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Negotiation, adoption and domestic implementation of the annex on liability to the Protocol on Environmental Protection to the Antarctic Treaty

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Abstract: Rules on liability are essential to ensuring the enforcement of an international agreement. The Antarctic Treaty Consultative Meeting's adoption of Measure 1 (2005), which contains Annex VI to the Protocol on Environmental Protection, is the first step towards complying with Article 16 of the Environmental Protocol on Liability. However, the approval process has been slow, and Measure 1 (2005) is still not in force. Here, we show a need for more momentum in its approval and that its domestic implementation varies significantly. Only 19 states have approved Measure 1 (2005) out of the 28 Consultative Parties required to enter into force. Ten have incorporated national provisions anticipating its entry into force. Our study suggests that the perceived inadequacy of Annex VI, the cost of response actions to environmental emergencies and the misplaced importance of Antarctic matters within many states' priorities contribute to the slow approval process. This analysis provides insights into the Antarctic Treaty System's governance mechanisms, particularly the liability regime and its implementation. The domestic legislation related to Antarctic liability is also analysed. This paper aims to explain the cumbersome approval process of Annex VI and to serve as a cautionary tale for future liability developments.

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Key words: Antarctica, domestic implementation of international standards, domestic law about Antarctica, environmental emergency, environmental liability, Environmental Protocol

Introduction

The Antarctic Treaty[1] ('the Treaty') and its Protocol on Environmental Protection[2] ('the Environmental Protocol') are essential milestones in the historical and legal development of Antarctic governance. They represent the evolution from geostrategic interests of demilitarization and peaceful use to regulated exploitation of resources that conclude with the protection of the ecosystem as a priority of the Antarctic Treaty System (ATS) (Ferrada 2012, 2014). The Environmental Protocol's general provisions are detailed in six annexes. Those concerning environmental impact assessment, conservation of fauna and flora, waste disposal and management and prevention of marine pollution entered into force in 1998 at the same time as the Environmental Protocol. The area protection and management annex was agreed to in 1991 but entered into force in 2002.

Article 16 of the Environmental Protocol states the Parties' compromise to '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', which are to be adopted through another annex. Annex VI on liability arising from environmental emergencies was negotiated between 1991 and 2005. Nineteen years after its adoption through Measure 1 (2005), Annex VI has not yet come into force (Secretariat of the Antarctic Treaty n.d.a).

The reasons for this failure to come into force probably lie in the disagreements expressed during its lengthy negotiation and the dissatisfaction of many parties with the resulting text agreed upon. Under the provisions of Article XI of the Antarctic Treaty, Measure 1 (2005) needs the approval of all 28 Consultative Parties whose representatives were entitled to participate in the XXVIII Antarctic Treaty Consultative Meeting (ATCM) (Stockholm, 2005) to become effective. However, as of May 2024, after almost two decades, only 19 states that were Antarctic Treaty Consultative Parties in 2005 and

[1] Adopted in Washington, DC, 1 December 1959. Entered into force 23 June 1961. Text in: 402 UNTS 71.
[2] Adopted in Madrid, 4 October 1991. Entered into force 14 January 1998. Text in: 2941 UNTS 9.

two other states that are not considered for its entry into force have approved it.[3] Ten of these states have issued internal legal rules to implement Annex VI. Six states already have domestic regulations in force, although the international agreement they implement is not yet mandatory. Another state is a hybrid case; Annex VI has not been nationally implemented, but another domestic regulation considers similar prescriptions to those in the Annex.

This article explores the development and domestic implementation of Annex VI to the Environmental Protocol on Liability. It utilizes information from the Antarctic Treaty Secretariat, official records of states that approved Annex VI and the relevant bibliography. The analysis provides a general overview of Annex VI's agreement and implementation process. While the paper reviews domestic laws of different jurisdictions, it is not a proper comparative law study. General features of the legal rules laid down by individual states are analysed in parallel. However, this paper does not pretend to fully understand their national legal systems, which are often heterogeneous. A comparative law study should consider their written regulations, jurisprudence and doctrine, the historical and sociological reasons for their diversity and how they work in practice (Zweigert & Kötz 1998, pp. 32–47). Such a broad analysis is outside the scope of this article, whose primary objective is to understand the legal framework and implementation of environmental liability measures related to the Antarctic Treaty and its Protocol on Environmental Protection. The article contributes to the academic discourse by offering a comprehensive analysis of the approval and implementation of Measure 1 (2005) and Annex VI. It delves into the negotiation and adoption processes and discusses critical political and legal concerns. The scope includes international law and domestic legislation about Antarctic liability.

Development and implementation of the liability regime in the Environmental Protocol to the Antarctic Treaty

From its mandate to implementation: the Antarctic liability regime

Despite the importance of the liability rules as instruments for fulfilling environmental duties, the Environmental Protocol did not include any substantive regulation in this regard (Sinha 2008, p. 216). It was impossible to agree on that issue during the Protocol's negotiation; instead, the Parties reached a formal compromise, reflected in Article 16, to negotiate in the future an environmental liability regime (Johnson 2006, p. 35). Although it could be considered a weak arrangement, this is one of the few international legal agreements that provide for the remediation of environmental damage (Vigni 2006, p. 217, Mariño 2013, p. 791).

Nevertheless, some authors have criticized the decision taken in 1991 through Article 16 because states would use it to avoid assuming an effective environmental liability regime (Francioni 1996, pp. 581–582). More than three decades after the Protocol's adoption, there is still no liability regime in force, so this criticism seems to have some basis. It is crucial to underscore that Article 16 creates an international obligation for states. During the time when he acted as one of the Annex's negotiators, Lefeber (2000a, pp. 182–183) highlighted that 'from a legal point of view, one can therefore no longer question the need to develop a special liability regimen'. Even if the Protocol's rules could be considered procedural ones, he continues, 'it nevertheless remains *binding* for the parties […]. However, Article 16 is not an obligation of result, but an obligation of conduct.' That means the Parties must adopt a particular course of conduct and cooperate in good faith to develop an Antarctic environmental liability regime. They are not forced to reach the desired end but only to engage in good-faith negotiations. Even so, a state's failure to comply with both types of obligations gives rise to international responsibility (Wolfrum 2011).

Article 16 of the Environmental Protocol expresses the commitment of its Parties to 'elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area'; that is, south of 60°S latitude. The article goes on to state that it refers to the activities 'covered by this Protocol', which is important considering that several activities are not under its environmental protection scope (i.e. high seas navigation, sealing, fishing or whaling; Ferrada 2018, 2022). These liability provisions would be included in one or more annexes *adopted* in an ATCM, which, in turn, would enter into force when *approved* by all the states entitled to participate in the meeting where it was adopted. This approval entails a formal act, equivalent to ratification, setting forth the state's consent to be bound by such an annex or annexes (Article 2(b) of the Vienna Convention on the Law of Treaties 1969). When the Environmental Protocol was adopted in the final session of the XI-4 Special ATCM (Madrid, 1991), the need to start discussions promptly in this respect was raised by some participants. Although the Environmental Protocol entered into force in 1998, the liability regime was thoroughly discussed from 1991 to 2005.

The negotiations were extremely tough, and the scope of the liability regime suffered significant changes

[3]Consultative Parties (2005): Australia, Chile, Ecuador, Finland, France, Germany, Italy, the Netherlands, New Zealand, Norway, Peru, Poland, the Russian Federation, South Africa, Spain, Sweden, Ukraine, the UK and Uruguay. Other Consultative Party: Czechia. Non-Consultative Party: Colombia.

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Table I. States that have approved Measure 1 (2005) and domestic regulations that implement it (by date).

No.	Country	Approval	Domestic regulation	Enactment	Took effect
1	Sweden	8 June 2006	Antarctic Act (2006: 924), Antarctic Ordinance (2006: 1111)	2006	1 October 2006
2	Peru	10 July 2007	-	-	-
3	Spain	17 December 2008	-	-	-
4	Poland	15 January 2009	-	-	-
5	Finland	14 December 2010	Law 1020/2010 (amending Law 28/1998)	2010	1 January 2011
6	Italy	12 October 2011	-	-	-
7	UK	18 April 2013	Antarctic Law 2013	2013	Suspended
8	Russian Federation	25 April 2013	Federal Law N° 50 (2012)	2012	1 January 2013
9	Norway	24 May 2013	Royal Decree of 26 April 2013	2013	26 April 2013
10	New Zealand	31 May 2013	Reform Act N° 95 (modification of Antarctica Environmental Protection Act of 1994)	2012	Suspended
11	South Africa	12 November 2013	Antarctic Treaties Regulations, 2021 (N° 1751) (complementing the Antarctic Treaties Act, 1996, Act No. 60 of 1996)	2022	11 February 2022
12	The Netherlands	28 April 2014	Act of 26 April 2012 amending the Antarctic Protection Act	2014	1 July 2019
13	Australia	15 May 2014	Antarctic Treaty (Environment Protection) Amendment Act 2012	2012	Suspended
14	Ecuador	11 May 2016	-	-	-
15	Uruguay	23 August 2017	-	-	-
16	Germany	15 September 2017	Antarktis-Haftungsgesetz	2017	Suspended
17	Ukraine	14 June 2018	-	-	-
18	Colombia (Non-Consultative Party)	13 February 2020	-	-	-
19	Chile	6 June 2021	Chilean Antarctic Law (Law 21.255)	2020	16 March 2021
20	France	18 November 2021	-	-	-
21	Czechia (Consultative Party since 2014)	21 May 2024	-	-	
-	India	-	Indian Antarctic Act, 2022; and Indian Antarctic Environmental Protection Rules, 2023	2022 and 2023, respectively	8 August 2022 and 7 August 2023, respectively

throughout the meetings organized in these 14 years (MacKay 2000, pp. 474–476, Johnson 2006, pp. 38–39, Vigni 2006, pp. 219–225). There was never an agreement on which kind of liability or responsibility would be considered in the new annex. Chile discussed this issue at the beginning of the negotiations (Working Paper 11, ATCM 1992), but obtaining a more precise understanding was impossible. Francioni (1996, pp. 586–587) also highlights this lack of definition.

The final agreement was reached at XXVIII ATCM (Stockholm, 2005) under the pressure that the willingness to negotiate such a regime would be lost if the Consultative Parties did not achieve it promptly. The 28 Consultative Parties entitled to participate in that ATCM were Argentina, Australia, Belgium, Brazil, Bulgaria, Chile, China, Ecuador, Finland, France, Germany, India, Italy, Japan, Korea (ROK), the Netherlands, New Zealand, Norway, Peru, Poland, the Russian Federation, South Africa, Spain, Sweden, Ukraine, the UK, the USA and Uruguay.

Annex VI on liability arising from environmental emergencies is contained in Measure 1 (2005), adopted by the indicated Consultative Parties (Secretariat of the Antarctic Treaty n.d.b). As explained, all of them must *approve* this Measure for its entry into force. However, 19 years after its adoption, only 19 Consultative States have done so (68% of those necessary). Colombia, a Non-Consultative Party, and Czechia, which is now Consultative but was not in 2005, have also approved it. However, their approvals are not considered for Annex VI's entry into force. Annually, at the ATCM, the Parties have evaluated this approval progression and drawn attention to the importance of Annex VI becoming effective. They have adopted Decisions 1 (2005), 4 (2010), 5 (2015) and 2 (2022) to encourage Parties to approve Measure 1 (2005) promptly. In addition, the ATCM's Multi-Year Strategic Work Plans adopted each year have included the entry into force of Annex VI as a priority issue (e.g. Decisions 5 (2021), 3 (2022), 5 (2023) and D (2024)).[4]

At the XLV ATCM (Helsinki, 2023), the importance of finishing the process of Measure 1 (2005) approval was highlighted. Following the recommendation of a group of Parties, the Meeting agreed to establish an informal intersessional process to evaluate the progress towards Annex VI becoming effective and to exchange information among the Parties. It was noted that adopting the Liability Annex into national legislation would not necessarily be a straightforward process. However, some Parties expressed their hope that the initiative for increased information exchange about the actions taken domestically would lead to a faster process of Annex VI entry into force (Working Paper 30 rev. 2, ATCM 2023; ATCM 2023, paras 242–243). A small group of Parties participated in the informal intersessional discussion and exchanged some ideas about the legal difficulties of approving and implementing Annex VI in their domestic legal systems (Information Paper 48, ATCM 2024).[5] The XLXI ATCM (Kochi, 2024) did not take any decision about this issue.

Ten of the 19 Consultative States that have approved Measure 1 (2005) have passed domestic regulations to implement it. India, which still has not formally approved Measure 1 (2005) as of 31 May 2024, has also passed such domestic legislation (see Table I). No information indicates that Colombia, Czechia or other Parties have enacted domestic legislation related to Annex VI.

Liability under Annex VI

Annex VI defines an *environmental emergency* as 'any accidental event that has occurred, having taken place after the entry into force of this Annex, and that results in, or imminently threatens to result in, any significant and harmful impact on the Antarctic environment' (Article 2.b). However, beyond its name and the few preventive obligations it envisages, it refers to Article 15 of the Environmental Protocol on response actions in cases of emergencies rather than Article 16 on liability. Notably, the objectives underpinning the operator's liability for environmental emergencies used in the Annex are not to prevent or compensate for the pollution or damage caused. They aim to grant access to a reimbursement scheme when the liable operator has failed to take a response action and a state does it instead. Moreover, it is a procedure to refund the cost of response actions, with limits and exclusions, to make it compatible with an insurance system.

It is also unclear that these insurances will work or how well they will work once the Annex enters into force (ATCM 2017, paras 129–162, Information Papers 87 and 88, ATCM 2017, ATCM 2019, paras 159–172, Information Papers 101 and 155, ATCM 2019). Nor is it clear how other international insurance schemes for environmental emergencies will complement the Antarctic scheme.

For example, the case of the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1992) can be considered. Article 3 states that this convention shall apply exclusively to pollution damage caused in the

[4]Decisions and other agreements adopted in the ATCM are identified by a number and the year of adoption. However, as this paper is being finalized in the days immediately following the conclusion of the XLVI ATCM (Kochi, 2024), we have retained the designation of Decision D (2024), with which it was adopted at the meeting, as the Antarctic Treaty Secretariat has not yet assigned its final numbering.

[5]Australia, as convener, and Canada, France, Japan, the Netherlands, Norway and the USA participated in the intersessional discussions.

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Table II. Liability actions.

Liability action	State operator	Non-state operator
Reimbursement	Determined by a diplomatic process of enquiry or, subsidiarily, by one of the classical means of international dispute settlement (operating under the anticipated acceptance of jurisdiction by the International Court of Justice or an Arbitral Tribunal according to the Environmental Protocol) (Article 7.4)	Before domestic courts of the Party in whose territory the operator is incorporated, has its principal place of business or habitual residence or, subsidiarily, of that Party in whose territory the activity causing the emergency was organized and authorized (Article 7.1) (What if none of these factors is met? What if more than one court is deemed to have jurisdiction?)
Payment to the fund	Settled by an agreement at an ATCM (requiring approval of the debtor itself) or alternatively by one of the classical means of inter-state dispute resolution (operating under the anticipated acceptance of jurisdiction by the International Court of Justice or an Arbitral Tribunal according to the Environmental Protocol) (Article 6.2.a)	According to the procedure established by each Party in their domestic legislation (Article 6.2.b)

ATCM = Antarctic Treaty Consultative Meeting.

sovereign territory, including the territorial sea, and in the exclusive economic zone of a Contracting State. It has a broader scope for preventive measures to prevent or minimize such damage (that is caused in the territorial sea and the exclusive economic zone). Therefore, except in the case of the Claimant States, and considering that such recognition would be controversial, this convention would only apply to Antarctica and surrounding seas in a restricted way. In the best scenario, it would cover reasonable measures taken after an incident to prevent or minimize pollution damage that could affect other areas beyond 60°S under the uncontroversial national jurisdiction of any Contracting States. It would not cover environmental restoration.

The liability regime created by Annex VI is weak, though it is not the only international regime with limits and exclusions. As discussed in the next section of this paper, this case must be compared with the liability scheme of the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) that preceded it. In this sense, the liability under CRAMRA - even though this treaty has not entered into force and only covers mineral resource activities - considers broader obligations and compensation duties than Annex VI, which is restricted only to environmental emergencies as defined in Article 2(b), and several types of Antarctic ecological damage are not covered by it. As explained later, a similar conclusion can be reached when comparing with the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress ('Nagoya-Kuala Lumpur Supplementary Protocol') or other instruments. Some delegates and advisors who participated in the Annex negotiation have published papers supporting the agreed-upon text and highlighting its merits (i.e. Shibata 2009). Here, we adopt a more critical approach.

In Annex VI, the obligation to reimburse arises from two circumstances (see Table II). The first can be found in Article 6.1, when the operator responsible fails to take a response action in a timely and effective manner, and one or more Parties have taken a response action under Article 5.2. The operator is obliged to reimburse the cost of the response action within the limits of Article 9, provided neither of the exemptions in Article 8 concurs. The second is in Article 6.2, which applies when neither the operator nor any Party has taken a response action. In this situation, the operator must pay into a fund created by Article 12 the costs that it would be necessary to spend if someone had taken some action. In such cases, the same exemptions and limits are considered. The procedure is provided for in Article 7, which distinguishes the emergency cases caused by a state's or a non-state's operator.

From CRAMRA to Annex VI: assessing liability regimes for environmental protection in Antarctica

Negotiation and adoption of Annex VI

Environmental liability was introduced as a topic for discussion in the ATCMs during the negotiation of the mineral exploitation regime (1970–1988) (Watts 1990, especially p. 180). In this sense, Annex VI's liability concept has a more direct background in Article 8 of CRAMRA (Infante 2009, p. 330). CRAMRA was adopted at IV-12 Special ATCM (Wellington, 1988), but it soon received criticism because of its environmental implications inside and outside the ATS. This became clear at the XV ATCM (Paris, 1989) when some Parties expressed concern that an environmental emergency similar to the *Exxon Valdez* oil spill (Alaska, 24 March 1989) could occur in Antarctica. In fact, some minor events of a similar nature occasionally occur during scientific and operational activities in Antarctica and its surrounding seas (Mulville 1999, p. 658). The ATCM Final Act and the working papers presented by

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Australia, Chile, France, Sweden and the USA showed a renewed concern for comprehensive environmental protection by proposing to work to elaborate the protocol on environmental liability to CRAMRA (Article 8.7 of CRAMRA). To advance in both aspects, the Parties agreed on realizing a Special ATCM in 1990, which was held in Viña del Mar, Chile (ATCM 1989, paras 40–69). At the same time, a United Nations General Assembly Resolution also called to suspend any mineral exploitation in Antarctica (Resolution A 44/124 B, 15 December 1989). As Redgwell (1994, p. 600) stated, 'The ultimate demise of CRAMRA and the negotiation of the Environmental Protocol were the result of complex pressures exerted upon the ATS from within and without.'

CRAMRA has not entered into force. In a sense, it was superseded by the Environmental Protocol, which forbids mineral exploitation, although this ban could be revised (Articles 7 and 25 of the Environmental Protocol). Even so, the outcome of the Annex VI negotiation must be evaluated and compared with Article 8 of CRAMRA. It is also interesting to compare CRAMRA and other international treaties on environmental liability (García 2007, pp. 490–491). Wolfrum & Wolf (2008, pp. 163–164) ponder that, at least from a liability perspective, CRAMRA surprisingly protected the Antarctic environment better than Annex VI of the Environmental Protocol. Their assertion could seem controversial, especially as the Environmental Protocol covers several aspects of ecosystem protection, such as environmental impact assessments, fauna and flora conservation, waste management, marine pollution and protected area designation and management. However, if we were only to consider the liability regime and how each of these international agreements addresses the environmental damage caused by different activities, CRAMRA has (or had) stricter rules than the Environmental Protocol.

Article 8 of CRAMRA and Annex VI of the Environmental Protocol consider few pre-emptive obligations, include specific state responsibility hypotheses, and contain several exceptions. Beyond these common points, CRAMRA's negotiators had specific concerns about the environmental damage of mineral activities (Watts 1992, pp. 195–204, Holdgate 1997). For this reason, although CRAMRA mentions that a liability protocol will be developed at a later stage (Article 8.7), it already considers the operator's strict liability for damage to the Antarctic environment or dependent or associated ecosystems arising from Antarctic mineral resource activities; loss of or impairment to an established use of Antarctica or its dependent or associated ecosystems; loss of or damage to property of a third party or loss of life or personal injury of a third party arising directly out of the damage to the Antarctic environment; and reimbursement of reasonable costs by whoever incurred them relating to the necessary response action for an environmental emergency if the operator that has caused the emergency fails to do so correctly. Instead, Annex VI's liability scope is limited to reimbursement.

Determining what motivated the Parties to relax the environmental liability requirements agreed upon and adopted in Article 8 of CRAMRA is difficult. A working paper presented by Chile at the ATCM a couple of years later provides some insights. In prohibiting mineral and other hazardous activities, the Parties would have considered it unnecessary to include a strict and burdensome liability regime in the Environmental Protocol (Working Paper 11, ATCM 1992). Another motivation could be that, under CRAMRA, private operators would be the main actors responsible for paying in case of any environmental damage. In contrast, under Annex VI, except for tourism activities, the main operators are the national Antarctic programmes and, ultimately, the State Parties. States are less generous in establishing a liability regime when they are likely to be subjected to it. Finally, after a long negotiation process (1991–2005) and before the interest in agreeing on the Annex decreased, several Parties were available to adopt a 'compromise solution', even if it was not the best outcome (Vigni 2006, pp. 241–242). They sought a feasible solution that was as close to the ideal as possible through an agreement incorporating mutual concessions in relation to their initial positions.

Fourteen years passed from the moment the need for a liability regime for the ATS materialized in Article 16 of the Environmental Protocol to the moment such a regime was adopted. Furthermore, there were severe shifts in focus: from global protection of the Antarctic environment (1992–1998) to a liability scheme restrained to that arising from the absence or inadequacy of response action to specific environmental emergencies (1998–2005). The details of this negotiation are well documented in the ATCM's Final Acts from 1991 to 2005. There are also a good number of academic works published about it (Poole 1992, Blay & Green 1995, Hemmings 1995, Aust & Shears 1996, Francioni 1996, Bobo 1997, Dobelle 1997, Lefeber 2000a, 2000b, MacKay 2000, Skåre 2000, Bederman & Keskar 2005, Francioni 2006, Gautier 2006, Geddis 2006, Johnson 2006, Vigni 2006, Vöneky 2008, Wolfrum 2008, Wolfrum & Wolf 2008, Shibata 2009, Hernández 2012, Hughes & Convey 2014, Nicchia 2014, Ferrada 2017). Though it is beyond the purposes of this paper to analyse all of the specific aspects of this negotiation, a few essential parts must be highlighted.

The XVII ATCM (Venice, 1992) entrusted the task of elaborating rules and procedures related to liability, as

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mandated by Article 16 of the Environmental Protocol, to a Group of Legal Experts (ATCM 1992, paras 37–40). Under the leadership of its chairman, Rüdiger Wolfrum, the Group engaged in extensive work. They met nine times between 1993 and 1998. They gathered recommendations from the Transitional Environmental Working Group (which prepared the establishment of the Committee for Environmental Protection, created by the Environmental Protocol), the Scientific Committee on Antarctic Research and the Council of Managers of National Antarctic Programs and, finally, delivered its results during the XXII ATCM (Tromsø, 1998) (Working Paper 1, ATCM 1998). Even though the question about the extent of the initial approach for the liability regime remained open, the legal experts noted that such a regime should cover at least issues like its scope of application, the definition of the notion of damage, response measures or remedial measures, the standard of liability, exemptions and limits, rules concerning the quantum of damage, state responsibility and insurance, as well as the implementation of an annex or annexes, including dispute settlement.

However ambitious the task of fulfilling the mandate of Article 16 of the Environmental Protocol, the XXII ATCM (Tromsø, 1998) opted to focus efforts on further negotiating the adoption of an annex or annexes on liability through an ATCM Working Group as agreed by Decision 3 (1998). This Working Group would take on the critical issues identified by its predecessor, neither of which was without consequence. Still, perhaps the most challenging was the 'question of whether work on an annex on liability should follow a comprehensive approach covering all categories of harmful impacts, or whether one should envisage more than one annex and should concentrate initially on an annex dealing with the failure to take response action in the event of environmental emergencies in accordance with Article 15 of the Protocol' (ATCM 1998, para. 71). The first approach was common in other environmental treaties negotiated or modified in the 1990s (Shibata 2009, pp. 350–351).

The Working Group, led by its chairman, Ambassador Don MacKay, undertook to continue developing a liability regime. The proposal that the USA had submitted to the XX ATCM (Utrecht, 1996) paved the way for the negotiations (Information Paper 43, ATCM 1996). This document was presented again at the XXII ATCM (Tromsø, 1998). It focused exclusively on liability arising from environmental emergencies. This shift meant a considerable departure from its predecessor, especially considering that the culmination of Chairman Wolfrum's work was an all-encompassing take on liability (Working Paper 1, ATCM 1998).

The negotiation was harsh, and, ultimately, the interest to continue the negotiation based on a less contentious issue prevailed, leading to the adoption of a step-by-step approach by Decision 3 (2001). The first of those steps was the liability arising from environmental emergencies. The solution reached at the XXVIII ATCM (Stockholm, 2005) and reflected in Annex VI, adopted by Measure 1 (2005), was a compromise. Many countries were not completely satisfied with having been unable to reach a robust environmental liability regime that was as demanding as expected.

In any case, by establishing a liability regime, though limited in scope, the ATS ensures the protection of the pristine Antarctic environment while simultaneously fostering cooperation and mutual accountability among the Parties. Within the broader field of international environmental law, the agreed-upon liability regime exemplifies specialized legal instruments tailored to address the challenges posed by environmentally sensitive regions. It underscores the significance of targeted legal frameworks that integrate precaution and prevention principles while providing redress mechanisms in the event of environmental harm. Moreover, 'the Liability Annex could be considered as the first complete legally binding environmental liability regime applicable to cases where both the causes and effect of an environmental incident occur in a public space' (Shibata 2009, p. 347).

Liability for environmental emergencies

English-speaking international law academics and lawyers discuss the meaning and difference between 'responsibility' and 'liability'. Admittedly, this is not a problem among the Spanish-, French- or Italian-speaking communities because, in these languages, there is only one word for this concept: *responsabilidad*, *responsabilité* or *responsabilità*, respectively. Although both terms are broadly synonymous and often used interchangeably, some authors have reported a confused understanding of them in international practice. They have highlighted the work of the United Nations' International Law Commission (ILC) to distinguish both concepts.

Broadly speaking, state 'responsibility' arises from an internationally wrongful act, whereas international 'liability' derives from an act not prohibited by international law but entailing harm. In the first case, the state is responsible for its acts or the acts attributable to it; in the second case, the state is liable for the damages produced by the operators under its jurisdiction or control if it has failed to prevent the harmful consequences. Domestic or international law can hold private operators liable in cases of environmental damage, typically under a system of compensation and insurance. These regimes of international civil liability rest on domestic procedures and courts to adjudicate claims of environmental harm

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Table III. Hypothesis under Annex VI to the Environmental Protocol.

The operator takes a response action	The operator does not take a response action … but its state does	The operator does not take a response action … but another state does	The operator does not take a response action … nor does anyone else
There is no liability, notwithstanding the magnitude of the environmental damage	Reimbursement of the response action's reasonable costs … but with limits, exceptions and conditions	Reimbursement of the response action's reasonable costs … but with limits, exceptions and conditions	Payment to a fund of the response action's reasonable costs, as if it was fictionally taken … but with limits, exceptions and conditions

through judgements that can then be enforced in the concerned jurisdiction. Examples of this can be found in the regimes governing maritime pollution, nuclear pollution, hazardous wastes and biosafety (Boyle 1990, Horbach 1991, Sucharitkul 1996, Fitzmaurice 2008, Barboza 2010, pp. 21–29, Crawford *et al.* 2010, Crawford 2013, Voigt 2021; see also ILC 2001, 2006).

As explained, Annex VI only creates the obligation to reimburse the cost of the response actions, with limits and exceptions. One of the negotiators of this instrument has said that 'under the Liability Annex, the liability arises not from the fact that the damage was caused by one's activity, but from the fact that the operator, having caused an environmental emergency that may have a significant and harmful impact on the Antarctic environment, did not take the required response action to avoid or minimize such impact. [… T]he Liability Annex does not at all use the term "damage" in its substantive provision' (Shibata 2009, p. 352). In other words, if the operator takes a response action, the liability scheme will not be triggered regardless of the magnitude of the damage because there is no obligation to repair the environment (see Table III). When, in 1989, the *Bahía Paraíso* tourist ship sank, resulting in severe environmental consequences, an emergency response action was taken (Karl 1992). Annex VI had not yet been agreed upon or entered in force by the time of the *Bahía Paraíso* accident. Still, if it had been, this environmental emergency would probably not have generated liability under its rules.

Unfortunately, Annex VI failed to adapt to the most recent developments in international civil liability, reflecting an already outdated take on environmental protection, and this will probably be even more the case when - or if - it enters into force. Thus, for example, the 1999 Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Protocol 1999) already included a definition of damage anchored in environmental values, together with a system that couples a strict and fault-based liability with many financial guarantees that the Parties must observe. The Basel Protocol of 1999 has yet to enter into force, presumably because of the lack of support among the Parties that generate the most hazardous wastes (Choksi 2001).

Similarly, on top of the basic liability scheme of its predecessors, the 2004 European Union Environmental Liability Directive (European Parliament 2004), in force since 2009, included a clear definition of damage that also encompasses the imminent threat of damage to the environment, as well as a set of preventive obligations and remedial measures. Perhaps the most significant contribution is the nuanced remediation scheme contained in Article 7 and Annex II of the EU Directive, which accounts for different levels of remediation privileging the restoration of the damaged environment. Lastly, it leverages the relationship between the domestic authorities and the operators to facilitate enforcement (Orlando 2015).

The 2010 Nagoya-Kuala Lumpur Supplementary Protocol to the Cartagena Protocol on Biosafety is apparently similar to Annex VI of the Antarctic Environmental Protocol. Its Article 5 considers the operator's duty to take appropriate response measures and the possibility that 'the competent authority may implement appropriate response measures, including, in particular, when the operator has failed to do so'. In this case, 'the competent authority has the right to recover from the operator the costs and expenses of, and incidental to, the evaluation of the damage and the implementation of any such appropriate response measures'. In both legal instruments, the reimbursement of costs for the actions taken seems to be an alternative, considering that the monetary quantification of environmental damage would be impossible, if not controversial.

However, there is a big difference between the Nagoya-Kuala Lumpur Supplementary Protocol and Annex VI. Indeed, in the first case, 'response measures' are considered expressly to 'prevent, minimize, contain, mitigate, or otherwise avoid damage, […and the] restoration of the damaged biological diversity to the condition that existed before the damage occurred, or its nearest equivalent; […or], inter alia, replacing the loss of biological diversity with other components of biological diversity for the same, or for another type of use either at the same or, as appropriate, at an alternative location' (Article 2.d of the Nagoya-Kuala Lumpur Supplementary Protocol). In the second case, the 'response action' only considers 'reasonable measures […]

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to avoid, minimise or contain the impact of that environmental emergency, which to that end may include clean-up in appropriate circumstances' (Article 2.f of Annex VI). The early international agreement thus has a broader scope and seems more concerned with environmental damage restoration than Annex VI. The Nagoya-Kuala Lumpur Supplementary Protocol has also been subject to several critical comments (see Shibata 2014).

Legal implications of entering Annex VI into force

Annex VI's approval process has been slower and less enthusiastic than in the case of the Environmental Protocol (1991–1998) or Annex V (1991–2002) for three reasons. First, several Consultative States were not completely satisfied with the text adopted at the end of the negotiation. Second, Annex VI could mean high costs for states if they are responsible for an environmental emergency caused by their state operators or if they must assume the responsibility of their private operators in some instances. Finally, the Antarctic issues are not a priority in the domestic politics of several countries, including some Consultative Parties.

Although the Final Act of the XXVIII ATCM (Stockholm, 2005) attempts not to overemphasize the dissenting voices of some negotiators and does not include their names or the countries they represent, it was impossible to hide the fact that some critical views were maintained beyond the spirit of reaching an agreement. Thus, for example, when the scope of the Annex was discussed, 'many delegations emphasised the importance of the widest possible scope of application for the Annex [… but o]ther delegations objected to a broad approach' (para. 100). Later, some delegations 'expressed their disappointment' when the exclusion of fishing activities was accepted (para. 101). When the clean-up measures were discussed, 'some delegations expressed their disappointment that it had not been possible to reach [an] agreement to include restorative or restitutionary measures within the definition' (para. 106). In another moment, 'some concern was also expressed that the text was taking an unduly commercial approach' (para. 113). Later in the discussion, one delegation raised its concerns about the insurance operation in Antarctica but finally said 'that delegation was prepared to accept the requirement under draft Article 11(1) in order not to hinder adoption of the Annex', even though it disagreed with the majority (para. 121). Lastly, it was considered 'the view of several delegations that the draft Annex did not completely discharge the obligations under Article 16 of the Protocol' (para. 126).

On the other hand, a former Antarctic Treaty executive secretary said, 'If the process for reaching unanimous agreement on a recommendation appears tortuous, then at least it benefits from the undivided attention of all those attending the ATCM. Once [an] agreement has been reached and the delegates return home, the Antarctic appears to go to the bottom of the attention pile, and often, very little national action is taken to implement the items agreed' (Huber 2011, pp. 90–91). Therefore, in many cases, governments seem genuinely uninterested in advancing international processes related to those topics.

The chronological and quantitative analysis can be expanded to a qualitative one. It is possible to distinguish four stages in the approval process: from 2005 to 2012, from 2013 to 2014, from 2015 to 2020 and from 2021 onward. Not one of the first six states to approve Measure 1 (2005) and, as a consequence, Annex VI to the Environmental Protocol is a Claimant or original Treaty member or has significant involvement in or influence on the ATS (Dudeney & Walton 2012).[6] There was a stark change in 2013. Of the next seven states to approve it, four are Claimants, six are original Treaty members and some are among the most influential ATS states.[7] At that time, it was possible to foresee positive momentum in the approval trend. Nevertheless, this did not materialize.

From 2015 to 2020, the Annex was approved by four other Consultative Parties[8] and one Non-Consultative Party.[9] It is remarkably slow going without strong national Antarctic programmes behind these approvals.

The last and current stage could mean a new impulse in the approval process. Two Claimants, original Antarctic Treaty Parties and Consultative States, have approved Measure 1 (2005).[10] Another Consultative Party (although it was not so in 2005) has also approved it,[11] and another 2005 Consultative Party is ready to do so.[12] The rest of the Consultative Parties that have to approve Measure 1 (2005) for Annex VI's entry into force have communicated in the ATCMs that they are working on their domestic approval.[13] Nevertheless, there have been no subsequent communications with the Depositary government. Attaining the approval of the 28 Consultative Parties for Measure 1 (2005) will not be an easy feat.

[6]Sweden (2006), Peru (2007), Spain (2008), Poland (2009), Finland (2010) and Italy (2011).
[7]The UK (2013), the Russian Federation (2013), Norway (2013), New Zealand (2013), South Africa (2013), the Netherlands (2014) and Australia (2014).
[8]Ecuador (2016), Uruguay (2017), Germany (2017) and Ukraine (2018).
[9]Colombia (2020).
[10]Chile (2021) and France (2021).
[11]Czechia (2024).
[12]India. See ATCM 2024 (preliminary), para. 178.
[13]Argentina, Belgium, Brazil, Bulgaria, China, Japan, the Republic of Korea and the USA. India has not yet approved Measure 1 (2005) either, but it is supposed to do so very soon.

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Domestic implementation and approval of international agreements

The domestic implementation of an international agreement or treaty - meaning, the fulfilment of its norms - can only occur when it is internationally compulsory (i.e. when it entered into force for the Contracting States as subjects of international law). The alternatives for when an international agreement can be considered in force and for whom depend on what the Parties have agreed on in this respect. The old Recommendations and now the Measures adopted under Article IX of the Antarctic Treaty 'shall become effective when approved by all the Contracting Parties whose representatives were entitled to participate in the meetings held to consider those measures'.

As long as Annex VI does not have the 28 approvals required, it arguably 'does not exist' as a binding norm of law. Moreover, it may never exist if it does not achieve this number of approvals. Therefore, Annex VI should not be enacted or published in any Contracting State, even those that have approved it. Having adopted Measure 1 (2005), the only state obligation is not to frustrate its subject and purpose (Article 18 of the Vienna Convention on the Law of Treaties, 1969). However, there are two special situations to consider in which domestic legislation must be enacted or at least approved before the international agreements enter into force.

The first case occurs if a Party deems it necessary to adapt its internal legislation before Annex VI enters into force, foreseeing the effects it will produce when it does. No state is legally obligated to do so because this international agreement is not mandatory. Despite this absence of a legal obligation to adjust their domestic legislation, when necessary, every state must commit to it if they are to behave seriously in their international relations. Otherwise, once the Annex enters into force, the international liability of the state could be compromised due to a failure to promptly develop its internal regulations to comply with the international commitments voluntarily acquired. Article 10 of Annex VI explicitly contemplates this state's liability. Depending on the different national law-making rules, these provisions related to Annex VI could enter into force before, at the same time as or after this international agreement. It would produce some abnormal legal consequences in the first case because the Annex would not be compulsory yet. In this sense, the best solution is establishing that these domestic norms will enter into force when the Annex does.

Nevertheless, some countries cannot subject the entry into force of laws or decrees to fulfilling a condition. For instance, in the case of Chile, the Congress or the Administration can provide that a norm will enter into force at some precise future date. However, they cannot provide that a norm will enter into force contingent on a future and uncertain event (Llanos 1977, p. 161). The same goes for the international entry into force of Annex VI. Considering that the general rule is that a norm is compulsory for the people under a particular state jurisdiction when officially published, an intermediate solution could be to enact the law when its respective internal procedures finish but suspend its publication.

On the other hand, following their constitutional legislation, after negotiating and adopting an international agreement or after deciding to adhere to an existing one, some states must pass a domestic law that reflects the content of said agreements. As a national provision that emanates from a sovereign act, this law is in some manner independent of the international agreement. Such is the case in the UK and common law countries (with important particularities in the USA). There is a clear distinction in this legal tradition between the prerogative of the head of state in contracting international obligations and the prerogative of the parliament in altering the domestic laws governing citizens. If a new treaty implies changing existing laws, the parliament must pass a national law imposing it. If such internal legislation is not passed or is repealed, the treaty will continue to oblige the state as a subject of international law; however, its courts will not apply it domestically, compromising the international responsibility of the said state. A treaty's direct application is generally rejected in such states, although exceptions exist (Shaw 2017, pp. 112–126, Akehurst 2018, pp. 65–66). In this way, a domestic law must be passed before or after the international agreement enters into force, or the government has to use the legal delay.

One issue closely related to the pre-emptive domestic implementation of the Annex is the attribution of competence and jurisdiction to the national courts in cases of reimbursement for response actions to environmental emergencies. Article 7.1 of Annex VI establishes a complex system of factors of jurisdiction based on where the Antarctic operator 'is incorporated or has its principal place of business or his or her habitual place of residence' or where the activities to be carried out in Antarctica have been organised if it is in the territory of the state that has formally or informally authorized those activities. 'Each Party shall ensure that its courts possess the necessary jurisdiction to entertain [the respective] actions' (Article 7.2). It will be interesting to see how this distribution of judicial competence operates in practice once the Annex is in force and what happens in the cases when none of the Parties achieve these conditions.

Another legally relevant distinction is the one between the treaties and international agreements that have the character of contracts and those that are law-making

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instruments. This distinction is frequently used in treaty practice and doctrine, although it is not exempt from criticism (Brölmann 2005). In any case, it is helpful to consider that the so-called contract treaties are international instruments that typically establish obligations for a small number of states based on reciprocity. On the other hand, in law-making or statutory treaties, the obligations created are 'self-existent' and have the intention to extend 'towards all the world rather than towards particular parties' (Fitzmaurice 1957, p. 54), meaning even to the Non-Party States. They lay down the rules of general application. These law-making instruments are binding by themselves to each Party State without consideration of the behaviour of the other Parties (Shaw 2017, p. 72).

Annex VI to the Environmental Protocol belongs to the second group if we consider its purpose to establish a liability scheme for environmental emergencies in the Antarctic area. On the other hand, Annex VI belongs to the contractual group if we attend to its operative clauses. That means that the complete application of Annex VI is not possible until it is enforced by all of the Parties, which shows its reciprocal nature. However, some states could apply some of the provisions of Annex VI domestically to regulate the activities of the Antarctic operators under their jurisdiction.

As a result, in cases where the domestic law implementing Annex VI enters into force before Annex VI, the Antarctic operators subject to that national legislation will be in a very particular situation. They will be obliged to carry out some behaviours that are not required of operators under the jurisdiction of the other states that negotiated the same agreement. Based on this situation, some Antarctic operators could prefer to move their activities to those countries with less strict rules in a kind of forum shopping. Moreover, domestic precepts could suppose some state's collective actions, which are materially impossible to comply with (e.g. concerning the fund created by Article 12).

Article 25 of the Vienna Convention on the Law of Treaties provides an explicit and voluntary mechanism for the provisional application of treaties. The ILC has proposed a framework for implementing Article 25, especially given its legal effects. Guideline 3 says, 'A treaty or a part of a treaty is applied provisionally pending its entry into force between the States or international organisations concerned, if the treaty itself so provides, or if in some other manner it has been so agreed' (United Nations 2021a). The United Nations General Assembly 'took note' of this proposal in its Resolution A/RES/76/113 (United Nations 2021b). On the other hand, in its interpretation, the United Nations Legal Affairs Office considers it feasible to unilaterally and provisionally apply an agreement not in force if the other signatories are notified (United Nations 2012, pp. 69–70). Although this is not what the states that have

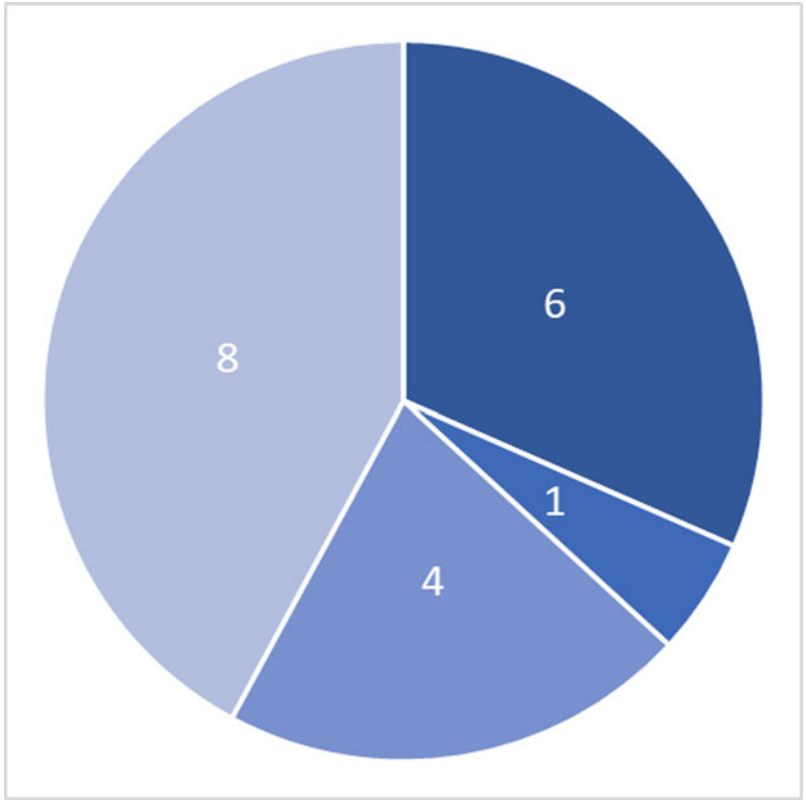

Figure 1. States that have approved Measure 1 (2005) and domestic implementation (only Consultative Parties). The numbers indicate the numbers of states with domestic legislation to implement Annex VI in force (six, 32%), the number of states that have not yet implemented Annex VI but have other regulations regarding environmental emergency matters in force (one, 5%), the number of states with domestic legislation to implement Annex VI suspended (four, 21%) and the number of states without domestic legislation to implement Annex VI (eight, 42%).

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enacted domestic rules for applying Annex VI have done, they have officially announced at the ATCMs the enactment of domestic legislation on the application of Annex VI. They have even shared the official texts of such domestic legislation with the other Antarctic Treaty Parties.

Finally, it is necessary to distinguish between two different situations: namely, the domestic approval or ratification process to be bound by a treaty or international agreement and the domestic implementation of it. First, the formal process to approve or ratify a treaty or international agreement by the competent national authority or legislature can take different forms. Some countries consider publishing these international documents in their official gazettes. Second, the domestic implementation of a treaty or international agreement means issuing national rules within the jurisdiction of a country to make possible the fulfilment of the provisions of such a treaty or international agreement. Examples of that implementation include creating procedures for their application, designating competent authorities concerning them or awarding jurisdiction regarding their matters to national tribunals. This distinction is considered throughout this paper.

Implementation of Annex VI by states that have approved it

Overview

We will review three groups of states and a particular case (see Fig. 1). First, group one comprises the six states applying domestic legislation to implement Annex VI pending its entry into force. Second, the particular case refers to one state that has approved Annex VI and has not yet implemented it. However, it has domestic regulations that expressly cover some matters included in that international instrument. In a similar situation is another state that still has not internationally approved Measure 1 (2005), but it has recently enacted domestic legislation that partially covers the issues regulated by Annex VI. Third, there is also a group of four states where the entry into force of the domestic regulation implementing Annex VI is suspended until the entry into force of that international agreement. Fourth, eight 2005 Consultative States plus other two Parties have approved Annex VI but have not passed domestic implementation regulations.

States with domestic legislation to implement Annex VI in force

A group of Consultative Parties – Sweden, Finland, the Russian Federation, Norway, the Netherlands and South Africa – has regulations concerning Annex VI that are domestically in force. It could be argued that states that have passed and enforced regulations to implement Annex VI to the Environmental Protocol, although the international agreement is not yet in force, show a more significant commitment to Antarctic environmental protection. However, they have also created a complex legal situation for the ATS because it is unclear whether this outcome could undermine the provisions of Annex VI. Political motivations may override strictly legal considerations in such cases.

Sweden reported approval of Measure 1 (2005) on 8 June 2006 and later enacted the Antarctic Act (2006: 924) and the Antarctic Ordinance (2006: 1111). The main provisions concerning Annex VI are in §§ 7, 9, 14, 19–25, 34.3 and 38 of the Act and § 5 of the Ordinance. The deferred effect no longer applies because it entered into force on 1 October 2006 (Polarforskningssekretariatet 2006).

Finland authorized Measure 1 (2005) approval on 26 November 2010, notifying the Depositary on 14 December 2010, and it approved two other provisions. The first is Measure 16 (2009), amending Annex II of the Environmental Protocol, which has been in force since 2016. The second provision is Measure 4 (2004) on tourism and non-governmental activities, which is not yet in force. These are scattered provisions, and they differ in the extent to which they are internationally binding. Despite this, Law 1020/2010, also published on 26 November 2010, implemented them in Finnish law, amending Law 28/1998. Liability for environmental emergencies is treated in Chapter 6.A (§§ 35.A–35.F) of Law 28/1998 (as amended text). The Finnish Penal Code was also reformed to strengthen sanctions on mineral exploitation in Antarctica. Government Decree 1259/2010 stated that notwithstanding the powers of the Ministry of the Environment, the point of contact for environmental incidents and emergencies would be the Ministry of Foreign Affairs (Oikeusministeriö 2010).

It was determined that the amendments would come into force on 1 January 2011. Anticipating the difficulties of implementing an international rule that is still not mandatory, Finnish Law 28/1998 (amended) provides on § 35.C.4, referring to § 35.C.2, on payment to the fund, that 'when the fund that Article 12 of Annex VI of the Environmental Protocol refers to has been established', the sums collected by the Finnish State Treasury will be transferred to it.

The Russian Federation formally approved Measure 1 (2005) on 25 April 2013. On the other hand, on 5 June 2012, it passed Russian Federal Law No. 50 concerning the '[r]egulation of activities of the Russian citizens and the Russian legal entities in the Antarctic'. This law provides a framework for implementing and adopting Annex VI at the national level, covering principles, preventive measures and procedural issues. It also contains the essential aspects of the liability scheme in

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Articles 8 and 12. The former deals with the financial aspects of the civil liability of the operators (i.e. financial security and insurance). The latter, in turn, includes the key provisions on the civil liability of operators for inflicting damage on the Antarctic environment, such as considerations of reimbursement, harm and response actions. While the Russian Federal Law entered into force in June 2012, Articles 8 and 12 entered into force on 1 January 2013 (Information Paper 144, ATCM 2017).

In addition to the general regulations that Norway applies in Antarctica as a Claimant State - a circumstance stressed in the precepts implementing Annex VI - its main provisions in this regard are the Law of 27 February 1930 and the regulations that develop it, among them the one relating to environmental protection and safety in Antarctica from 1995. The Royal Decree of 26 April 2013 replaced it and implemented, among others, Annex VI. Section 41 of the new regulation stated it would enter into force immediately, abolishing the previous one. On 24 May 2013, Norway notified the Depositary of its approval of Measure 1 (2005) (Klima-Og Miljødepartementet 2013).

In the Netherlands, in 2012, the Queen approved a law - published later in 2014 - that made several amendments to the Antarctica Protection Law of 1998 to implement Annex VI, among others. Measure 1 (2005) was approved on 28 April 2014 (Rijksoverheid 2014). Subsequently, the consolidated text of the Act of 5 March 1998, containing rules for protecting the Antarctic environment to implement the Environmental Protocol, entered into force on 1 July 2019. This consolidated text incorporates the relevant Annex VI-related provisions into the Dutch Antarctic regulation (Background Paper 4, ATCM 2021).

Lastly, South Africa approved Measure 1 (2005) on 12 November 2013. Some years later, the Department of Forestry, Fisheries and the Environment enacted the Antarctic Treaties Regulations, 2021 (N° 1751) to complement the Antarctic Treaties Act, 1996 (Act No. 60 of 1996). The regulations aim to protect the Antarctic environment, its dependent and associated ecosystems and Antarctica's intrinsic value, including its wilderness and aesthetic values (section 2). They implement the legal mandates of the Environmental Protocol and its Annexes in South African domestic law. In particular, Chapter 3 (sections 9–15) covers the different aspects of the liability arising from environmental emergencies applying Annex VI. These norms have been in force since 11 February 2022 (Government Gazette 2022).

These Swedish, Finnish, Russian, Norwegian, Dutch and South African provisions are based on Annex VI but do not and cannot properly constitute its domestic implementation because the Annex has not yet entered into force. Therefore, it lacks any legal strength and (still) does not exist as legal norm. The states are free to incorporate any prescription they want in their national regulations, but, as explained, they have created a very particular legal situation in this case. For example, concerning the compensation that has to be paid if no response action is undertaken by the responsible operator or anyone else, except in the case of Finland, the cited domestic regulations simply mandate pay to the fund created by Article 12 of Annex IV as if it were a currently existing entity.

States with other domestic legislation on environmental emergencies in force

Chile represents a very particular case; it has not enacted regulations related to Annex VI, but it has legal norms in force that cover an even more strict Antarctic environmental liability. The Chilean National Congress authorized the approval of Measure 1 (2005) on 25 May 2021, and on 6 June 2021, the government notified the Depositary of its approval. The country has not enacted any domestic norm for Annex VI implementation. However, the Chilean Antarctic Law (Law 21.255-2020) contains some environmental liability prescriptions similar and even further to those in such international agreements (Caldera 2021, pp. 45–53).

The Chilean Antarctic Law is a milestone in Chilean Antarctic legal history and regulation. It consolidates norms regarding its Antarctic institutions, governance and environmental protection, including provisions on liability for environmental damages (see Ferrada 2021). The National Congress approved the law on 17 September 2020, and it entered into force on 16 March 2021 (Biblioteca del Congreso Nacional de Chile 2020).

Concerning Annex VI, the law establishes that Antarctic operators must have insurance and contingency plans (Article 28). Under governmental coordination, they must take prompt and effective response actions to environmental emergencies (Article 41). It also considers, among others, some prescriptions closely related to environmental liability, which go beyond the provisions contained in Annex VI (e.g. Articles 42–44 regarding environmental liability, Article 48 regarding offences sanctioned with fines or Article 54 regarding environmental crimes). In any event, Chile will have to make minor modifications to the Chilean Antarctic Law when Annex VI enters into force, such as changing from fault liability (the Chilean general rule in civil liability) to strict liability (Annex VI).

The case of India is also a special one. It still has not approved Measure 1 (2005) (as of 31 May 2024), nor has it properly implemented Annex VI. However, the Indian Antarctic Act (2022) - especially sections 39, 40 and 42.b - and in the Indian Antarctic Environmental Protection Rules (2023) - especially sections 37 and 39 - cover matters related to the liability arising from

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environmental emergencies (NCPOR 2022, 2023, Information Paper 141, ATCM 2023, Information Paper 61, ATCM 2024).

States with domestic legislation to implement Annex VI suspended

Other Consultative Parties - the UK, New Zealand, Australia and Germany - have regulations that implement Annex VI, but they have not yet entered into force.

On 20 June 2012, when the XXXV ATCM (Hobart, 2012) concluded, the UK's House of Commons began to discuss the Antarctic Act 2013, which implements Annex VI. It received the Royal Assent within a year. The first part (§§ 1–13) incorporates into British domestic law the provisions of the Annex, and the second part (§§ 14–18) amends the Antarctic Act 1994, which implemented the Environmental Protocol. Matters regarding environmental emergencies will enter into force when so determined by an administrative act (§ 18.3). Although not explicitly stated, it is safe to assume that this will coincide with the moment Annex VI enters into international force (The National Archives 2013). The UK approved Measure 1 (2005) on 18 April 2013.

In 2009, New Zealand began processing Reform Act N° 95, approved and enacted in 2012. This law modified the Antarctica (Environmental Protection) Act of 1994, inserting Part 5.A (§§ 37.A–37.I), which implements Annex VI. It underwent minor reform in 2013 through an amendment to the penal procedure. The new provisions will come into force when the Governor-General decides on this through a Council Order. It was stated that the law's enactment allowed New Zealand to approve Measure 1 (2005) internationally, as this was done on 31 May 2013. Nonetheless, the law will only enter into force domestically when Annex VI does (New Zealand Parliament 2012).

In 2011, Australia started updating its Antarctic legislation and considering the implementation of Annex VI. It stated that its strategic and political interests justified a proactive attitude in contributing to preserving the ATS (including the crucial rule in Article IV of the Antarctic Treaty, which guarantees the rights of Claimants, including Australia) and improving Australia's influence on it by protecting the environment. The Antarctic Treaty (Environment Protection) Amendment Act 2012 amended the regulations of 1980 on environmental protection. It incorporated the implementation regulations of Annex VI and sanctioning non-compliance in its second appendix, mainly through sections 13CF, 13CG and 13CH. Measure 1 (2005) was approved on 15 May 2014. Within the 2012 law, § 2 stipulated that the amendments on liability will come into force together with Annex VI, although the environmental approvals system can do so in advance (Federal Register of Legislation 2012).

Similarly, in addition to the regulation implementing the Environmental Protocol and its Annexes I, II, III, IV and V, Germany approved Annex VI and implemented the obligations arising from it through domestic regulation passed on 5 July 2017. This provision (*Antarktis-Haftungsgesetz*) contemplates obligations of certain operators (§§ 2–6) and contains rules on liability, on liability about response actions, on limits, on insurance (§§ 7–13) and more. As is the general rule in these cases, this law will be effective together with the entry into force of Annex VI (Bundesgesetzblatt 2017).

States without domestic legislation to implement Annex VI

Finally, there is a group of states that were Consultative Parties in 2005 and have approved Measure 1 (2005) but still have not enacted any related domestic implementation legislation. Some of these legislative approval processes have expressed the need to pass national legislation to implement Annex VI. In one case, it was even said that the implementation legislation would enter into force when the Annex did.[14] However, according to the Antarctic Treaty Secretariat Electronic Information Exchange System, as of May 2024, and after revising their own national legal database systems, there is no information about the enactment of such domestic legislation in the following countries: Peru, Spain, Poland, Italy, Ecuador, Uruguay, Ukraine and France. The same goes for Colombia, a Non-Consultative Party, and Czechia, which is now a Consultative Party but was not so in 2005.[15]

In addition to India, two other Non-Consultative Parties have communicated that they will soon formally finish their processes to approve Measure 1 (2005). Turkey announced that it had domestically approved it (see ATCM 2021a, para. 120). Nevertheless, as of May 2024, there has not been any official information that it has finished the diplomatic process to communicate its approval to the Depositary (see United States 2024). On the other hand, Canada has also stated that it 'was on a path to approve Annex VI, with which it was already in compliance' (see ATCM 2022, para. 118).

Conclusion

Through Article 16 of the Environmental Protocol, the Antarctic Treaty Consultative Parties commit to

[14]This is the case of Ukraine, according to Information Paper 16 (ATCM 2018).

[15]The respective national legislation database, official webpages and the Antarctic Treaty Secretariat Electronic Information Exchange System links are cited in the 'References' section at the end of this article.

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'elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by this Protocol'. Although the Protocol was adopted in 1991 and has been in force since 1998, the progress in fulfilling Article 16's mandate has been minor and slow. Annex VI, on liability arising from environmental emergencies, adopted through Measure 1 (2005), has been the only material outcome of this development. However, it covers only a part of the environmental liability and is only a first step towards establishing an Antarctic environmental liability regime, as stated by Decision 3 (2001).

Furthermore, not only does Measure 1 (2005) not address the actual damage to the environment, but, even more damningly, 19 years after its adoption Annex VI is not yet in force. Only 19 of the 28 Consultative States that must approve the Measure have done so (plus two other Parties, but they are not considered in the number of approvals required for entry into force). Annex VI is still not a properly binding international agreement. Of course, this situation was considered by the negotiators and was deliberate. Countries with large science programmes would not have wished to be subject to liability and potential actions by foreign entities and courts until all states were mutually bound. This is appropriate from the perspective of international legality but not from the Antarctic environmental protection perspective.

In principle, it is only appropriate for any given country to implement a new international agreement within the limits of its jurisdiction when it becomes internationally binding and is either enforceable or, depending on the conditions that the Parties agreed upon, its quick entry into force is foreseeable. However, in some cases, their existing domestic regulations may collide with the international agreement. In these situations, states must adjust their domestic legislation before the international agreement is enforceable to comply adequately with their international obligations. Nevertheless, the adjustment of national regulation to cater to the international agreement has defined limits and can produce undesirable outcomes. Such is the case when a country establishes stringent rules binding for their nationals, although they are not still compulsory for the other Parties to the international agreement where the commitment originated.

In the case of Annex VI of the Antarctic Environmental Protocol, agreed upon by Measure 1 (2005) at the XXVIII ATCM (Stockholm, 2005), it seems appropriate to develop an internal regulatory framework before it enters into force. Moreover, Article 10 establishes a clear incentive to do so. It interprets the state's 'adoption of laws and regulations, administrative actions and enforcement measures' as appropriate measures to ensure compliance with Annex VI and, therefore, a circumstance that excludes the state's liability for the acts of the private operators under its jurisdiction. However, it is arguable whether such domestic rules must enter into force before the international agreement they implement does. Not only has Annex VI not yet entered into force, but it is still not properly an international norm of law and perhaps never will be if it does not reach the 28 necessary approvals.

Different reasons can explain the lack of traction in the approval rate. The strenuous negotiation process from 1991 to 2005 and the fact that, after 19 years since the adoption of Measure 1 (2005), only 68% of the necessary Consultative States have approved it suggest dissatisfaction with the outcome of the negotiation process to adopt Annex VI, either because it was not broad enough or because it was excessively broad. On the other hand, the costs associated with a response measure to an environmental emergency may serve as a detraction for states that would have otherwise approved Measure 1 (2005). Moreover, although unfortunate and shortsighted, sometimes Antarctic issues are low in priority in the domestic political affairs of many countries.

In any case, beyond the substantive or formal criticisms that may be made of Annex VI, there is little doubt that states' efforts should focus on their process of entering into force as fast as possible. It may not be the all-encompassing, financially efficient and curated instrument to protect the Antarctic environment, but having it as a mandatory regulation is more beneficial than not.

Consultative Parties broadly agree on this basic yet not self-evident principle. Moreover, in the XLIII ATCM (Paris - online, 2021), they agreed to the Paris Declaration, where they reaffirmed their commitment to 'aim to make all necessary efforts to bring Annex VI of the Environmental Protocol on Liability Arising from Environmental Emergencies into force, as a critical step towards implementing Articles 15 and 16 of the Environmental Protocol' (ATCM 2021b). More recently, in the XLV ATCM (Helsinki, 2023), the Meeting agreed to establish an 'informal intersessional process to continue the ATCM's work on evaluating progress towards Annex VI becoming effective and to exchange information on the actions Parties could take to approve Measure 1 (2005)', which was convened by Australia and conducted via the ATCM Discussion Forum (ATCM 2023, paras 242–243). At the XLVI ATCM (Kochi, 2024), the Meeting noted that the entry into force of Annex VI required some domestic procedures, and some Parties said that they were somewhat complex and lengthy, although there were no insurmountable impediments. The Meeting encouraged all Parties to advance in these domestic procedures to bring the measure into force (ATCM 2024, preliminary, paras 178 and 207).

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Once Annex VI is in force internationally, its domestic implementation will be required to ensure its fulfilment. It is and will be a challenging legal and practical process. Shibata (2009, p. 368) observed that 'a formidable task still confronts many of the Consultative Parties to implement the first international environmental liability regime applicable in a public space domestically', highlighting the difficulties it represents for countries such as Japan. Indeed, 15 years after Shibata's paper was published, Japan has still not approved Measure 1 (2005). As we have explained, the Parties that have approved it have acted in several ways. They have solved the implicit legal and practical problems even using opposite approaches. We hope Annex VI will soon be in force and domestically implemented by all of its Parties.

Author contributions

LVF conducted the initial research for this article. Later, the information collected was updated and completed by his former student, DAC. Both are responsible for the data acquisition, analysis, writing, reviewing and editing of the manuscript.

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Competing interests

The authors declare none.

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