the limits of 60°S would not therefore conflict with the provisions of Article VI of the Treaty. Accordingly, it can be asserted with some confidence that Article 7 of the Protocol extends to mining on the Antarctic continent and surrounding Southern Ocean up to 60°S.

A further argument could be made that the Environmental Protocol also extends to mining activities that occur beyond the Antarctic Treaty area, especially if such

²³ Blay, *supra* note 11, at 389.

²⁴ Environmental Protocol, Article 25 adopts special procedures in case of the amendment of the Article 7 prohibition on mining, which may take place at a review conference of the Environmental Protocol, 50 years after entry into force, i.e. 2048.

²⁵ Antarctic Treaty, Article VI.

²⁶ 499 UNTS 311.

²⁷ 450 UNTS 82.

²⁸ E. D. Brown, *The International Law of the Sea*, vol. 1 (1994) 446.

activities have, or may have, an impact upon the ecosystem south of 60°S.²⁹ The Protocol could therefore be interpreted so as to limit any transboundary activity that has a direct impact within the Protocol's area of operation.³⁰ Whether a party to the Protocol which seeks to engage in continental shelf mining in areas under their sovereignty north of 60°S would be bound by the Protocol's provisions remains to be determined, though it should be noted that Argentina, Australia, Chile, France, Norway, South Africa and the UK potentially have large continental shelf claims in parts of the Southern Ocean immediately to the north of the Antarctic Treaty area and may one day seek to exercise the right to engage in mining or other continental shelf activities.³¹

2 Ice Mining

Article 7 does not extend to the mining of ice,³² and this interpretation is supported by the Final Act of the Protocol negotiations.³³ However, this does not imply that ice harvesting in Antarctica is unregulated. The core environmental principles of the Protocol are broad enough to apply to ice harvesting both on the continent and the maritime areas within the Antarctic Treaty area, and in particular activities that may cause 'significant changes in the . . . glacial or marine environments'.³⁴ However, any legitimate glaciological activity undertaken in the course of scientific research, while being subject to the terms of the Protocol, would most likely not be unduly restricted by the Protocol's environmental provisions.³⁵

²⁹ The Declaration by the delegation of Chile at the conclusion of 1991 special Treaty meeting negotiating the Environmental Protocol noted: 'We understand that the prohibition of Antarctic mineral activities shall apply to the whole territory to which we claim sovereign rights in the Antarctic, and to the respective continental platform, even in the event that it stretches north of the 60 degrees southern latitude.' Bush, *supra* note 4, Binder II, Part AT91D: D.AT04101991D.02, 10. See also Antarctic Treaty (Environment Protection) Act 1980 (Australia), ss. 19A–19C (as amended) giving effect to the provisions of the Environmental Protocol and comment in D. R. Rothwell and R. Davis, *Antarctic Environmental Protection: A Collection of Australian and International Instruments* (1997) 170–171; Blay and Green, 'The Practicalities of Domestic Legislation to Prohibit Mining Activity in Antarctica: A Comment on the Australian Perspective', 30 *Polar Record* (1994) 23–32.

³⁰ An example of such an activity would be mining of a deposit in the continental shelf or seabed which partly fell within the Environmental Protocol's area of operation.

³¹ See the discussion in Vidas, 'The Relationship Between the Environmental Protocol and the Law of the Sea Convention Regarding the Southern Ocean Seabed', 7/99 *Antarctic Project Report* (1999).

³² Iceberg and ice harvesting is considered to be a potentially viable economic activity in Antarctica: see Schwerdtfeger, 'Antarctic Icebergs as Potential Sources of Water and Energy', in Rudiger Wolfrum (ed.), *Antarctic Challenge II* (1986) 377–389; see also Carroll, 'Of Icebergs, Oil Wells and Treaties: Hydrocarbon Exploitation Offshore Antarctica', 19 *Stanford Journal of International Law* (1983) 207–227; and Lindquist, 'The Iceberg Cometh? International Law Relating to Antarctic Iceberg Exploitation', 17 *Natural Resources Journal* (1977) 1–41.

³³ See *Final Act of the Eleventh Antarctic Treaty Special Consultative Meeting*; see also the discussion in Bush, *supra* note 4, Binder II, Part AT91D at 4.

³⁴ Environmental Protocol, Article 3(2)(b)(iii). See also the discussion in Trombetta-Panigadi, 'The Exploitation of Antarctic Icebergs in International Law', in Francioni and Scovazzi, *supra* note 9, at 225–257.

³⁵ See Environmental Protocol, Article 3(4), Article 8 and Annex I; cf. De Cesari, *supra* note 22, at 419–420 and 428–431.

D *The Role of the Committee for Environmental Protection*

The role of the Committee for Environmental Protection (CEP) is to provide advice to the parties in the implementation of the Protocol, including the operation of the Annexes.³⁶ The CEP held its first meeting in 1998 and its establishment represented an important step in the evolution of the Treaty system with the creation of a permanent specialist body to provide the parties with advice on environmental matters.³⁷

The first meeting of the CEP in 1998 resulted in the adoption of a workplan.³⁸ The agreed priority issues in the CEP workplan are:

- environmental impact assessment (EIA);
- protected areas;
- environmental monitoring;
- State of the Antarctic Environment Report (SAER);
- emergency response action and contingency planning;
- data and information exchange; and
- introduced alien species.³⁹

A key procedural issue which has arisen for the CEP concerns the procedures to be followed for 'comprehensive environmental evaluations' (CEE) completed under Annex I of the Protocol. At the 1998 Treaty meeting delegations were of the view that the CEP would provide advice on all draft CEEs; however, the US only saw a need for the CEP to review CEEs when a CEP member believed that a particular scientific, technical or procedural matter required consideration. It was finally agreed that, as per Article 3(4) of Annex I to the Protocol, the CEP was to be given the opportunity to consider and give advice on a range of matters associated with draft CEEs.⁴⁰ At the 1999 Lima meeting this matter was again addressed; however, it was resolved

³⁶ Environmental Protocol, Article 12 lists some of the following as areas in which the CEP will provide advice: the effectiveness of measures taken pursuant to the Protocol; the need for additional measures, including new Annexes; the application and implementation of EIA; the means of minimizing or mitigating environmental impacts of activities; and the need for scientific research, including environmental monitoring, related to the implementation of the Protocol.

³⁷ CCAMLR, Article XV provides for the creation of a 'Scientific Committee' which has the role of providing a 'forum for consultation and cooperation concerning the collection, study and exchange of information with respect to the marine living resources' found in the area to which the Convention applies; however, this Committee only operates under CCAMLR and does not provide advice to the ATCM under any procedures established under the Antarctic Treaty.

³⁸ The workplan was developed from a number of working papers submitted at the 1997 and 1998 Treaty meetings; see XXI ATCM/2/REV1, 'Committee for Environmental Protection (CEP): Establishment Issues', submitted by the Netherlands, New Zealand and South Africa, April 1997; XXII ATCM/WP 24, 'Committee for Environmental Protection (CEP): A Discussion Paper', submitted by the United Kingdom, May 1998; XXII ATCM/WP23, 'Committee for Environmental Protection (CEP): Establishment Issues', submitted by New Zealand and the Netherlands, May 1998; and XXII ATCM/WP20, 'Committee for Environmental Protection (CEP): Consequences of Establishment', submitted by Norway, April 1998.

³⁹ *Draft Report of the Twenty-Second Antarctic Treaty Consultative Meeting* (Tromsø, 25 May–5 June 1998), Annex E 'Report of the Committee for Environmental Protection', para. 7 (hereinafter '1998 CEP Report').

⁴⁰ 1998 CEP Report, *supra* note 39, at paras 26–28. It was also agreed that draft CEEs were to be forwarded to the CEP at the same time as they were circulated to the Treaty parties.

through adoption by the CEP of 'Guidelines for CEP Consideration of Draft CEEs'.⁴¹ The guidelines provide for consideration by an intersessional contact group of a draft CEE when issues have been identified that require CEP consideration.⁴²

As the CEP is the first new Treaty system organ since the CCAMLR Commission and the first to have a direct role in the operation of the Antarctic Treaty since its entry into force in 1961, there is considerable interest in the impact that it will have upon the Treaty and Treaty system. Already some important procedural issues concerning the interaction of the CEP and Treaty meetings have arisen.⁴³ The CEP indicated in 1998 that it 'was cognizant of its role as adviser to [Treaty meetings], and would of course carry out any tasks directed to it'.⁴⁴ This would suggest that the CEP sees itself very much as an advisory body with specialist expertise and that it recognizes that political decisions concerning the Protocol rest with the Treaty parties at their annual meetings. At Lima in 1999 there was also discussion concerning the timing and scheduling of both Treaty and CEP meetings. The costs associated with annual Treaty meetings throughout the 1990s have resulted in some parties questioning their need; however, any revision to meeting every other year would impact upon the work of the CEP.⁴⁵ While the debate was unresolved, it may prove to be a significant cause of tension in future years especially if the institutional structure of the CEP demands annual meetings.

3 The Annexes to the Environmental Protocol

The Environmental Protocol presently has five Annexes attached to it and each deals with separate environmental issues arising from the operation and scope of the Protocol. As is common with many environmental instruments, the Protocol's Annexes create more detailed obligations than the generally broader 'framework' provisions of the principal Articles of the Protocol. Each Annex deserves separate review.

A *Environmental Impact Assessment*

While the obligation to conduct environmental impact assessment (EIA) is found in Article 8, Annex I of the Environmental Protocol provides the operational framework for the process. The Protocol requires a prior environmental assessment of activities judged against an Article 8 standard of less than, equivalent to, or more than a 'minor or transitory impact'. Article 8 requires an Annex I assessment to be applied on all activities undertaken pursuant to 'scientific research programmes, tourism and all

⁴¹ *Final Report of the Twenty-Third Antarctic Treaty Consultative Meeting* (Lima, 24 May–4 June 1999) para. 49. See also *Committee for Environmental Protection Report II* (Lima, 24 May–4 June 1999) (hereinafter '1999 CEP Report'), Annex 4.

⁴² 1999 CEP Report, *ibid.*, Annex 4, paras 3 and 10. The contact group is to report to the next CEP meeting.

⁴³ One such issue has been the relationship between the CEP and Working Group II — a standing working group which meets during the annual Treaty meetings; see 1998 CEP Report, *supra* note 39, at paras 10–12.

⁴⁴ *Draft Report of the Twenty-Second Antarctic Treaty Consultative Meeting*, *supra* note 39, at para. 39.

⁴⁵ *Report of the Twenty-Third Antarctic Treaty Consultative Meeting*, *supra* note 41, at paras 35–37.

other governmental and non-governmental activities' for which notice is required to be given under Article VII of the Antarctic Treaty.⁴⁶ The EIA process classifies activities on the basis of whether they are judged as having one of three degrees of impacts upon the Antarctic environment or dependent or associated ecosystems:

- less than a minor or transitory impact, in which case the activity may proceed;⁴⁷
- a minor or transitory impact, in which case the activity may proceed following an 'initial environmental evaluation' and provided that appropriate procedures are put in place to verify the impact of the activity;⁴⁸ or
- more than a minor or transitory impact, in which case the activity will not proceed until a 'comprehensive environmental evaluation' (CEE) has been completed, and the CEP and Treaty meeting considered the proposal.⁴⁹

Given that the terms 'minor' and 'transitory' are not defined, their interpretation has become a key issue.

A major development in this area came with the adoption at the 1999 Treaty meeting of 'Guidelines for EIA in Antarctica'.⁵⁰ The guidelines were developed following an intersessional meeting and, while the CEP has acknowledged they are not mandatory in nature, they are recognized as a 'useful and important' guide for the parties and operators.⁵¹

1 Levels of Environmental Impact

As the terms 'minor' and 'transitory' are capable of widely varying interpretation, to ensure their consistency it would be desirable if the Treaty parties could agree upon a collective understanding on their interpretation. This has been the subject of discussion at recent meetings.

New Zealand took the initiative in 1996⁵² and 1997⁵³ to prepare a number of papers on this topic, which contained a thorough analysis of how some of these essential terms in the EIA process should be interpreted. New Zealand asserted that the three identified 'levels' of EIA need not be seen as isolated and static: "The carrying out of the evaluation is what actually enables us to determine what the level of impact is likely to be, and a "lower" level evaluation may lead to the decision that a "higher"

⁴⁶ Environmental Protocol, Article 8.

⁴⁷ *Ibid.*, at Annex I, Article 1.

⁴⁸ *Ibid.*, at Annex I, Article 2.

⁴⁹ *Ibid.*, at Annex I, Articles 3 and 4.

⁵⁰ Resolution 1 (1999).

⁵¹ 1999 CEP Report, *supra* note 41, at para. 35.

⁵² XX ATCM/INF 2, 'Developing an Understanding of Minor and Transitory', submitted by New Zealand, 29 March 1996. *Final Report of the Twenty-First Antarctic Treaty Consultative Meeting* (Christchurch, 19–26 May 1997) para. 138, noted: "The terms "minor" and "transitory" are interpreted by the Treaty Parties in their implementation of Annex I and a great deal of experience in producing IEEs and CEEs has accumulated. Many IEEs and CEEs have been presented as Information Papers at the ATCM meetings. However, there is at present no systematic approach to utilizing and learning from this experience.'

⁵³ XXI ATCM/WP35, 'Further Understanding of the Terms "Minor" and "Transitory"', submitted by New Zealand, May 1997.

level evaluation is required.⁵⁴ A conceptual model was also provided as to how the key terms ‘minor’ and ‘transitory’ should be understood, and it was suggested that ‘Minor[ness]’ related to ‘magnitude’ of impact, and that ‘Transitory[ness]’ related to duration of impact,⁵⁵ of which more weight should be attached to duration. Other factors relevant to these deliberations included the significance of the location or space in which the impact might be felt, the instrumental and intrinsic values attributed to both the site of the activity and the activity itself, and the probability of the impact.⁵⁶

Other contributions to the debate have been made by Russia, Brazil and Argentina.⁵⁷ The Treaty parties have considered the usefulness of attempting to further define the terms ‘minor’ and ‘transitory’; however, they have noted that a ‘determination of the status of activities was context dependent, based on value judgments and information available at the time’.⁵⁸ In an important contribution, the US noted that ‘the focus of the discussion should not be on developing prescriptive definitions but rather on providing guidance for making determinations’.⁵⁹

Following intersessional work conducted during 1997–1998, Australia submitted a Working Paper to the 1998 meeting which also focused on the interpretation of ‘minor’ and ‘transitory’.⁶⁰ Much of this paper reviewed existing guidelines for Antarctic EIA adopted by national operators. Three essential steps were identified:

- 1 Description of the activity: where it is acknowledged that it is essential to understand a proposed activity to enable accurate prediction and evaluation of its impacts.
- 2 Description of the receiving environment: where it was noted that an appropriately detailed knowledge of the receiving environment is essential for an accurate prediction of impacts, and, therefore an assessment of their significance.⁶¹
- 3 Description of the impacts: where it was noted that a comparison of predicted impacts across a range of activities should yield some consensus on a definition of ‘minor’ and ‘transitory’; however, for this to occur it was important they be described in similar language.⁶²

⁵⁴ *Ibid.*, at para. 9.

⁵⁵ *Ibid.*, at 2–3, para. 14.

⁵⁶ *Ibid.*, at 3, para. 17.

⁵⁷ XXI ATCM/INF 80, ‘Contribution to Further Understanding of the Terms “Minor” or “Transitory” Impacts: Russian Viewpoint: Brief Version’, submitted by Russia, 19 May 1997; XXI ATCM/INF 97, ‘Contribution to Understanding of Minor or Transitory Environment Impact’, submitted by Brazil, 21 May 1997; XXI ATCM/INF 55, ‘Elementos para la Interpretación de los Procedimientos de Evaluación de Impacto Ambiental Contenidos en el Anexo I del Protocolo de Madrid’, submitted by Argentina (in Spanish), 18 May 1997.

⁵⁸ *Draft Final Report of the Twenty First Antarctic Treaty Consultative Meeting*, *supra* note 52, at para. 34.

⁵⁹ *Ibid.*

⁶⁰ XXII ATCM/WP19, ‘Environmental Impact Assessment — The Role of EIA Guidelines in Understanding “Minor” and “Transitory”’, submitted by Australia, April 1998. Other contributors to this paper included Argentina, Brazil, New Zealand, the Republic of Korea and the United Kingdom.

⁶¹ *Ibid.*, Part 2(b), where it is noted that, while Annex I does not specifically require a description of the receiving environment, it can be implied by the words of Article 2(1)(b), Annex I.

⁶² *Ibid.*, Part 2.

The recently adopted 'Guidelines for EIA in Antarctica' note that the interpretation of EIA is dependent upon 'a number of variables associated with each activity and each environmental context. Therefore the interpretation of this term will need to be on a case by case site specific basis.'⁶³ It therefore appears that for the time being there is no incentive to adopt any agreed interpretation of some of these key environmental terms in the Protocol.

2 *EIA Procedures*

In addition to the interpretation of the Protocol's EIA terms, there has also been debate regarding the procedures to be followed in the assessment process. For example, what continuing obligations arise with respect to EIA when a 'change' occurs to an existing activity,⁶⁴ and which parties have responsibility for the conduct of an assessment when the activity is being jointly conducted, especially in cases where there may be competing claimant states?⁶⁵ Discussion on these issues at the 1998 meeting was assisted by a working paper submitted by Argentina⁶⁶ in which a number of questions were identified for resolution. Particular emphasis was placed upon the need to resolve variations in interpretation within the Protocol's official languages,⁶⁷ in particular terms such as 'activity', 'output', 'exposure' and 'impact'.⁶⁸ The 1999 'Guidelines for EIA in Antarctica' will assist considerably in giving content to some of these procedures, especially with respect to: defining the activity; identification of outputs of the activity; analysis of impacts; and impact evaluation.⁶⁹

It is clear that the Treaty parties have given serious consideration to the interpretation of the EIA process. While the collection of data as to how some key Protocol terms are being given effect to in national practice is helpful, an important step remains to be taken and that is the adoption, probably through a Treaty meeting, of a statement which sets out an agreed set of principles as to how these terms are to be interpreted. The 1999 Guidelines are a helpful step in that process; however, it remains to be seen whether they will result in greater consistency in interpretation of the EIA provisions. Ultimately, the Protocol's EIA provisions require the active participation of each Treaty party whose nationals, expeditioners or corporations wish to engage in Antarctic activities. This requires the enactment of domestic laws and the adoption of appropriate policies consistent with the Protocol. Recent Treaty meetings have witnessed reports being tabled by parties regarding their EIA processes and implementation.⁷⁰ Notwithstanding the increased understanding of the central

⁶³ Resolution 1 (1999), Part 1.

⁶⁴ Environmental Protocol, Article 8(3), which also extends to an increase in the intensity of an activity, the addition of an activity, or the decommissioning of a facility.

⁶⁵ *Ibid.*, Article 8(4).

⁶⁶ XXII ATCM/WP14, 'Procedures of Environmental Assessment', submitted by Argentina, April 1998.

⁶⁷ The official languages of the ATS are English, French, Russian and Spanish: Antarctic Treaty, Article XIV; Environmental Protocol, Article 27.

⁶⁸ XXII ATCM/WP14, *supra* note 66, at 1.

⁶⁹ Resolution 1 (1999), section 3.

⁷⁰ In 1999, at ATCM XXIII, reports were presented by Germany, Norway, Italy, the United Kingdom, Uruguay, Spain and South Africa.

importance of the EIA process to the Protocol by the Treaty parties and the growing consensus on appropriate practices,⁷¹ it is clear that more work remains to be completed in this area. Agreement on interpretation of key EIA terms will continue to be a major challenge facing the Treaty parties.

B Conservation of Antarctic Fauna and Flora

Annex II provides for the conservation of Antarctic fauna and flora and incorporates some of the provisions in the 1964 Agreed Measures. The Agreed Measures included certain exceptions for scientific research, and while these are continued in Annex II they are more problematic. For example, 'taking' includes the capturing, handling or molesting of a native mammal or bird, or, in the case of native plants, any activity which removes or damages large quantities so 'that their local distribution or abundance would be significantly affected'.⁷² Consequently, the mere touching of a penguin by a research scientist would fall within the definition while the removal of a small sample of moss from an exposed rock would probably not. 'Harmful interference' has a more extensive definition and covers activities such as the landing of a helicopter in a manner that disturbs concentrations of birds and seals.⁷³

In relation to research into seals, both Fur Seals and the Ross Seal are listed under Appendix A to Annex II as 'Specially Protected Species' with the result that permits cannot be issued for their taking unless there exists a 'compelling scientific purpose'.⁷⁴ Permits may only be issued to take or interfere with native fauna and flora under strict conditions; such permits must take into account 'unavoidable consequences of scientific activities not otherwise authorized'.⁷⁵

A number of provisions exist in Annex II which have the potential, depending on how they are interpreted, to impose restrictions upon the conduct of Antarctic science. In one respect, the balancing of the pursuit of science with environmental protection is something which Treaty parties have lengthy experience with as the 1964 Agreed Measures contained similar exceptions for scientific research;⁷⁶ however, a critical review of how the Agreed Measures were applied demonstrates

⁷¹ See *Draft Final Report of the Twenty First Antarctic Treaty Consultative Meeting*, *supra* note 52, Resolution 2 (1997), which provides in part:

The Representatives, Encourage Consultative Parties to:

1. Include in their procedures for assessing the environmental impacts of their activities in Antarctica, provision for review of the activities undertaken following the completion of a CEE.
2. Adopt the following process for CEE follow-up:
 - (a) Review activities carried out following completion of CEE, including analysis of whether the activities were conducted as proposed, whether applicable mitigation measures were implemented, and whether the impacts of the activity were as predicted in the assessment;
 - (b) Record any changes to the activities described in the CEE, the reasons for the changes, and the environmental consequences of those changes, and
 - (c) Report to the Parties on the outcomes of (a) and (b) above.

⁷² Environmental Protocol, Annex II, Article 1.

⁷³ *Ibid.*, at Annex II, Article 1.

⁷⁴ *Ibid.*, at Annex II, Article 3(5)(a).

⁷⁵ *Ibid.*, at Annex II, Article 3(2)(c).

⁷⁶ See the discussion by De Cesari, *supra* note 22, at 425–426, discussing the similarity between the provisions of Environmental Protocol, Annex II, and provisions in the 1964 Agreed Measures.

cases where environmental protection was ignored in the national interest of states wishing to engage in certain activities in Antarctica.⁷⁷

C Waste Disposal and Management

Annex III deals with Antarctic waste disposal and management and applies to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty.⁷⁸ Article 2 of the Annex provides that:

The amount of wastes produced or disposed of in the Antarctic Treaty area shall be reduced as far as practicable so as to minimize impact on the Antarctic environment and to minimize interference with the natural values of Antarctica, with scientific research and with other uses of Antarctica which are consistent with the Antarctic Treaty.⁷⁹

The Annex seeks to establish a comprehensive scheme for the removal of waste from Antarctica,⁸⁰ the incineration of waste,⁸¹ the disposal of waste on land and at sea,⁸² and waste management planning.⁸³ While these provisions represent an improvement on previous measures, there are anomalies such as the constant use throughout of the term ‘maximum extent practicable’ as a waste disposal standard.⁸⁴ While this is a common term found in international environmental instruments, it is regrettable that common minimum standards were not adopted when the Protocol was negotiated. This type of language has the potential to result in wide variations in interpretation by Treaty parties. For example, will waste management become dependent upon the Antarctic scientific research budgets of individual states? A further anomaly is found in Article 5 where provision is made for disposal into the sea of sewage treated by the ‘rotary biological contractor’ process providing such disposal does not adversely affect the local environment and it is disposed of in accordance with Annex IV. However, the Annex IV provisions dealing with sewage discharge are directed at ships and not discharge from land.⁸⁵

To date, the impact of Annex III has not been given much considered attention by the Treaty parties. Waste management is not on the priority agenda for future action by the CEP, and little substantive discussion on implementation of this Annex occurred at the 1999 Treaty meeting. While this may partly reflect the reality that

⁷⁷ One of the best examples of such action was the decision by France during the 1980s to build an airstrip at their Pointe Geologie base in Adelie Land notwithstanding the substantial impact upon a local penguin colony: see Barnes, ‘Legal Aspects of Environmental Protection in Antarctica’, in C. C. Joyner and S. K. Chopra (eds), *The Antarctic Legal Regime* (1988) 241, at 258–259.

⁷⁸ Environmental Protocol, Annex III, Article 1(1).

⁷⁹ *Ibid.*, at Annex III, Article 1(2).

⁸⁰ *Ibid.*, at Article 2.

⁸¹ *Ibid.*, at Annex III, Article 3.

⁸² *Ibid.*, at Annex III, Articles 4 and 5.

⁸³ *Ibid.*, at Annex III, Article 8.

⁸⁴ See as an example Environmental Protocol, Annex III, Article 4(2), which provides ‘Sewage, domestic liquid wastes and other liquid wastes . . . shall, to the maximum extent practicable, not be disposed of . . .’. For comment, see Blay, *supra* note 11, at 392–394; and Joyner, *supra* note 11, at 333.

⁸⁵ See Environmental Protocol, Annex IV, Article 6.

waste management mechanisms are already in place, implementing Annex III will require new practices consistent with overall goals of the Protocol.⁸⁶ In that regard the CEP does have a role under Article 10 to assess waste management plans that have been adopted by Treaty parties, and to review from time to time the operation of the Annex to ensure that it reflects improvements in waste disposal technology.⁸⁷

D *Marine Pollution*

Annex IV relates to the prevention of marine pollution. It applies not only to each Protocol party but also to ships entitled to fly a party's flag and other ships engaged in supporting a party's operations while within the Antarctic Treaty area.⁸⁸ The Annex seeks to implement standards similar to those which are found in the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).⁸⁹ Provisions deal with the discharge of oil,⁹⁰ noxious liquid substances,⁹¹ garbage⁹² and sewage.⁹³

However, Article 11 of Annex IV allows for a significant exception: its provisions do not apply to warships and other ships 'owned or operated by a state and used, for the time being, only on government non-commercial service'. As a result, a great many vessels which visit Antarctic waters on behalf of national expeditions in order to resupply scientific stations or to conduct scientific research in the Southern Ocean are exempt.⁹⁴ While Article 11 does include a requirement that parties 'ensure' that ships exempted by this provision 'act in a manner consistent, so far as is reasonable and practicable' with the Annex, there is no mechanism for enforcement of this commitment as it is exempt from the Protocol's dispute settlement provisions.⁹⁵ Annex IV also includes a provision dealing with the need to ensure that vessels are fitted with adequate waste retention capacity and that ports are equipped with reception facilities for such vessels.⁹⁶ The interpretation of this provision raises the question as to whether all Treaty parties will be required to meet this standard, or only those with territory adjacent to the Southern Ocean.

In an effort to give some further effect to Annex IV, Resolution 1⁹⁷ dealing with 'Emergency Response Action and Contingency Planning' was adopted at the 1997 Treaty meeting. The resolution urged Treaty parties to ensure that their vessels

⁸⁶ For a comprehensive discussion of the waste management practices of the ATS and the impact of Environmental Protocol, Annex III, see Bou, 'Waste Disposal and Waste Management in Antarctica and the Southern Ocean', in Francioni and Scovazzi, *supra* note 9, at 319–374.

⁸⁷ See Environmental Protocol, Annex III, Article 11.

⁸⁸ *Ibid.*, at Annex IV, Article 2.

⁸⁹ 12 ILM (1973) 1319; 17 ILM (1978) 546. On this point, see further the discussion in C. C. Joyner, *Antarctica and the Law of the Sea* (1992) 174.

⁹⁰ Environmental Protocol, Annex IV, Article 3.

⁹¹ *Ibid.*, at Annex IV, Article 4.

⁹² *Ibid.*, at Annex IV, Article 5.

⁹³ *Ibid.*, at Annex IV, Article 6.

⁹⁴ Blay, *supra* note 11, at 394, comments that: 'This exclusion significantly undermines the annex.'

⁹⁵ See Environmental Protocol, Annex IV, Article 11(4).

⁹⁶ *Ibid.*, at Annex IV, Article 9.

⁹⁷ *Draft Final Report of the Twenty First Antarctic Treaty Consultative Meeting*, *supra* note 52, Annex C.

operating within the Antarctic Treaty area were covered by contingency plans. Discussion at the 1998 meeting also centred on this issue with a number of working papers addressing the topic which resulted in endorsement of a number of guidelines for reporting oil spill incidents.⁹⁸

E *The Antarctic Protected Area System*

Annex V was adopted at the 1991 Treaty meeting shortly after the Protocol negotiations concluded,⁹⁹ and will enter into force separately from the Protocol following unanimous acceptance by Treaty parties. This Annex deals with the Antarctic Protected Area system and seeks to reorganize the previously existing system of area management under a single Annex. Two types of special areas are provided for: Antarctic Specially Protected Areas and Antarctic Specially Managed Areas. Antarctic Specially Protected Areas can be designated in order to protect any area, including a marine area, which has 'outstanding environmental, scientific, historic, aesthetic or wilderness values'.¹⁰⁰ Areas which meet certain criteria are eligible for designation under this category, in addition to those areas that were previously designated as either Specially Protected Areas or Sites of Special Scientific Interest.¹⁰¹ Entry into these areas is by permit only.¹⁰² Antarctic Specially Managed Areas are areas of the continent, including marine areas, where permissible activities have and are being conducted. Such areas will probably have been subject to heavy use resulting from interest in their scientific research potential or as a tourism destination. In order 'to assist in the planning and coordination of activities, avoid possible conflicts, improve cooperation between Parties or minimize environmental impacts'¹⁰³ these sites can be designated as Specially Managed Areas. Entry into these sites is restricted to persons holding a permit.¹⁰⁴ Before any site can be designated under either of these categories it is necessary for a management plan to be approved

⁹⁸ *Draft Final Report of the Twenty Second Antarctic Treaty Consultative Meeting*, *supra* note 39, at para. 57.

⁹⁹ Environmental Protocol, Article 9, provided that additional annexes could be adopted under the procedure provided for under Article IX of the Antarctic Treaty. As a result, additional annexes can be adopted through the Recommendation process at Treaty meetings. An important consequence of this process is that additional annexes, including Annex V, become operative under a different mechanism to that provided for the original four annexes to the Environmental Protocol as per Protocol, Article 9(2), which refers to the provisions of Antarctic Treaty, Article IX requiring the approval of all the Treaty parties which adopted the annex. At the 1999 Treaty meeting, 22 of the required 26 Treaty parties had ratified Annex V, which is expected to enter into force in 2000.

¹⁰⁰ Environmental Protocol, Annex V, Article 3. For a discussion of the protected area system created by Annex V, see Harris, 'Standardization of Zones Within Specially Protected and Managed Areas under the Antarctic Environmental Protocol', 30 *Polar Record* (1994) 283–286; Cordonnery, 'Area Protection and Management in Antarctica: A Proposed Strategy for the Implementation of Annex V of the Madrid Protocol Based on Information Management', 14 *Environmental and Planning Law Journal* (1997) 38–51; and, for a more critical perspective of Antarctic protected areas, see Marks Clark and Perry, 'The Protection of Special Areas in Antarctica', in Francioni and Scovazzi, *supra* note 9, at 293–318.

¹⁰¹ Environmental Protocol, Annex V, Article 3(2) and (3).

¹⁰² *Ibid.*, at Annex V, Article 3(4).

¹⁰³ *Ibid.*, at Annex V, Article 4(1).

¹⁰⁴ *Ibid.*, at Annex V, Article 4(3).

by a Treaty meeting. Management plans are to include not only full details on the area, but also a clear description of the conditions under which permits for entry may be issued and codes of conduct for the use of the area.¹⁰⁵ In 1998 the Treaty parties adopted Resolution 2 (1998) at their annual meeting which is a guide to the preparation of management plans for Antarctic Specially Managed Areas.

The CEP will play a critical role in assessing areas that have been put forward for designation under this Annex and will also review the adequacy of management plans.¹⁰⁶ A number of Treaty parties had already revised their management plans for Antarctic protected areas in light of the provisions of Annex V.¹⁰⁷ Implementation and interpretation of this Annex will be assisted by the long experience the Treaty parties have had in implementing the Antarctic Protected Area system which developed from the 1964 Agreed Measures.

In 1997 and 1998 discussion took place at Treaty meetings as to whether previously designated protected areas will receive some form of continuing designation under the new mechanisms established in Annex V. In 1998 the CEP acknowledged that there were difficulties with the Protocol protected area system and agreed that it was necessary to consider the issue in the wider context of protection given under Annexes I to IV as well as Annex V. The CEP noted:

Particular attention needs to be given to protecting areas where there are fauna, flora or other values at high risk of being damaged by human activities. There are also gaps in the system with some protected area categories as set out in Annex 3(2) of Annex V being very poorly represented or not represented at all.¹⁰⁸

In light of this assessment, the CEP recommended that a further workshop be convened to address this issue and following the 1999 Treaty meeting, a mechanism has now been put in place for the development of guidelines for implementation of the protected areas framework in Annex V and developing criteria for assessment of environmental risk, and quality and feasibility for identifying, selecting and proposing protected areas.¹⁰⁹

4 The Environmental Protocol and International Law

The Environmental Protocol is the latest instalment in a number of initiatives which have been taken to protect the Antarctic environment since 1959. The Antarctic Treaty itself not only created a framework for the evolution of the so-called Antarctic Treaty System, but also sought to demilitarize the continent, prohibit nuclear

¹⁰⁵ *Ibid.*, at Annex V, Article 5(3). The development of Antarctic management plans had been a matter of some debate throughout the 1980s: see Keage, Hay and Russell, 'Improving Antarctic Management Plans', 25 *Polar Record* (1989) 309–314.

¹⁰⁶ Environmental Protocol, Annex V, Article 6. For a discussion of the relationship between Annex V and the previous Protected Area System, see R. I. Lewis Smith *et al.* (eds), *Developing the Antarctic Protected Area System* (1994).

¹⁰⁷ Harris, *supra* note 100, at 283.

¹⁰⁸ 1998 CEP Report, *supra* note 39, at para. 48.

¹⁰⁹ 1999 CEP Report, *supra* note 41, at para. 80.

explosions, place limits on assertions of new sovereignty claims, and establish procedures whereby parties to the Treaty would meet regularly to discuss these issues.¹¹⁰ While the Treaty therefore was not primarily negotiated in response to environmental concerns, by addressing issues such as demilitarization, denuclearization, and constraints on sovereignty claims during the height of the Cold War it did achieve a number of important environmental outcomes for Antarctica. From this foundation, the Treaty was able to support the subsequent negotiation of additional Treaty instruments such as the 1972 Seals Convention,¹¹¹ CCAMLR,¹¹² and numerous recommendations adopted at Treaty meetings which had an environmental focus.¹¹³ The Antarctic Treaty has therefore been an important head agreement which has acted as an umbrella for subsequent specialist instruments.

A *The Precautionary Approach*

The push during the 1980s for the negotiation of an Antarctic minerals regime was viewed by many environmental groups as a retrograde step in Antarctic environmental protection, and, notwithstanding the eventual adoption of a minerals convention in 1988,¹¹⁴ the sudden about-face by the Treaty parties with the adoption of the Environmental Protocol resulted in the minerals regime being abandoned. This represents one of the most extreme illustrations of the precautionary approach being adopted in international environmental law.¹¹⁵ The Treaty parties had spent six years negotiating a detailed instrument to regulate Antarctic mining activities with associated diplomatic effort and cost, and yet soon after the conclusion of those negotiations the impetus for entry into force of that regime was being redirected into an alternate regime which at a minimum prohibits mining for 50 years. The reasons for this switch in emphasis are numerous; clearly, the influence of the debate within the United Nations during the 1980s which questioned the legitimacy of the Treaty system cannot be ignored.¹¹⁶ However, to have adopted this approach to Antarctic mining at a time when evidence was accumulating as to the extent of mineral reserves not only on the continent but also in the Southern Ocean,¹¹⁷ represented clear

¹¹⁰ See Antarctic Treaty, Articles I, IV, V and IX.

¹¹¹ 11 ILM (1972) 251.

¹¹² 19 ILM (1980) 841.

¹¹³ See the discussion in D. R. Rothwell, *The Polar Regions and the Development of International Law* (1996) 111–121.

¹¹⁴ For a discussion, see Beck, 'Convention on the Regulation of Antarctic Mineral Resource Activities: A Major Addition to the Antarctic Treaty System', 25 *Polar Record* (1989) 19–32; Bush, 'The 1988 Wellington Convention: How Much Environmental Protection?', in J. Verhoeven, P. Sands and M. Bruce (eds), *The Antarctic Environment and International Law* (1992) 69–83.

¹¹⁵ A definition of the precautionary approach can be found in Principle 15 of the 1992 Rio Declaration on Environment and Development, 31 ILM (1992) 874 which provides: 'In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.'

¹¹⁶ See the discussion in K. Suter, *Antarctica: Private Property or Public Heritage?* (1991) 69–94.

¹¹⁷ See the discussion in Willan, Macdonald and Drewry, 'The Mineral Resource Potential of Antarctica: Geological Realities', in G. Cook (ed.), *The Future of Antarctica* (1990) 25–43.

acceptance by the Treaty parties that Antarctica was not capable of sustaining the environmental consequences of commercial mining. While the prohibition has been criticized due to its potential to be revisited after 50 years, the political reality of mining in Antarctica combined with the enormous costs and the need to negotiate a new minerals regime to regulate any such activity will act as significant disincentives for the future. The provisions in the Environmental Protocol prohibiting mining therefore represent a clear illustration of the precautionary principle at work and build upon previous Antarctic illustrations of its adoption.¹¹⁸

B Environmental Impact Assessment

In addition to the prohibition on mining, perhaps the other most significant feature of the Environmental Protocol is the requirement for the conduct of EIA. This is the first time such an environmental standard has been created for a whole continent in international law, the only other illustration being the 1991 ECE Espoo Convention on Environmental Impact Assessment in a Transboundary Context¹¹⁹ which has a more limited operation. The conduct of EIA is not a new development for environmental law, having first appeared during the late 1960s at the national level, but states have been reluctant to adopt it as part of their international obligations. Even when there exist very broad obligations for environmental assessment, such as in the 1982 United Nations Convention on the Law of the Sea, levels of implementation have been exceedingly variable.¹²⁰ While implementation of Antarctic EIA ultimately depends upon the quality of national laws and policies and the views of the CEP and Treaty parties when reviewing assessments, the level of detail in the provisions of Article 8 of the Protocol and in Annex I provide a model for international EIA. Whether EIA on an equivalent continental scale will be reproduced is doubtful. Yet while Antarctic EIA may be a special case its adoption lends weight to the legitimacy of EIA in international instruments and the experience of the Treaty parties in implementation will be assessed for its application in other places.¹²¹

¹¹⁸ It can be argued that the negotiation of the 1972 Seals Convention and CCAMLR are also illustrations of the precautionary principle at work. In both cases, regimes were negotiated prior to the commencement of significant commercial exploitation of seals (in the modern era) and fish stocks; see Rothwell, *supra* note 113, at 401.

¹¹⁹ (1991) 30 ILM 800; see the discussion in P. Sands, *Principles of International Environmental Law*, vol. I (1995) 588–591.

¹²⁰ (1982) 21 ILM 1261, see Article 206; see also the 1985 ASEAN Agreement on the Conservation of Nature and Natural Resources and the 1986 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (1987) 26 ILM 38. See Van Dyke, 'Sea Shipment of Japanese Plutonium under International Law', 24 *ODIL* (1993) 399 for a discussion of EIA obligations under the law of the sea.

¹²¹ The Arctic and the oceans are other global areas where there may be impetus for the adoption of EIA standards; it could also be argued that the regionalization of environmental law will further add to the impetus for common EIA standards; see Sands, *supra* note 119, at 594, who notes: 'The idea that environmental impact assessments may now be required as a matter of customary law, particularly at the regional level, is capable of being argued, particularly when the project concerned is likely to have very significant effects on the environment and those effects will be transboundary.'

C *Waste Disposal and Management*

A feature of Antarctic environmental protection has been the ongoing concern about the impact of waste which culminated in Annex III on waste disposal and management. Again, this is a first for international environmental law in its application to a complete continent. The waste provisions apply to private adventurers who visit the continent, the permanent scientific bases, and all other activities in between. The disposal and management of waste is a particular problem due to the climate, the environment and the small amount of ice-free rock. Disposal of sewage has the potential to have significant impact on Antarctic fauna and flora. The Annex III initiatives are both costly for the Treaty parties and present major logistical challenges when waste needs to be returned from Antarctica. That such an initiative was developed for Antarctica can partly be explained by the lack of any infrastructure to deal with waste and the environment's sensitivity to its impact. However, these are conditions which are not unique. Agricultural, industrial and urban waste are the major land-based point sources of marine environmental pollution which are in urgent need of state controls globally.¹²²

The Antarctic waste management initiatives will therefore provide a framework for states to work with in responding to similar challenges to common areas such as rivers, lakes and the oceans.

D *Protected Area Management*

Antarctica has been the scene of various models for protected area management since the 1960s when the continent was first declared a 'Special Conservation Area',¹²³ and the Protocol follows this approach by recognizing Antarctica as a 'special reserve, devoted to peace and science'.¹²⁴ It partly implements this approach through the Annex V provisions for area protection and management. In many respects Annex V represents an updating and rationalization of the protected area system commenced under the 1964 Agreed Measures, nevertheless it remains a unique system in international environmental law. While there are a number of international instruments providing for the protection of natural and cultural heritage, wetlands, rangelands, marine areas, alpine areas, rivers and lakes,¹²⁵ they rarely require the level of management Annex V provides for Antarctic protected areas. In this respect the Antarctic parties were able to reflect upon their previous experiences and thereby ensured that the Protocol reflected contemporary environmental management standards. The Antarctic model of area protection is the most sophisticated and far ranging in current international practice and serves as a template for adoption by states at the bilateral, subregional and regional level.

¹²² It has been estimated that 44 per cent of marine pollution is the result of run-off and land-based discharges: Independent World Commission on the Oceans, *The Ocean Our Future* (1998) 27.

¹²³ See Agreed Measures, Preamble.

¹²⁴ Environmental Protocol, Preamble.

¹²⁵ See generally the discussion in P. Birnie and A. Boyle, *International Law and the Environment* (1992) chapters 6, 11 and 12; and Sands, *supra* note 119, chapter 10.

E *Antarctica as a Park*

Since the 1970s there has been ongoing discussion especially amongst members of the environmental movement about the designation of Antarctica as a 'World Park'.¹²⁶ This discussion became a significant element during the debate in the late 1980s over whether mining should be permitted. Part of the difficulty in this debate for lawyers is that there exists no precedent for such a declaration, and, while nomination as a 'World Heritage Area' under the 1972 World Heritage Convention¹²⁷ is important international recognition of an area's status, it does not provide for an 'internationalization' of the area's day-to-day management. While the so-called 'World Park campaign' was for environmentalists a useful means for gaining public support during the debate over the merits of the minerals regime, it has rarely been mentioned since the adoption of the Environmental Protocol. On many grounds, however, it could be argued that the cumulative impact of the development of the Treaty system combined with the Protocol is that Antarctica is now in many respects co-managed by the Treaty parties as a park. The prohibition on mining and the limitation on other development activities sees Antarctica share common characteristics with parks around the world. When the controls over all visitors, ranging from commercial tourism ventures to the private visitor are also considered, the Antarctic Park analogy is completed. It is true that science remains a major 'industry' in Antarctica,¹²⁸ and commercial fishing does operate in northern parts of the Southern Ocean;¹²⁹ however, the combined impact of the various provisions under the Protocol which limit commercial mining and ensure environmental protection do offer as comprehensive a management system for Antarctica as a 'park' as any national park systems.¹³⁰ Here the Antarctic experience serves as a model for large-scale parks management and control, complete with various territorial claims, at both national, bilateral and subregional levels.

F *Regional Cooperation in Environmental Protection*

The other significant contribution the Antarctic Protocol makes to international environmental law is its embodiment of principles of regional cooperation in environmental management amongst states with common interests. It is notable that, while the key players in the Antarctic Treaty system have traditionally been the seven territorial claimants plus Russia and the US, the states whose territories are

¹²⁶ See the discussion in Rothwell, *supra* note 16; Mosley, *supra* note 16; C. C. Joyner, *Governing the Frozen Commons* (1998) 174–179; and Berguno, 'The Antarctic Park: The Issue of Environmental Protection', in J. Verhoeven, P. Sands and M. Bruce (eds), *The Antarctic Environment and International Law* (1992) 103–107.

¹²⁷ 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, 1037 UNTS 151.

¹²⁸ Laws, 'Science as an Antarctic Resource', in G. Cook (ed.), *The Future of Antarctica* (1990) 8–24.

¹²⁹ See the discussion in S. Bateman and D. R. Rothwell (eds), *Southern Ocean Fishing: Policy Challenges for Australia* (1998).

¹³⁰ Cf. Joyner, *supra* note 126, at 179, who, while prepared to accept Antarctica's *de facto* status as a World Park, is not prepared to confer *de jure* status on such a designation.

immediately to the north of Antarctica are also Treaty parties. From a regional perspective, the Treaty system and the Protocol therefore includes within it all the states with a principal interest in the continent and Southern Ocean. Through this common and shared interest in Antarctic affairs, which for all of these core states extends in some fashion back to the nineteenth century, Antarctic affairs have been given some prominence in their national life. The ability of the Protocol to operate is therefore enhanced through this common interest in Antarctica. At a procedural dimension this common interest is institutionalized through the role of the CEP and annual Treaty meetings which operate as a check against unilateral action by an individual party.¹³¹ The Antarctic management model, perpetuated through the Protocol, is an illustration of how effective environmental cooperation can be achieved between states and the advantages of a regional management approach *vis-à-vis* global regimes.

5 The Environmental Protocol, Antarctica and International Law

A criticism often made against the Environmental Protocol is the inadequacy of its provisions concerning environmental protection and its incomplete regulation of Antarctic environmental issues. This criticism is often grounded in the failure of the Protocol to deal separately with the environmental impact caused by Antarctic tourism, but also through a failure to deal comprehensively with all of the environmental issues facing Antarctica.¹³² Much of this criticism is borne out of the speed with which the Protocol was negotiated and is also perhaps a reflection of the time spent in carefully crafting the minerals convention in the 1980s. Irrespective of the merit or otherwise of these criticisms, it is certainly true that the Protocol was drafted with considerable speed for an instrument of its complexity. It should therefore not be surprising that questions have arisen over the interpretation of its terms and provisions. However, unlike many international instruments which lay dormant until they actually become operative, the Environmental Protocol was given *de facto* application soon after its conclusion. At successive meetings between 1991 and 1997 the Treaty parties actively discussed the impact of the Protocol and prepared for its operation upon entry into force. The establishment of the ‘Transitional Environmental Working Group’ in anticipation of the Protocol’s eventual entry into force clearly indicated how serious the Treaty parties were about the Protocol. Likewise, many Treaty parties also enacted in advance new laws or adopted policies substantially in

¹³¹ See Francioni, ‘International Cooperation for the Protection of the Environment: The Procedural Dimension’, in W. Lang, H. Neuhold and K. Zemanek (eds), *Environmental Protection and International Law* (1991) 203, at 215, who noted (prior to the conclusion of the Protocol): ‘the Antarctic treaty system provides, perhaps, the most original and sophisticated model of international consultation with regard to the protection of a common space.’

¹³² See the comments in Pineschi, *supra* note 11, at 290–291; Orrego Vicuña, *supra* note 11, at 201–202. On the question of the Protocol and Antarctic tourism, see Vidas, ‘The Legitimacy of the Antarctic Tourism Regime’, in O. S. Stokke and D. Vidas (eds), *Governing the Antarctic* (1996) 307–316.

conformity with the Protocol prior to 1998. Operational procedures for national Antarctic expeditions were also adjusted to meet the new Protocol standards.¹³³ It has therefore been possible, for many of the Treaty parties to assess on a preliminary basis the issues associated with implementation of the Protocol. This process has inevitably raised a number of matters which relate to both general and specific operational terms and conditions. None of these matters has been conclusively resolved to date and it may take some time before such a resolution is achieved. Until that time, the interpretations given to the Protocol by the Treaty parties at their annual and intersessional meetings and workshops, and through their own domestic laws and policy processes, will play an essential role in developing a better appreciation of the key terms of the Protocol.

At the global level, the Environmental Protocol continues the tradition of Antarctic environmental instruments setting new standards for international environmental law, for, as noted by Kimball, 'Antarctica has, in many ways, served as a microcosm for the evolution of environmental law and policy'.¹³⁴ The Protocol goes beyond what any other contemporary international environmental instrument achieves in the protection and conservation of a continent and its surrounding ocean. A measure of the extent of Antarctic environmental protection delivered through the Protocol is that perhaps only in Europe are there equivalent environmental regimes at a continental level. The Antarctic Protocol contributes to state practice in key international environmental law principles and in concepts such as the precautionary principle, environmental impact assessment and protected area management. That Antarctica's protected status is equivalent to that of a 'Park' in national environmental law is a further illustration of what has been achieved by the Protocol. Debate, however, still remains as to whether Antarctica is a part of the common heritage.¹³⁵ The existence of territorial claims on the continent and maritime claims in the Southern Ocean would seem to defeat such views, notwithstanding the apparent dormant status of these claims for the time being. More legitimacy may attach to such a claim being asserted over the remaining 'unclaimed sector'.¹³⁶ Given the uncertain state of common heritage management in areas such as the deep seabed and the

¹³³ For a review of the implementation of the Protocol to date, see Dodds, 'South Africa: Implementing the Protocol on Environmental Protection', 10/99 *Antarctic Project Report* (1999); Joyner, 'The United States: Legislation and Practice in Implementing the Protocol', 9/99 *Antarctic Project Report* (1999); and Bush, 'Australian Environmental Legislation and the Antarctic: The Meeting of International and Domestic Law and Politics', 8/99 *Antarctic Project Reports* (1999).

¹³⁴ Kimball, 'Environmental Law and Policy in Antarctica', in P. Sands (ed.), *Greening International Law* (1993) 122, at 123.

¹³⁵ See the discussion in Joyner, *supra* note 126, at 220–258; Charney, 'The Antarctic System and Customary International Law', in Francioni and Scovazzi, *supra* note 9, 51, at 75–80; and Suy, 'Antarctica: Common Heritage of Mankind?', in J. Verhoeven, P. Sands and M. Bruce (eds), *The Antarctic Environment and International Law* (1992) 93–96.

¹³⁶ The area between 90°W and 150°W along the Antarctic coast through to the South Pole has not been subject to any formal territorial claim and remains to this day unclaimed: see the discussion in F. M. Auburn, *Antarctic Law and Politics* (1982) 28 and 67.

moon, however, the Antarctic Environmental Protocol may well provide as good a model as any.

Much remains to be done in implementing and giving effect to the terms of the Protocol. A number of challenges face the Treaty parties in the next decade, especially with respect to the growth of tourism and overfishing in the Southern Ocean. However, it is clear that the Treaty parties remain committed to ensuring comprehensive conservation and protection for Antarctica. The ongoing negotiations for the development of a new liability Annex for the Protocol¹³⁷ are evidence of the continued commitment towards development of the environmental protection regime. While Antarctica presents unique climatic, environmental, legal and political challenges reproduced in few other locations, the lessons from Antarctica nonetheless remain of considerable value for international law.

¹³⁷ Environmental Protocol. Articles 15–16 contemplate negotiation of a regime for liability for activities in Antarctica and this has been the subject of ongoing discussions throughout the 1990s: see Lefeber, 'A Critical Assessment of the Proposals for an Antarctic Liability Regime', *5/99 Antarctic Project Report* (1999).