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Kees Bastmeijer
Tilburg University

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Antarctica: Shared Responsibility for Cumulative Environmental Impacts

*Kees Bastmeijer**

1. Introduction

Terms like 'joint', 'collectively', and 'shared' are central to the Antarctic Treaty System (ATS),[1] as no single state is in a position to govern the Antarctic, or parts of it, on its own. Based on the Antarctic Treaty of 1959[2] (Antarctic Treaty, or Treaty), twenty-nine states (the consultative parties), each with a substantial scientific interest in the area, manage it collectively through a consensus-based decision making system.[3] From the early beginnings of the ATS, the states involved have strived for the safeguarding of peace, the promotion of scientific research, and the protection of the Antarctic environment. The Treaty itself prohibited nuclear weapon testing and nuclear waste disposal, and as early as 1964, the consultative parties designated Antarctica as a 'Special Conservation Area'.[4] In 1970, the meeting of the consultative parties broadened its collective environmental responsibility by agreeing that 'the Consultative Parties should assume responsibility for the protection of the environment and the wise use of the Treaty area'.[5] The instruments that have been adopted since, which concern sealing, the exploitation of marine living resources, mineral resource activities, scientific activities, tourism activities, and other types of Antarctic activities, have

* Kees Bastmeijer is Professor of Nature Conservation and Water Law at the Tilburg Law School, Tilburg University, the Netherlands, and Visiting Professor at the School of Business, Economics and Law at the University of Gothenburg, Sweden (2016–19), c.j.bastmeijer@uvt.nl. The research leading to this chapter has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007–2013)/ERC grant agreement n° 249499, as part of the research project on Shared Responsibility in International Law (SHARES), carried out at the Amsterdam Center for International Law (ACIL) of the University of Amsterdam. All websites were last accessed in December 2014.

[1] For a definition of the Antarctic Treaty System (ATS), see Article 1, under e) of the Protocol on Environmental Protection to the Antarctic Treaty, n. 6.

[2] Antarctic Treaty, Washington, 1 December 1959, in force 23 June 1961, 402 UNTS 71**Error! Hyperlink reference not valid.** (Antarctic Treaty or Treaty).

[3] During the first half of the 20th century, seven states (Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom) claimed parts of the continent, but the legitimacy of these claims was internationally disputed. In 1959, these seven claimant states and five other states signed the Antarctic Treaty, ibid. A central element of the Treaty is the 'agreement to disagree' of Article IV: all states reserve their position regarding the legal status of Antarctica and the contracting parties agree to manage Antarctica collectively. Today, 29 consultative parties are involved in the Antarctic decision-making process. For a comprehensive discussion of the ATS, see e.g., L.M. Elliott, *International Environmental Politics: Protecting the Antarctic* (New York: St. Martin's Press, 1994).

[4] Agreed Measures for the Conservation of Antarctic Fauna and Flora, Brussels, 2 June 1964, in force 1 November 1982, available at www.ats.aq.

[5] Recommendation VI-4 (Japan, 1970) on the 'Human interference with the environment', available at www.ats.aq.

convincingly aimed to ensure the comprehensive protection of the Antarctic environment. A major step in this respect was the adoption of the Protocol on Environmental Protection to the Antarctic Treaty (Protocol) in 1991.[6]

There have been no legal cases between states relating to violations of the legal instruments that form part of the ATS. At first sight this appears to make the Antarctic less relevant for this book, which focuses on *ex post facto* shared responsibility[7] of states and other actors for harmful outcomes. However, there are some emerging Antarctic environmental concerns that justify the inclusion of this chapter. These concerns are discussed in section 2 below. In identifying these scenarios, attention is limited to activities on the Antarctic continent, which excludes, for instance, Southern Ocean fisheries.[8] Furthermore, possible shared responsibility of states for harmful impacts in Antarctica caused by activities conducted outside the Antarctic Treaty area are also outside the scope of this chapter.[9] The analysis in section 2 will show that the slow but continuous decrease of Antarctica's wilderness qualities, caused by the accumulation of human impacts, may be the most substantial impact of human activities in Antarctica.

Next, section 3 provides an overview of the relevant obligations that apply to these cumulative impacts on Antarctica's wilderness. The provisions of the Protocol are discussed briefly, and the relevance of the no harm principle for Antarctica receives attention as well. In light of these substantive obligations, in section 4 the attention focuses on the question of whether the cumulative impacts on the Antarctic wilderness may result in *ex post facto* shared responsibility of the consultative parties to the Treaty. For this purpose, special secondary

[6] Protocol on Environmental Protection to the Antarctic Treaty, Madrid, 4 October 1991, in force 14 January 1998, (1991) 30 ILM 1455 (Protocol).

[7] See P.A. Nollkaemper and D. Jacobs, 'Shared Responsibility in International Law: A Conceptual Framework', (2013) 34 MIJIL 359, 365. The authors explain that the concept of *ex post facto* shared responsibility is related to situations in which multiple states (possibly with involvement of non-state actors) jointly contribute(d) to certain outcomes (e.g. harmful effects) that 'international law seeks to prevent' (at 361). The present author adopts the approach of Nollkaemper and Jacobs (at 367) to 'opt for a definition referring to a contribution to harmful outcomes that the law seeks to prevent, irrespective of the question whether such an outcome causes injury to a particular actor'. Nollkaemper and Jacobs (at 366) explain that shared responsibility in this sense should be distinguished from *ex ante* shared responsibility: situations in which two or more states (and possibly non-state actors) are responsible to prevent harm.

[8] For the theme of this volume, illegal fishing in relation to the CAMLR Convention (Convention on the Conservation of Antarctic Marine Living Resources, Canberra, 20 May 1980, in force 7 April 1982, 1329 UNTS 48), as well as the designation of Marine Protected Areas under the CAMLR Convention and the Protocol may also provide interesting case studies. For discussions on the practice of shared responsibility in respect of fishery, see Chapter 14 in this volume, Y. Takei, 'Fisheries', in P.A. Nollkaemper and I. Plakokefalos (eds.), *The Practice of Shared Responsibility in International Law* (Cambridge University Press, 2016), ___.

[9] See Chapter 38 in this volume, J. Peel, 'Climate Change', in P.A. Nollkaemper and I. Plakokefalos (eds.), *The Practice of Shared Responsibility in International Law* (Cambridge University Press, 2016), ___.

rules (Annex VI to the Protocol)[10] as well as general international law on state responsibility are considered. As will be shown, the Protocol's provisions appear to be of less relevance for this question compared to the no harm principle. However, the no harm principle also raises interesting questions in relation to the cumulative wilderness impacts. For instance, to what extent do these impacts result in a wrongful act of the states involved in the ATS? How do these impacts relate to the threshold of 'significant harm'? And have the consultative parties taken sufficient preventative measures to ensure the required due diligence? Section 5 contains the main conclusions.

2. Factual scenarios

No cases have been brought to international courts and tribunals in relation to (individual or collective) breaches of the Antarctic Treaty or the Protocol. As observed by Voigt, 'the role of State responsibility has not played a large practical role in the environmental responsibility context [as m]ost transboundary environmental concerns are solved through diplomatic means, negotiation and adoption of agreements'.[11] This is certainly true within the ATS context. However, a number of developments in the Antarctic may have environmental impacts that are contrary to the objective and provisions of the Protocol, and justify discussion from the perspective of shared responsibility.

Nollkaemper and Jacobs explain that questions on shared responsibility can arise out of 'joint or concerted action' (referred to as *cooperative responsibility*), as well as out of situations of cumulative actions without concerted character (referred to as *cumulative responsibility*).[12] Subsections 2.1 and 2.2 below show that factual scenarios for Antarctica may well be based on this distinction, also taking into account the important notion that shared responsibility may be related to action as well as omission (failure to act).

[10] Annex VI to the Protocol, 'Liability arising from environmental emergencies', adopted as Decision 1 (2005), available at www.ats.aq.
[11] C. Voigt, 'State Responsibility for Climate Change Damages' (2008) 77 Nord JIL 1, 20.
[12] Nollkaemper and Jacobs, 'Shared Responsibility in International Law', n. 7, at 368.

2.1 The conduct of 'joint activities' in Antarctica

Several joint activities, such as an Antarctic expedition, the establishment of a research station, or the use of an airstrip, could result in cooperative shared responsibility. For instance, research facilities are often established, financed, used and/or maintained through cooperation between various state governments (or the national research programmes of these governments). As discussed in section 3 below, Article 6 of the Protocol explicitly promotes such collaboration. In these situations of joint expeditions or facility use, questions on cooperative shared responsibility could arise when provisions of the ATS instruments are violated (e.g. establishing a new research station without making a prior environmental impact assessment, conducting a joint research project that involves the taking of, or harmful interference with, Antarctic flora and fauna without a permit, etc.). However, in practice, consultative parties are reluctant to raise questions on state responsibility (individual or shared). This is illustrated by the responses to reports of international inspections, which sometimes contain examples of breaches of provisions of the Protocol. Discussions on these reports in the Committee for Environmental Protection (CEP) and at the Antarctic Treaty Consultative Meeting (ATCM) have generally only resulted in recommendations for improvement.[13]

Also, non-governmental activities may contribute to harmful outcomes. For instance, a tourist expedition may be organised in the United Kingdom, using a Russian flagged vessel, departing for Antarctica from New Zealand, and involving participants from various other states. In such situations, questions on cooperative shared responsibility could arise, for instance, if the governments of the states involved did not ensure the correct implementation and application of the Protocol's provision regarding the expedition, or if there was no supervision or enforcement response to violations. In practice, these situations also have not

[13] See, for instance, 'Report of Inspections under Article VII of the Antarctic Treaty and Article 14 of the Protocol on Environmental Protection', US Department of State, 2006, available at www.state.gov/documents/organization/82146.pdf, at 9: 'Several stations had barrels of waste oil sitting exposed to the environment, without any secondary containment. In one case, the Inspection Team found a barrel of waste oil leaking its contents into the ground.' While this is a clear violation of Article 2(1) and Article 6 of Annex III to the Protocol on Environmental Protection (in force since 1998, n. 6), the Report continues (at 9): 'The Inspection Team recommends that stations store such waste oil, prior to its removal from the Antarctic Treaty Area, in containers that will prevent leakage into the environment.' The report was discussed at the ATCM in 2007, which resulted in the following paragraph in the Final Report of the meeting: 'New Zealand referred Parties to the recent work of COMNAP in reviewing best practice for fuel handling and storage guidelines, which could assist in addressing some of the environmental issues identified in the United States inspection report.' See the Final Report of the 30th Antarctic Treaty Consultative Meeting, New Delhi, India, 30 April-11 May 2007, available at www.ats.aq, para. 196.

resulted in legal discussions about responsibility (individual or shared) of the states involved. At the ATCM, consultative parties are clearly reluctant to criticise each other's implementation practice. The way the Protocol has been transposed into domestic law and is applied in practice receives regular attention, but such discussions can mainly be characterised as 'information exchange'.

2.2 Cumulative impacts caused by multiple human activities

2.2.1 Antarctic activities of states that are contracting parties to the Protocol

Almost all human-made objects with a permanent or semi-permanent character in Antarctica have been established by governments of contracting parties to support scientific research. A map, developed in 2009 by the council of managers of national Antarctic (research) programs (COMNAP), shows that there are more than 110 research stations and research camps in Antarctica.[14] As shown on maps prepared by Tin and Summerson[15] and as discussed by Bastmeijer and Tin,[16] these research facilities and associated infrastructure (e.g. airstrips, transport, storage facilities, etc.) have resulted in cumulative impacts on the 'wilderness values' of Antarctica and possibly related values (e.g. scientific values).

The use of these facilities, which involves large-scale transportation of people and goods each season, also results in other adverse impacts. A clear example is the introduction of alien species to Antarctica. Worldwide, the introduction and distribution of alien species is one of the main threats for biological diversity. Based on 'sampling, identifying, and mapping the vascular plant propagules carried by all categories of visitors to Antarctica during the International Polar Year's first season (2007–2008)', a research team found that '[v]isitors carrying seeds average 9.5 seeds per person, although as vectors, scientists carry greater propagule loads than tourists.'[17] The researchers also concluded that '[a]lien species

[14] COMNAP, 'Antarctica and the Southern Ocean: Main Antarctic facilities operated by the National Antarctic Programs in the Antarctic Treaty Area', Map, edition 5, 2009, available at www.comnap.aq. For an overview of additional facilities (or plans for such facilities), see Doc. ATCM XXXVII/IP 73, 'New Antarctic stations: Are they justified?', submitted by Antarctic Southern Ocean Coalition (ASOC), 2014, available through www.ats.aq.
[15] T. Tin and R. Summerson, 'Wilderness and Aesthetic Values in Antarctica', map presented by ASOC at the ATCM XXXII (2009), available at www.ats.aq.
[16] K. Bastmeijer and T. Tin, 'Antarctica – A Wilderness Continent for Science: The "Public's Dream" as a Mission Impossible?', in G. Alfredsson and T. Koivurova (eds. in chief) and H.O. Ágústsson (special ed. volume 6), *The Yearbook of Polar Law*, vol. 6 (Boston/Leiden: Brill/Martinus Nijhoff Publishers, 2014), 559.
[17] S.L. Chown, A.H.L. Huiskes, N.J.M. Gremmen, J.E. Lee, A. Terauds, K. Crosbie, Y. Frenot, K.A. Hughes, S. Imura, K. Kiefer, M. Lebouvier, B. Raymond, M. Tsujimoto, C. Ware, B. Van de Vijver, and D.M. Bergstrom,

establishment is currently most likely for the Western Antarctic Peninsula' and showed that '[w]ith climate change, risks will grow in the Antarctic Peninsula, Ross Sea, and East Antarctic coastal regions.'[18]

2.2.2 Antarctic activities of states that are not contracting parties to the Protocol

Non-contracting parties have occasionally been involved in Antarctic activities, but the author is not aware of any example of such an activity that has resulted in harmful impacts.[19] For instance, as stated in relation to the previous category, all research stations in Antarctica belong to states that are contracting parties to the Protocol.[20]

In theory, this category could become more relevant if governments of non-contracting parties to the Protocol were to commence activities that have been prohibited or regulated under the Protocol. For instance, the Protocol prohibits the conduct of mineral resource activities for other than scientific purposes until at least 2048.[21] Depending on various factors, such as the worldwide scarcity of mineral resources and technological developments, states, including non-contracting parties,[22] could become interested in mineral resource exploitation in Antarctica, which would clearly result in a situation that the Protocol aims to prevent. However, in the short term such developments are not likely.

2.2.3 Antarctic activities of private operators

Since the end of the 1980s, Antarctic tourism has grown rapidly. Over this period the number of tourists who have made landings in Antarctica has increased from about 1,000[23] each

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'Continent-wide risk assessment or the establishment of nonindigenous species in Antarctica' (2012) 109 PNAS 4938, at 4938.

[18] Ibid.

[19] An example outside the scope of the Protocol, n. 6, but certainly relevant for the ATS, is illegal, unreported and unregulated fishing, a concern that has received much attention within the framework of the CAMLR Convention, n. 8.

[20] Not all states that operate a station in Antarctica are consultative parties. For instance, the Czech Republic operates Mendel Polar Station (a summer station).

[21] See Articles 7 and 25 of the Protocol, n. 6.

[22] See 'Ukrainian scientists discover more hydrocarbons in western Antarctica', *Kyiv Post*, 26 March 2013.

[23] K. Bastmeijer and R. Roura, 'Regulating Antarctic tourism and the precautionary principle' (Current Development Note) (2004) 98 AJIL 763.

season to almost 37,000 tourists in the 2014-2015 season.[24] Most of the visited sites are located in the Antarctic Peninsula region.

Although multi-year monitoring research in the Antarctic is not well developed, the available research data indicates that there is not much evidence of permanent adverse impacts by tourist activities on Antarctic flora and fauna. In part this is because most tourists have visited the Antarctic by ship and most operators are willing to respect the applicable regulations of the ATCM and the International Association of Antarctic Tour Operators (IAATO). However, if tourist numbers continue to grow in the future, the pressure on the visited sites is likely to increase, and it is uncertain whether the existing instruments – such as site-specific guidelines – will be adequate to prevent cumulative impacts, such as influences on the location of penguin colonies, disturbance of breeding giant petrels or other species, the trampling of fauna, and the introduction of non-native species.

Tourism developments may also increase the 'human footprint' on wilderness values in Antarctica. Apart from tourist numbers, the diversity of tourist activities has also increased substantially since the Protocol was signed in 1991. Today, activities conducted in Antarctica include, among many other types of activities, expeditions with motorised vehicles, air-born expeditions (e.g. using helicopters), fly and sail operations, marathons, mountain climbing, base jumping/skydiving, downhill skiing and snowboarding, skydiving and paragliding, scuba diving, the use of camps and semi-permanent facilities, and activities with an artistic or educational objective.[25] Although the impacts of individual activities may be limited, the cumulative impacts could be significant.

2.2.4 Accumulation of impacts by governmental and non-governmental activities

The categories discussed above are based on a distinction between different groups of actors. However, in practice these various actors are often collectively involved in activities that may cause certain impacts or risks. This certainly applies to the risks of cumulative impacts by visitation of sites with vulnerable flora and fauna and the introduction of alien species. It is

[24] IAATO, 'Antarctic Tourism Fact Sheet 2014-2015', available at https://nsidc.org/noaa/iicwg/docs/IICWG-2014/IAATO_Fact_Sheet_2015.pdf. See for more statistics, http://iaato.org/tourism-statistics.
[25] For an overview of the diversification of tourism in Antarctica, see Doc. ATCM XXXVI/WP 47, 'Report of the Informal Contact Group on the Increasing Diversity of Tourism and other Non-Governmental Activities in Antarctica', submitted by the Netherlands, 2013, available through www.ats.aq.

also true for the impacts on wilderness values due to the establishment of permanent and semi-permanent facilities. For instance, apart from facilities to support scientific research, tour operators have also established semi-permanent facilities (camps) in the Antarctic to support land-based tourism. Examples are the camping facilities at Patriot Hills and the Vinson Massif base camp, as well as 'Union Glacier camp', a 'completely refurbished base camp [that] now offers the height of Antarctic field comforts for up to 80 guests'.[26] The economic interest in establishing new permanent infrastructures for tourism may increase in the future, particularly if land-based tourism and fly-sail tourism continue to grow.

Furthermore, certain governmental and non-governmental activities have become interlinked more directly, particularly over the last decade. Some facilities that were established to support scientific research are increasingly being used for tourism purposes as well. For instance, 'the Uruguayan National Programme transports and accommodates between 20 and 50 paying visitors at their Artigas Station in King George Island to recover some of the station's operating costs'.[27] Based on a questionnaire and the responses of nine consultative parties, the Antarctic and Southern Ocean Coalition (ASOC) concluded in an information paper to ATCM XXXIV in 2012 that 'some Parties have identified two locations where commercial land-based tourism takes place using infrastructure from National Antarctic Programs, which indicates a level of support from those programs: Fildes Peninsula (Teniente R. Marsh Airport) and the blue ice airstrip near Novolazarevskaya Station in Queen Maud Land'.[28] ASOC also reported that at the Fildes Peninsula 'the airstrip is primarily used for landings by the Chilean company *Aerovías DAP*'.[29] This company brings tourists to this part of the Antarctic for fly-cruise expeditions, which involve flying to the Antarctic Peninsula in about two hours, followed by an expedition cruise by ship.[30] This type of activity increased

[26] See 'New blue-ice runway opens in Antarctica', Easier Travel, 3 November 2010, www.easier.com/79811-new-blue-ice-runway-antarctica.html.
[27] K. Bastmeijer, M. Lamers, and J. Harcha, 'Permanent Land-based Facilities for Tourism in Antarctica: The Need for Regulation' (2008) 17 RECIEL 84, Table 2; and 'Visitors Programme to the "Artigas" Antarctic Scientific Base (BCCA)', submitted by the Government of Uruguay (Doc. XXVIII ATCM/IP 56, 2005), available at www.ats.aq.
[28] Antarctic and Southern Ocean Coalition (ASOC), Doc. ATCM XXXIV/IP 87, 'Land based tourism in Antarctica', 2012. See also Doc. ATCM XXXIII/WP 61, 'Queen Maud Land – A new center of non-governmental activity in the Antarctic', Russian Federation, 2010, available at www.ats.aq.
[29] Ibid.
[30] See www.coolantarctica.com/Travel/Fly_to_Antarctica.php.

dramatically since the 2012-13 season, when there were 2,064 tourists, compared to 860 in 2011-12, 531 tourists in 2010-11, and 345 in 2009-10.[31]

To summarise, the most substantial concerns from the perspective of environmental protection in Antarctica derive from cumulative impacts caused by multiple human activities. Gradually, due to the slow but continuous development of human activities, the 'human footprint' in Antarctica is increasing. This particularly results in impacts on the wilderness values of Antarctica. 'Naturalness', including the absence of non-native species and the lack of permanent facilities (roads, buildings, tracks and other permanent proof of modern human society), are internationally recognised as the main qualities of 'wilderness',[32] and it is these qualities in particular that are gradually affected. To a certain extent these cumulative impacts may also be influenced by climate change. For instance, temperature rise in some parts of Antarctica (e.g. the Peninsula) may increase the chances of survival for non-native species.[33]

As these cumulative impacts on Antarctica's wilderness qualities are considered to be far more substantial in comparison to other environmental effects caused by human activities in Antarctica (e.g. direct impacts on flora and fauna or on Antarctic Specially Protected Areas), the discussions below on primary and secondary rules will focus particularly on the relevance of these rules for these cumulative impacts.

3. Primary rules

This section will discuss the general aim of environmental protection (3.1), the concrete obligations of the Protocol on Environmental Protection (section 3.2), and the relevance of the no harm principle for Antarctica (3.3)

[31] IAATO, 'Antarctic Tourism Fact Sheet 2012-2013', available at http://iaato.org. IAATO's Antarctic tourism preliminary estimates for the 2015-16 season indicate that almost 2,300 tourists will take part in air-cruise operations. See IAATO, 'IAATO Overview of Antarctic Tourism: 2013-14, 2014-15 Season and Preliminary Estimates for 2015-16 Season', Information Paper, Doc. XXXVIII ATCM/IP 53, 2015, available at http://iaato.org/current-iaato-information-papers, at 24.

[32] N. Dudley (ed.), *Guidelines for Applying Protected Area Management Categories* (Gland: World Conservation Union/IUCN, 2008). See also C.F. Kormos, *A Handbook on International Wilderness Law and Policy* (Golden: Fulcrum, 2008).

[33] For a recent and 'comprehensive, up-to-date account of how the physical and biological environment of the Antarctic continent and Southern Ocean has changed from Deep Time until the present day' and information on 'how the Antarctic environment may change over the next century', see: J. Turner, R. Bindschadler, P. Convey, G. di Prisco, E. Fahrback, J. Gutt, D. Hodgson, P. Mayewski, and C. Summerhayes (eds.), *Antarctic Climate Change and the Environment*, Scientific Committee on Antarctic Research/Scott Polar Research Institute Cambridge, 2009, available at www.scar.org/scar_media/documents/publications/ACCE_25_Nov_2009.pdf (quotes at i).

3.1 The aim of comprehensive environmental protection

In parallel to safeguarding the peace and freedom of scientific research, the protection of the Antarctic environment constitutes a well-developed third pillar of the ATS. As explained in the introduction to this chapter, the consultative parties have expressed their responsibility (*ex ante*) for environmental protection in Antarctica in many hard law and soft law instruments. When it became clear in 1989 that the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)[34] would not enter into force,[35] an intense debate ensued on the level of ambition that should be aspired to in respect of environmental protection in Antarctica. During this debate the idea of protecting Antarctica as a wilderness received explicit attention.[36] A press release from the Australian government in 1989 made clear that ensuring wilderness protection was an essential motivation for Australia's decision not to ratify the CRAMRA: 'we believe that it is both desirable and possible to seek stronger protection for what remains the world's last great wilderness'.[37] Based on the intensive debate during that time period, the consultative parties agreed in 1989 to

> undertake as a priority objective the further elaboration, maintenance and effective implementation of a comprehensive system for the protection of the Antarctic environment and its dependent and associated ecosystems, aimed at ensuring that human activity does not have adverse impacts on the Antarctic environment or dependent or associated ecosystems or compromise the scientific, aesthetic or wilderness values of Antarctica.[38]

Within two years, the consultative parties agreed upon this comprehensive system by signing the Protocol on Environmental Protection to the Antarctic Treaty in 1991. The level of aspiration was high. The Protocol recalls in the preamble 'the designation of Antarctica as a Special Conservation Area' in 1964, and provides in Article 2 that '[t]he Parties commit themselves to the comprehensive protection of the Antarctic environment and dependent and

[34] Convention for the Regulation of Antarctic Mineral Resource Activities, Wellington, 2 June 1988, not in force, (1988) 27 ILM 859 (CRAMRA).
[35] Australia and France – soon joined by other countries (e.g. Belgium, India, and New Zealand) – decided not to sign and ratify the CRAMRA, ibid. See S.K.N. Blay, 'Current Developments, New Trends in the Protection of the Antarctic Environment: The 1991 Madrid Protocol' (1992) 86 AJIL 377, 378.
[36] For a discussion on the protection of wilderness values in the Polar Regions, see K. Bastmeijer, 'Protecting Polar Wilderness: Just a Western Philosophical Idea or a Useful Concept for Regulating Human Activities in the Polar Regions?', in G. Alfredsson and T. Koivurova (eds. in chief), and D. Leary (special ed. volume 1), *The Yearbook of Polar Law*, vol. 1 (Boston/Leiden: Brill/Martinus Nijhoff Publishers, 2009), 73.
[37] Press Statement, 22 June 1989, quoted by S. Blay and B.M. Tsamenyi, 'Australia and the Convention for the Regulation of Antarctic Mineral Resource Activities (CRAMRA)' (1990) 26 (158) PR 195, 198. See also C. Redgwell, 'Environmental Protection in Antarctica: The 1991 Protocol' (1994) 43 ICLQ 599, at 606, footnote 42.
[38] See also G. Triggs, 'A Comprehensive Environmental Regime for Antarctica', in G.D. Triggs (ed), *The Antarctic Treaty Regime: Law, Environment and Resources* (Cambridge University Press, 1987), 103, 110.

associated ecosystems and … designate Antarctica as a natural reserve, devoted to peace and science.' Building on the earlier instruments discussed above, Article 3(1) of the Protocol provides an overview of all the values that must be taken into account when planning and conducting human activities in the Antarctic. These values explicitly include the wilderness values of Antarctica:

> 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 values as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.

3.2 Concrete obligations under the Protocol

This aim of comprehensive protection of Antarctica, including all the values mentioned in Article 3(1) of the Protocol, is developed in a set of more concrete obligations in the Protocol and its annexes. Some of these obligations explicitly refer to joint Antarctic activities and even promote their conduct. For instance, Article 6 of the Protocol requires the contracting parties to 'co-operate in the planning and conduct of activities in the Antarctic Treaty area' and provides that:

> To this end, each Party shall endeavour to:
> (a) promote co-operative programmes of scientific, technical and educational value, concerning the protection of the Antarctic environment and dependent and associated ecosystems;
> (b) provide appropriate assistance to other Parties in the preparation of environmental impact assessments;
> (c) provide to other Parties upon request information relevant to any potential environmental risk and assistance to minimize the effects of accidents which may damage the Antarctic environment or dependent and associated ecosystems;
> (d) consult with other Parties with regard to the choice of sites for prospective stations and other facilities so as to avoid the cumulative impacts caused by their excessive concentration in any location;
> (e) where appropriate, undertake joint expeditions and share the use of stations and other facilities.

This provision encourages contracting parties to conduct joint activities, which may result in situations of potential cooperative shared responsibility. However, the provisions are also relevant to preventing cumulative impacts (see particularly under subsections (d) and (e)).

Another example of a provision that explicitly refers to joint activities is Article 8(4) of the Protocol, relating to the conduct of environmental impact assessments (EIAs) for such activities: 'Where activities are planned jointly by more than one Party, the Parties involved shall nominate one of their number to coordinate the implementation of the environmental impact assessment procedures set out in Annex I.' Most other obligations do not explicitly refer to joint activities of contracting parties and it must be assumed that these were drafted as obligations of individual states pertaining to individual conduct. For instance, Article 3(2)(b) of the Protocol states that

> activities in the Antarctic Treaty area shall be planned and conducted so as to avoid:
>
> (i) adverse effects on climate or weather patterns;
>
> (ii) significant adverse effects on air or water quality;
>
> (iii) significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments;
>
> (iv) detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora;
>
> (v) further jeopardy to endangered or threatened species or populations of such species; or
>
> (vi) degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance.

Article 3(2)(c), Article 8, and Annex I to the Protocol further require that Antarctic activities are planned and conducted on the basis of prior EIAs. In view of the concerns discussed in subsection 2.2 of this chapter, it is interesting to note that Article 3(2)(c) explicitly requires that 'judgments shall take account of: … (ii) the cumulative impacts of the activity, both by itself and in combination with other activities in the Antarctic Treaty area'.

Article 3(2)(d) of the Protocol also requires that 'regular and effective monitoring shall take place to allow assessment of the impacts of ongoing activities', with special attention given to the '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' (Article 3(2)(e)).

Article 3(4) of the Protocol includes the obligation of contracting parties to ensure that Antarctic activities 'take place in a manner consistent with the principles in this Article; and be modified, suspended or cancelled if they result in or threaten to result in impacts upon the

Antarctic environment or dependent or associated ecosystems inconsistent with those principles'.

Given the formulation of Article 3 and the title of this provision ('environmental principles'), it must be assumed that the values identified therein must be taken into account when implementing the other, more specific provisions of the Protocol.[39] These provisions relate to prior EIAs for proposed Antarctic activities (Article 8 and Annex I), the protection of flora and fauna (Annex II: e.g., a permit requirement for the taking or harmful interference with flora and fauna and the obligation to take measures to prevent the introduction of non-native species and diseases), and waste management provisions (Annex III (on land) and Annex IV (at sea)). Furthermore, Annex V constitutes the bases for designating Antarctic Specially Protected Areas (ASPAs), Antarctic Specially Managed Areas (ASMAs), and historic sites and monuments.[40] Activities in an ASPA are only allowed with a permit, and must be conducted in accordance with the internationally agreed management plan for that ASPA. In general, historic sites and monuments may be visited, but damage to the sites or monuments must be avoided.

The contracting parties to the Protocol have to ensure that the provisions of the Protocol and additional measures that have entered into force are adequately implemented in their domestic legal and administrative systems, and are applied in practice to all Antarctic activities under their jurisdiction.[41] Many of the states parties have developed detailed implementing legislation.

3.3 The no harm principle and Antarctica: a 'shared obligation' to prevent significant harm?

According to the no harm principle, states have a due diligence obligation 'to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction'.[42] The International Court of

[39] K. Bastmeijer, *The Antarctic Environmental Protocol and Its Domestic Legal Implementation* (The Hague: Kluwer Law International, 2003), 179.
[40] For an overview of all ASPAs, ASMAs and Historic Sites that have been established, see the Antarctic Protected Area Database, www.ats.aq/devPH/apa/ep_protected.aspx?lang=e.
[41] See Article 13(1) of the Protocol, n. 6.
[42] Declaration of the United Nations Conference on the Human Environment, Stockholm, 16 June 1972, (1972) 11 ILM 1416 (Stockholm Declaration), Principle 21; and Rio Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, (1992) 31 ILM 874 (Rio Declaration), Principle 2. See among others, P. Birnie, A. Boyle, and C. Redgwell, *International Law & The Environment* (Oxford University Press 2009), 148-150.

Justice has confirmed that this principle is part of customary international law.[43] It is generally accepted that the no harm principle is not an obligation of result, but a due diligence obligation to prevent significant harm.[44] A large part of the literature on the no harm principle focuses on situations of transboundary environmental impacts, in which an activity in a 'state of origin' causes harm to the environment of a neighbouring state. However, the principle as formulated in Principle 21 of the Stockholm Declaration and in Principle 2 of the Rio Declaration also applies to damage caused to areas beyond national jurisdiction.[45]

Applying the due diligence principle to Antarctica requires an interpretation of the element of 'jurisdiction and control' in the Antarctic context. In the absence of recognition of sovereignty in Antarctica, many questions relating to jurisdiction over persons in Antarctica have been left open by the ATS instruments. Article VII(5)(a) of the Antarctic Treaty obliges each contracting party to the Treaty to give the other contracting parties advance notice of 'all expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions organised in or proceeding from its territory'. Although this is 'just' a reporting provision, several key obligations of the Protocol discussed above include an explicit reference to Article VII(5) of the Treaty. For example, Article 8(2) of the Protocol, relating to EIAs, provides:

> Each Party shall ensure that the assessment procedures set out in Annex I are applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities.

Other provisions of the Protocol, such as Article 3 on environmental principles, the provisions on emergency response action,[46] and the provisions on waste management,[47] include similar references to Article VII(5) of the Antarctic Treaty. As discussed more comprehensively by the author in an earlier publication,[48] this indicates that each contracting party should apply its

[43] See e.g. *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, ICJ Reports 1997, 7, at 41; and *Pulp Mills on the River Uruguay (Argentina* v. *Uruguay)*, Judgment, ICJ Reports 2010, 14, at para. 193. See earlier as part of an Advisory Opinion, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, ICJ Reports 1996, 226, at 241-242, para. 29.
[44] Birnie, Boyle, and Redgwell, *International Law & The Environment*, n. 42, 148-150.
[45] See e.g. T. Koivurova, 'Environmental Protection in the Arctic and Antarctica', in N. Loukacheva, *Polar Law Textbook* (Copenhagen: Nordic Council of Ministers, 2010), 23, 27. Stockholm Declaration, n. 42; Rio Declaration, n. 42.
[46] See Article 15(1)(a) of the Protocol, n. 6.
[47] See Article 1 of Annex III to the Protocol, n. 6.
[48] Bastmeijer, *The Antarctic Environmental Protocol and Its Domestic Legal Implementation*, n. 39.

domestic laws and administrative implementation practices to all categories of expeditions listed in Article VII(5):[49]

- expeditions organised in its territory;
- expeditions to and within Antarctica organised by its nationals;
- expeditions to and within Antarctica, on the part of its ships, and
- expeditions proceeding from its territory.

Quite remarkably, this position is not much debated at the ATCM or in the literature, possibly because of its far-reaching consequences. Bush pays attention to this issue, but is careful in his wording:

> Under the environmental regime of the Protocol, the Consultative Parties showed some willingness to agree about the exercise of jurisdiction on 'all expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions to Antarctica organized in or proceeding from its territory', as mentioned in the Antarctic Treaty, Article VII(5)(a).[50]

Moreover, apart from the explicit reference to Article VII(5)(a) in the relevant provisions of the Protocol, there is another strong argument for the interpretation that each contracting party should take legal and administrative measures in relation to all categories of activities that are mentioned in that Article. Article X of the Antarctic Treaty states that '[e]ach of the Contracting Parties undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles or purposes of the present Treaty.' According to Charney, 'the Article functions as a commitment by the States parties to promote the norms found in the Treaty within the international community by all appropriate means – political and legal'.[51] Indeed, in many recommendations that have been adopted since the entering into force of the Treaty in 1961, the consultative parties have acknowledged their special responsibility for managing human activities in the Antarctic Treaty area. For example, the preamble of Recommendation VIII-13 provides 'that prime responsibility for Antarctic matters, including protection of the Antarctic

[49] W. Bush, 'Means and Methods of Implementation of Antarctic Environmental Regimes and National Environmental Instruments: An Exercise in Comparison', in D. Vidas (ed.), *Implementing the Environmental Protection Regime for the Antarctic* (Dordrecht: Kluwer Academic Publishers, 2000), 21, 28. Bush suggests that 'a reason for making the reference may have been to confine the obligation under art. 3(4) and other paragraphs where the phrase appears to those where a party to the protocol stood in a particular relationship to the activity concerned'. The author states that: 'In this way the reference to art. VII(5) would supplement the vague jurisdictional rules addressed in art. 13 infra on compliance.'

[50] Ibid, 40.

[51] J.I. Charney, 'The Antarctic System and Customary International Law', in F. Francioni and T. Scovazzi (eds.), *International Law for Antarctica*, 2nd edn (The Hague: Kluwer Law International, 1996), 51, 83.

environment, lies with the States active in the area which are parties to the Antarctic Treaty'. This special responsibility regarding all activities in Antarctica has also been emphasised in other recommendations,[52] in the preamble of the Protocol, and in Article 13(2) of the Protocol: 'Each Party shall exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity contrary to this Protocol.' Richardson explains: 'In negotiating comprehensive measures for the protection of the Antarctic environment the clear intent of the Antarctic Treaty parties had been that all who undertake activities in the Antarctic Treaty area should do so with full regard for the standards of the Protocol.'[53]

Assuming that the Antarctic Treaty and the Protocol are not part of an objective regime that also binds non-contracting parties,[54] a broad jurisdictional scope of application of the domestic legislation of all contracting parties is essential for the effective implementation of the lofty goals of Article X of the Treaty and Article 13(2) of the Protocol. In other words, the contracting parties can only be successful in 'closing the net' in accordance with these Articles if all parties apply their legislation to all expeditions identified in Article VII(5)(a) of the Treaty.[55] This is particularly true in light of the substantial increase in non-governmental activities in Antarctica since the Protocol was signed in 1991.

Following this reasoning regarding jurisdictional issues in the ATS as a clarification of the phrase 'activities within their jurisdiction or control' of the no harm principle, the due diligence obligation of each state that is a contracting party to the Treaty and the Protocol would relate to all categories of expeditions mentioned in Article VII(5)(a) of the Treaty. Furthermore, in view of the aim laid down in Article X of the Treaty and Article 13(2) of the Protocol, one might even argue that the contracting parties have – to a certain extent – agreed to cooperate in the exercise of their jurisdiction and control, and thereby to conduct 'joint

[52] See also Recommendation IX-5: 'The Consultative Parties recognize their prime responsibility for the protection of the Antarctic environment from all forms of harmful human interference.' See also Recommendation XV-1, available at www.ats.aq. Comparable phrases are also included in the CAMLR, n. 8, and the CRAMRA, n. 34.

[53] M.G. Richardson, 'Regulating Tourism in the Antarctic: Issues of Environment and Jurisdiction', in D. Vidas (ed.), *Implementing the Environmental Protection Regime for the Antarctic* (Dordrecht: Kluwer Academic Publishers, 2000), 71, 82.

[54] See, among various other authors, B.A. Boczek, 'The Legal Status of Visitors, Including Tourists, and Non-Governmental Expeditions in Antarctica', in R. Wolfrum (ed.), *Antarctic Challenge III, proceedings of an Interdisciplinary Symposium*, 7 - 12 July 1987 (Berlin: Duncker & Humblot, 1988), 455, 466. For a contrasting view, see R.D. Hayton, 'The Antarctic Settlement of 1959' (1960) 54 AJIL 349, 366.

[55] This reasoning could be criticised by pointing at the overlapping jurisdictional scopes of domestic laws; however, this problem is well known to the contracting parties and many domestic laws include the option to exempt an activity from the law if this activity is (adequately) regulated by another contracting party.

jurisdiction or control' over activities in Antarctica. If one connects this ambition to the no harm principle, one could argue that the contracting parties are also subjected to a 'shared due diligence obligation' to prevent significant harm in Antarctica.

4. The problem of determining responsibility for cumulative impacts

The discussions above provide arguments for the view that the developments in practice, particularly the cumulative impacts caused by multiple governmental and private actors on Antarctica's wilderness values, contrast with the ambitious principles and obligations as accepted by the consultative parties. Whether this contrast may also result in 'shared' *ex post facto* state responsibility of the consultative parties will be discussed below. After a brief discussion of the liability annex (Annex VI) to the Protocol, we will take a closer look at possible *ex post facto* shared responsibility under general international law. This discussion is based on the assumption that Annex VI may not be considered as a 'self-contained regime' ('autonomous systems decoupled from general international law').[56] Consequently, after the entering into force of Annex VI, the general rules on state responsibility will continue to apply in the Antarctic, complementary to these special secondary rules of Annex VI.[57]

4.1 Special secondary rules: Annex VI

Article 16 of the Protocol states that '[c]onsistent with the objectives of this Protocol for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems, the Parties undertake to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by this Protocol.' The wording of this Article makes clear that the consultative parties considered special liability rules necessary for achieving the objectives of the Protocol as discussed in

[56] B. Simma and D. Pulkowski, 'Of Planets and the Universe: Self-Contained Regimes in International Law' (2006) 17 EJIL 483, 485.

[57] Based on ibid., 488-489, it could be argued that Annex VI cannot be considered as a *lex specialis* because Annex VI and state responsibility do not relate to the same subject matter: state responsibility relates to 'the consequences of breach' of international obligations, while Annex VI relates to the consequences of damage resulting from emergencies; however, this may be the subject of a longer debate, as there clearly is overlap.

section 3.[58] Informal negotiations started in 1992 and after thirteen years, Annex VI was adopted as 'a step in the establishment of a liability regime in accordance with Article 16 of the Protocol'.[59]

The scope of this Annex has substantial limitations.[60] It is limited to damage and related risks arising from emergencies only. Furthermore, requirements to ensure compensation or restoration of damage to the Antarctic environment beyond the level of response measures are not included. Because several consultative parties had aimed for a more comprehensive set of liability rules, it was agreed that the Annex should be considered as a first step.[61]

The Annex obliges each contracting party to 'require its operators to undertake reasonable preventative measures that are designed to reduce the risk of environmental emergencies and their potential adverse impact' (Article 3(1) of Annex VI), and to require them to 'establish contingency plans for responses to incidents' (Article 4(1)(a) of Annex VI). In case these requirements cannot prevent an emergency, the Annex obliges each party to require 'each of its operators to take prompt and effective response action to environmental emergencies arising from the activities of that operator' (Article 5(1) of Annex VI). 'In the event that an operator does not take prompt and effective response action, the Party of that operator and other Parties are encouraged to take such action' (Article 5(2) of Annex VI), and in relation to such response actions, additional regulations on prior notification, consultation and co-operation apply. For the costs involved in these response actions, the operator that has failed to take the required response action will be strictly liable (Article 6(1) of Annex VI), except in situations where exemptions or limitations apply (Articles 8 and 9 of Annex VI).

It is relevant for the theme of this volume that the Annex applies to non-state operators as well as to state operators in Antarctica (a mixed regime). This is consistent with the Protocol and

[58] See R. Lefeber, 'The Legal Need for an Antarctic Environmental Liability Regime, in D. Vidas (ed.), *Implementing the Environmental Protection Regime for the Antarctic* (Dordrecht: Kluwer Academic Publishers, 2000), 181, 184.
[59] Annex VI, n. 10, preamble. See also Decision 1 (2005), 'Annex VI (liability)', available through www.ats.aq.
[60] On these limitations, see also R. Wolfrum, 'Liability for Environmental Damage in Antarctica: Supplement to the Rules on State Responsibility or a Lost Opportunity?', in I. Buffard, J. Crawford, A. Pellet, and S. Wittich (eds.), *International Law between Universalism and Fragmentation: Festschrift in Honour of Gerhard Hafner* (Leiden: Brill/Martinus Nijhoff Publishers, 2008), 817, 820.
[61] See Paragraph 126 of the Final Report of ATCM XXVIII (2005) that reflects 'the view of several delegations that the draft Annex did not completely discharge the obligations under Article 16 of the Protocol' (available at www.ats.aq).

the other Annexes, which also apply to both categories.[62] As far as the issue of attribution is concerned, Article 10 of Annex VI makes clear that

> [a] Party shall not be liable for the failure of an operator, other than its State operators, to take response action to the extent that that Party took appropriate measures within its competence, including the adoption of laws and regulations, administrative actions and enforcement measures, to ensure compliance with this Annex.

This provision conforms to the general rules on state responsibility. During the negotiations, this text was included as an alternative to a draft provision that formulated a much broader responsibility of contracting parties for damage caused by the activities of their private operators.[63]

The Annex does not pay explicit attention to shared responsibility of states. However, significantly, it does provide expressly for shared liability of operators, which include state operators. Article 6(4) of Annex VI provides that liability of operators for response costs will be 'joint and several … [w]hen an environmental emergency arises from the activities of two or more operators'. This is not an unusual provision in a liability regime.[64] However, this provision – as well as the other provisions of Annex VI – will not apply to the concerns of cumulative wilderness impacts discussed in section 2.2, as these concerns (at least for the largest part) will not fall within the definition of 'environmental emergency' ('any accidental event').[65]

4.2 General international law on state responsibility: ex post facto shared responsibility for cumulative impacts?

The general principles of responsibility as formulated by the International Law Commission would seem to be normally applicable to the possibility of state responsibility in relation to environmental harm on Antarctica, though the question of invocation may lead to particular problems. This section will leave these problems aside and focus on a few questions

[62] During the negotiations of the Protocol this was explicitly discussed, and Working Group II 'agreed that the provisions of the Environmental Protocol and its Annexes would apply equally to Governmental and non-governmental activities'. See the Final Report of the XIth Special ATCM (report working group II), Madrid, Spain, 1991, at 23, available at www.ats.aq.
[63] Personal communication with René Lefeber, who was a member of the delegation of the Netherlands involved in the negotiations for Annex VI.
[64] See Wolfrum, 'Liability for Environmental Damage in Antarctica', n. 60.
[65] Article 2(b), Annex VI, n. 10.

pertaining to the interface between the nature and content of primary obligations and responsibility that are relevant to the possibility of shared responsibility in relation to Antarctica.

4.2.1 Lawfulness of activities that cause cumulative impacts

The search for an answer to the question of whether shared responsibility may be established for the causing of cumulative impacts on Antarctica's wilderness should start with identifying the possible wrongful act.[66] One line of reasoning could be that states are cumulatively responsible[67] for conducting and/or authorising 'wrongful activities'. These activities would then be considered wrongful because they all contribute to impacts that the Protocol aims to prevent. This reasoning is weak, as many (probably even most) single activities are lawful and conducted under existing ATS instruments and domestic implementing laws and practices. In relation to scientific research activities it may even be advocated that these activities are important for strengthening another pillar of the ATS: 'It is not forbidden to go to Antarctica to do scientific research. On the contrary, in numerous provisions scientific research is granted privileges by the Antarctic Treaty System.'[68] Vöneky refers to Francioni, who has stated that 'most environmental damage is caused by lawful acts that have had adverse effects on the environment'.[69]

Here we touch upon the central problem of cumulative impacts of human activities. Even if contracting parties to the Protocol have implemented the Protocol in good faith, and private and governmental operators respect all applicable regulations, the overall cumulative adverse effects on protected Antarctic values may still be significant. Consequently, in discussing shared responsibility in relation to the cumulative impacts described in section 2.2, it is necessary to focus on the lawfulness of the harm that is caused, and not on the question of whether the activities are lawful. As Voigt states in relation to climate change damage in light

[66] The distinction of various types of reasoning builds on Voigt, 'State Responsibility for Climate Change Damages', n. 11, at 4.
[67] For a further explanation of the terminology of cumulative and cooperative shared responsibility, see Nollkaemper and Jacobs, 'Shared Responsibility in International Law', n. 7, at 368-369.
[68] S. Vöneky, 'The Liability Annex to the Protocol on Environmental Protection to the Antarctic Treaty', in D. König, P.-T. Stoll, V. Röben, and N. Matz-Lück (eds.), *International Law Today: New Challenges and the Need for Reform? Beiträge zum ausländischen öffentlichen Recht und Völkerrecht*, vol. 193 (Berlin/Heidelberg/New York: Springer, 2008), 165, 176-177.
[69] F. Francioni, 'Liability For Damage to the Common Environment: The Case of Antarctica' (1994) 3 RECIEL 223, at 223.

of the no harm principle: 'The fact that polluting activity was not prohibited domestically is irrelevant in this context as it is the causation of harm that is prohibited, not the polluting activity.'[70] This requires a more comprehensive discussion of the question of the extent to which the cumulative wilderness impacts described in section 2.2 should be considered as damage or harm that goes beyond certain 'thresholds' laid down in the primary rules described in section 3.

4.2.2 Lawfulness of the cumulative harm: the lack of clear thresholds in the Protocol

The wording of the most relevant primary rules, particularly Article 3 of the Protocol, is quite vague. The parties have committed themselves 'to the comprehensive protection of the Antarctic environment'; that Antarctica has been designated as a 'natural reserve, devoted to peace and science' (Article 2); and that 'the protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness … shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area' (Article 3(1)). However, what level of cumulative impacts on such values should be prevented? Manzoni states that '[u]nlimited access to a reserve … constitutes a contradiction in terms',[71] but what is the more exact 'threshold' above which cumulative environmental impacts must be considered a 'breach' of Article 3?

For certain cumulative impacts, Article 3(2)(b) of the Protocol provides more concrete guidance. For instance, the obligation to ensure that 'activities in the Antarctic Treaty area shall be planned and conducted so as to avoid … (iv) detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora' and to avoid '(v) further jeopardy to endangered or threatened species or populations of such species' sets a more concrete threshold for the (risks of) introduction of non-native species in Antarctica. Also, the requirement of subsection 3(2)(b)(vi) to avoid 'degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance' is relevant for the discussion on cumulative impacts. Still, these provisions mean that it is not

[70] Voigt, 'State Responsibility for Climate Change Damages', n. 11, at 15.
[71] See M. Manzoni, 'Environmental Hazards in Antarctica and Man's Impacts on the Antarctic Environment', in F. Francioni (ed.), *International Environmental Law for Antarctica* (Milan: Giuffrè, 1992), 53, at 88: 'Possibly, some discrimination might be introduced with regard to the different rationales for human presence in Antarctica, for example, by differentiating between performing essential scientific tasks, or carrying out activities of an optional nature such as tourism.'

an easy task to establish *ex post facto* state responsibility *strictu sensu* for the contribution of an activity to the cumulative impacts, particularly because the 'thresholds' of acceptable impacts are not clearly formulated. Furthermore, most of these provisions appear to apply to individual contracting parties. As discussed in subsection 3.2 of this chapter, only a few provisions of the Protocol require contracting parties to collaborate to prevent cumulative impacts.[72] However, these provisions are also formulated as obligations of conduct, while again the threshold of acceptable cumulative impacts is vague.

4.3 The collective failure to prevent significant cumulative impacts

The discussion in subsection 4.1 above makes clear that the special secondary rules of Annex VI to the Protocol do not allow us to establish state responsibility (individual or shared) for the cumulative impacts discussed in subsection 2.2. The scope of Annex VI is limited to environmental emergencies, while the cumulative impacts are mainly caused by 'lawful' activities. The discussion in subsection 4.2 shows that establishing a wrongful act in relation to the cumulative impacts under general rules of state responsibility is also difficult. Nonetheless, it is likely that the cumulative impacts described in subsection 2.2 will continue to increase and although exact thresholds are not set, it is obvious that at a certain point in time these impacts will be contrary to the environmental principles of Article 3, as well as the commitment of the contracting parties 'to the comprehensive protection of the Antarctic environment' and the designation of 'Antarctica as a natural reserve, devoted to peace and science' (Article 2 of the Protocol). This continuing increase of cumulative impacts will also limit the options of future generations to value and enjoy the wilderness values of Antarctica. This all implies, at least, an obligation of the consultative parties to take joint action to prevent this continuing process of causing cumulative impacts.

The ATS reveals some significant weaknesses on this point. Overall, the consultative parties appear to be willing to ensure adequate implementation of the Protocol and other requirements (e.g. EIAs, permits for entering ASPAs, waste management, etc.). However, most of the efforts relate to the conduct of individual activities and managing their effects. A more proactive and strategic collective approach that addresses the concerns in relation to cumulative impacts in Antarctica is still lacking in many respects.

[72] See in particular Article 6(1)(d) and (e) of the Protocol, n. 6.

For instance, the ATCM has regularly discussed the concern of the increasing number of research stations. In 1989, the ATCM adopted Recommendation XV-17, recommending the governments of the consultative parties 'to take … measures to avoid excessive concentration in Antarctica of such stations or facilities'. However, these measures related only to 'consultations, co-ordination and possible cooperation'.[73] Article 6 of the Protocol requires the contracting parties to 'consult with other Parties with regard to the choice of sites for prospective stations and other facilities so as to avoid the cumulative impacts caused by their excessive concentration in any location' and 'where appropriate, undertake joint expeditions and share the use of stations and other facilities'.[74] In line with this provision, several stations have been presented as 'international research stations', open to researchers from other states. However, in reality states have reasons for establishing or rebuilding their 'own' station (e.g. to strengthen an application for consultative status under Article IX(2) of the Treaty; to ensure an annual budget for polar research programmes; to emphasise their position as claimant state in the Antarctic, etc.).[75] As explained by Karen Scott, 'all consultative parties to a greater or lesser extent support national science programmes in order to maintain political influence within the regime'.[76] Although discussions on draft comprehensive environmental evaluations for new stations in the CEP provide opportunities to question the need for additional infrastructure in Antarctica, the decision to proceed is left to the individual state governments.[77] The ATCM has not adopted a legally binding measure or soft law instrument to prevent the establishment of unnecessary science infrastructure or the duplication of scientific research.[78]

A similar conclusion must be drawn in respect of the question of whether permanent facilities for tourism (e.g. hotels or visitor centres) should become the subject of additional ATS

[73] Recommendation ATCM XV-17, 'Establishing of new stations', Paris, 1989, available at www.ats.aq.
[74] Article 6(1)(d) and (e) of the Protocol, n. 6.
[75] For a discussion on the interrelations between science and politics, see K.N. Scott, 'Scientific rhetoric and Antarctic Security', in A.D. Hemmings, D.R. Rothwell, and K.N. Scott (eds.), *Antarctic Security in the Twenty-First Century Legal and Policy Perspectives* (London: Routledge, 2013), 284.
[76] Ibid., 292.
[77] Ibid., 303. See also K. Bastmeijer and R. Roura, 'Environmental Impact Assessment in Antarctica', in K. Bastmeijer and T. Koivurova (eds.), *Theory and Practice of Transboundary Environmental Impact Assessment* (Boston/Leiden: Martinus Nijhoff Publishers, 2008), 175.
[78] See also Scott, 'Scientific rhetoric and Antarctic Security', n. 75, at 304: 'the ATS as yet provides no tools to facilitate and promote a more strategic approach to planning scientific – and other – activities taking place within the Antarctic Treaty area'.

regulation. This issue was discussed at the ATCM for several years, but no consensus could be reached.[79]

Furthermore, the ATCM has invested little time in discussing the desirability of a policy on open or closed areas for Antarctic tourism. Already in 1990, during the Chile session of the XIth Special ATCM, Working Group II 'considered the possibility of establishing duly monitored special tourist interest areas, in order to determine the impact of human presence on the environment and its feasibility as a management scheme'.[80] At some more recent ATCMs, this proposal was tabled again, but it received very little attention and no decisions were taken.

The diversification of tourism and other non-governmental activities in Antarctica and related concerns have been discussed regularly. The consultative parties have also reached no common view on the need to adopt a strategic approach in respect of these issues. Should the consultative parties – in view of the natural reserve status of Antarctica, the objectives of the Protocol, and the values of Article 3(1) – adopt a collective vision or legal instruments with regard to certain types of activities in Antarctica (such as the use of motorised vehicles for tourism, helicopter excursions, large-scale sport events, fly-sail operations, etc.)? The ATCM has not yet answered this question.[81]

A final example relates to the question of whether measures should be taken to avoid human visitation of 'new' pristine areas in Antarctica that will become accessible due to climate change or technological developments. This question is also still waiting for an answer from the ATCM.

Without a more strategic approach towards these and other policy issues, the consultative parties are not ensuring an effective joint response to the current developments and the increasing cumulative impacts discussed in this chapter. This lack of joint action constitutes a strong argument for collective shared responsibility of the consultative parties.

[79] See R. Wolfrum, S. Vöneky, and J. Friedrich, 'The Admissibility of Land-Based Tourism in Antarctica under International Law', Information Paper, Doc. XXVIII ATCM/IP 20, tabled by the Government of Germany, 2005, available at www.ats.aq; and K. Bastmeijer, M. Lamers and J. Harcha, 'Permanent Land-based Facilities for Tourism in Antarctica: The Need for Regulation' (2008) 17 RECIEL 84.
[80] See the Final Report of the XIth Special ATCM (report working group II), Madrid, Spain, 1991, available at www.ats.aq.
[81] See Doc. ATCM XXXVI/WP 47, n. 25.

5. Conclusions

There have been no concrete court cases and there are no current legal disputes involving state responsibility that directly relate to discussions on breaches of the legal obligations under the Antarctic Treaty System. However, the continuing process of causing long-term or even permanent impacts on Antarctica's wilderness qualities particularly justifies a discussion on (potential) *ex post facto* shared responsibility of the consultative parties to the Antarctic Treaty. Similar to the concerns of global climate change, biodiversity loss and marine litter, the problem of wilderness loss is caused by the accumulation of adverse impacts by many single activities. The increasing number of research stations and related logistic support activities, the increasing number of tourists visiting Antarctica, the diversification of Antarctic activities, and the increase of visits to new pristine areas are among the most important developments that are increasing the 'human footprint' in Antarctica.

These developments clearly conflict with the nature reserve status of Antarctica, the Protocol's objective of comprehensive environmental protection, the legal status of wilderness values in Article 3 of the Protocol, some of the more specific provisions of the Protocol (e.g. Article 3(2)(b)), as well as with the ambitious *ex ante facto* shared responsibility that the consultative parties have explicitly accepted in the interests of mankind. However, establishing a wrongful act on the basis of these provisions is problematic, as most individual activities are conducted in conformity with the Protocol, and a clear threshold for determining the watershed between acceptable and unacceptable cumulative impacts is lacking. Consequently, it is difficult to advocate 'cumulative shared responsibility' based on the argument that each contribution constitutes a breach of the obligations under the Treaty and/or the Protocol.

Nonetheless, this chapter argues that the slow but continuing process of causing long-lasting or even permanent impacts on the Antarctic wilderness (see section 2.2) is likely to result in harmful impacts that the Protocol aims to prevent, as well as substantially limiting the options for future generations to value and enjoy Antarctica as a wilderness. Accepting that impacts that are 'unfair to future generations' qualify as 'significant', the process of wilderness decrease as described must be considered to be above the threshold of the no harm principle.

Recognising the importance of conducting scientific research in Antarctica, and also in the interests of future generations of humankind, it cannot be argued convincingly that the

consultative parties are exercising sufficient due diligence to prevent these relevant impacts. Almost one hundred per cent of the activities that contribute to the cumulative impacts described in section 2.2 fall under the jurisdiction or control of the contracting parties to the Treaty and the Protocol. However, no pro-active and strategic collective approach has been taken towards the various relevant causes of the cumulative wilderness impacts. Among the topics that have been discussed at previous ATCMs are the number of research stations, effective collaboration between national science programmes, concerns in respect of increasing visitor numbers, the desirability of adopting an area approach, the increase in land-based tourist activities and other 'new' types of activities, the increased use of scientific infrastructure for tourism, and the possible expansion of visitation to new pristine Antarctic sites, but these issues have not become the subject of preventative measures. Some consultative parties appear to be reluctant to adopt policy and additional legal or soft law measures to proactively address cumulative wilderness impacts. Without a more strategic approach, the consultative parties do not have an effective response to the related developments and the cumulative impacts discussed in this chapter.

This provides a strong argument for the view that the consultative parties are failing to take sufficient collective action to prevent significant harm to the environment of an area beyond the limits of national jurisdiction, which presents a possible example of 'collective shared responsibility' of states.