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Attainment of consultative status by parties to the Antarctic Treaty: past, present and future

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ABSTRACT

Antarctica is governed through consensus-based decision-making by the 29 Consultative Parties to the Antarctic Treaty. Another 28 'non-Consultative Parties' have acceded to the Treaty and agreed to be bound by its principles and the decisions of the Antarctic Treaty Consultative Meeting (ATCM) yet cannot participate in decision-making. Through the Treaty, acceding Parties can attain consultative status by demonstrating 'substantial scientific research activity' in Antarctica. Seventeen Parties have done so, with the Czech Republic the most recent in 2014. Since then, Venezuela, Belarus and Canada have made multiple unsuccessful bids to attain consultative status, representing an unprecedented failure rate. To understand this change, we determined the recent academic output of the five most recent Consultative Parties and the ten non-Consultative Parties currently most engaged in Antarctic affairs. We also examined how the ten non-Consultative Parties weighed up against other indicators that may be relevant to attainment of consultative status, such as organisational memberships (including the Scientific Committee on Antarctic Research and Council of Managers of National Antarctic Programs) and Treaty system engagement. We found that the very low levels of academic output deemed acceptable >20 years ago no longer appear sufficient to acquire consultative status. However, a number of non-Consultative Parties appear well-placed to attain consultative status once current wider geopolitical tensions have abated. In the meantime, there is a risk that if states feel there is no effective mechanism to attain a voice in Antarctic governance, then the legitimacy of the Treaty system may be called into question.

KEYWORDS

Antarctic Treaty; bibliometric analysis; consultative status; international collaboration; Protocol on Environmental Protection to the Antarctic Treaty; research station

Introduction

The Antarctic Treaty area (the area south of latitude 60°S) is governed through consensus-based decision-making by the Antarctic Treaty Consultative Parties. The 29 Consultative Parties to the Treaty attend the now annual Antarctic Treaty Consultative Meeting (ATCM) where they consider and, where appropriate, make decisions on issues

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including: operation of the Antarctic Treaty system, science, tourism, biological prospecting, inspections under the Treaty, climate change and safety and operations. The Consultative Parties comprise the 12 original signatories to the Antarctic Treaty (i.e. Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, the Soviet Union (now the Russian Federation), South Africa, the United Kingdom of Great Britain and Northern Ireland and the United States of America) plus another 17 countries that have attained consultative status in the time since the Treaty entered into force. Consultative status entitles Parties to attend the ATCM, participate in decision-making, chair meetings and make proposals for consideration by the Meeting. A further 28 Parties have acceded to the Treaty but have not attained consultative status. These ‘non-Consultative Parties’ agree to be bound by the Treaty’s principles and the decisions of the ATCM yet are not entitled to participate in decision-making and do not have an automatic right to attend ATCMs, although in practice they are always invited (Recommendation 15 (1985)).

How to acquire consultative status

Any state can become a non-Consultative Party to the Antarctic Treaty simply by depositing an instrument of accession with the depositary government, which in this case is the United States.¹ However, the Antarctic Treaty allows for non-Consultative Parties to attain consultative status with Article IX(2) stating: ‘*Each Contracting Party which has become a party to the present Treaty by accession under Article XIII shall be entitled to appoint representatives to participate in the meetings referred to in paragraph 1 of the present Article, during such time as that Contracting Party demonstrates its interest in Antarctica by conducting substantial scientific research activity there, such as the establishment of a scientific station or the despatch of a scientific expedition*’. An aspiring Consultative Party must also accede to the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol; Article 22, para. 4) and they may be invited to make a declaration of intent to approve the Recommendations and Measures adopted at the ATCM and subsequently approved by all the Consultative Parties (Decision 2 (2017)). The final step for the Party is to notify the depositary government that it considers that it has fulfilled the requirements for consultative status and demonstrate this by providing supporting information (Decision 2 (2017)).

Following the failure of Venezuela’s bid for consultative status in 2016, the ATCM provided further information on the procedure and criteria for attainment of consultative status² through guidance provided in Decision 2 (2017)³ ‘*Guidelines on the procedure to be followed with respect to Consultative Party status*’ (from here on referred to as the Guidelines). The Guidelines state that the Contracting Party seeking to attain consultative status should provide a dossier of information to the depositary government 210 days before the ATCM at which its request is to be considered. The information dossier should include a description of all scientific programmes and activities performed in Antarctica during the last ten years (which, amongst other things, may include a list of

¹Art. XIII(1) of the Antarctic Treaty. See also Auburn, “Consultative Status under the Antarctic Treaty”.

²e.g., para 49 in ATS, Final Report 1987, 24–25; Decision 4 in ATS, Final Report 2005, 347–348.

³Decision 2 in ATS Final Report 2017, 229–235.

publications related to Antarctica, a list of publications with co-authors from different countries; details of citations of relevant papers, and details of its creation of datasets that are accessible to the scientific community). The Party should include information that points to a sustained contribution to science (e.g. ongoing and planned scientific programmes in Antarctica and details of research facilities or logistical resources to support research activities). The dossier should also give a description of all the planning, management and execution of the Party's scientific programmes and logistical support activities in Antarctica, in compliance with the Antarctic Treaty and the Protocol and provide details about the Party's ability to promote international cooperation in accordance with Article III of the Treaty. Aspiring Consultative Parties are also encouraged to become a full member of the Council of Managers of National Antarctic Programs (COMNAP) to show engagement in Antarctic operational matters in support of science, and to become a full member of the Scientific Committee on Antarctic Research (SCAR) as an indicator of involvement in Antarctic science (see the Guidelines attached to Decision 2 (2017)). The information dossier is distributed to the Consultative Parties for their assessment of whether, or not, the criteria for consultative status have been met and, following a private meeting of the Heads of Delegation (i.e. for each existing Consultative Party) in the margins of the following ATCM, the final decision is taken during the meeting under the ATCM Agenda Item 'Operation of the Antarctic Treaty System'. If there is consensus amongst the Antarctic Treaty Consultative Parties that the criteria for attainment of consultative status have been met, then the ATCM Chair will propose the adoption of a Decision recognising the new Consultative Party, and the Decision shall, in accordance with Decision 2 (2017), be notified by the host Government to the Contracting Party. If, following (sometimes robust) discussion at the Heads of Delegation meeting, consensus cannot be reached, then further discussions may occur under the ATCM Agenda Item, but the Party's attainment of consultative status will likely not be agreed for that year, although some feedback on which elements of the dossier were lacking may be provided.⁴

In Article IX(2) of the Treaty, examples of means of demonstrating 'substantial scientific research activity' include the establishment of a scientific station or the dispatch of a scientific expedition; however, although most Consultative Parties have constructed at least one research station, this is not a pre-requisite for attainment of consultative status. The Netherlands became a Consultative Party in 1990, having used capacity at the research stations of other Parties (i.e. Poland; Arctowski Station, King George Island) to support its science programme, and more recently established the Dirck Gerritsz Laboratory at the United Kingdom's Rothera Research Station (Adelaide Island).⁵ As well as being cost-effective, the environmental benefits of this approach are in keeping with the principles of the Protocol including the requirement to limit impacts upon Antarctic ecosystems.⁶

Objectively, attainment of consultative status under the Treaty is dependent upon the fulfilment of a defined set of criteria, i.e. the level of scientific research activity and scientific logistical support demonstrated by a Party. However, when existing

⁴Barrett, "Securing the polar regions", 319–328.

⁵Noor et al., "Innovative transportable laboratories for polar science"; Barrett, "Securing the polar regions", 322–323.

⁶Gray & Hughes, "Demonstration of 'substantial research activity'", 7–10.

Consultative Parties assess a prospective Party's bid for consultative status, to some degree, they may in practice also take other factors into consideration that indicate the Party's level of engagement in Antarctic affairs more generally, although these factors may not be listed in the set of criteria, as set out in Decision 2 (2017) and the attached Guidelines. Examples may include a Party's management of Antarctic tourism activities (Resolution 6 (1999)), its level of previous attendance and engagement with the ATCM, and possibly its involvement in other components of the Antarctic Treaty system, such as accession to the Convention for the Conservation of Antarctic Marine Living Resources (CAMLR Convention).

Recent bids for consultative status

The first Party to gain consultative status as a non-original signatory was Poland, in 1977 (Recommendation S-O1 (SATCM I-1; London, 1977)). This was followed by a period of rapid accession to the Treaty and successful attainment of consultative status by 11 new Parties during the late 1970s and throughout the 1980s, some of which may have been linked to the negotiations of the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) and Parties' desire to have a voice in any related decision-making.⁷ The last two Parties to gain consultative status during the period prior to the agreement of the Protocol (1991) were Ecuador and the Netherlands,⁸ both in 1990, then Bulgaria in 1998,⁹ Ukraine in 2004,¹⁰ and the Czech Republic in 2014.¹¹ No country has successfully bid for consultative status since then, with geopolitical factors having a major influence.

Venezuela's formal bids in 2016 and 2018 had opposition from several countries that were concerned they did not meet the requirements.¹² However, Molenaar (2021)¹³ suggested that the opposition was possibly due to the concerns of some Consultative Parties from South America regarding the deteriorating domestic situation in Venezuela at the time and the lack of a full dossier of information relevant to the application.

Belarus informed the ATCM of its intention to request recognition as a Consultative Party in 2019.¹⁴ It made a bid in 2021, but discussion at the ATCM was postponed due to the virtual format of the meeting resulting from the COVID-19 pandemic and '*the necessity of an in-person meeting to discuss such an important matter*'.¹⁵ However, some Consultative Parties may have had concerns regarding the Belarusian 2020 presidential elections and the arrest of the opposition activist Roman Protasevich through the forced landing of Ryanair Flight 4978 at Minsk in 2021.¹⁶ The involvement of Belarus in the illegal invasion of Ukraine by the Russian Federation that commenced in February 2022

⁷Scully, "The development of the Antarctic Treaty System", 35–37.

⁸ATS, Final Report 1990, 2–3.

⁹para. 146–147 in ATS, Final Report 1998, 24–25.

¹⁰para. 57–58 in ATS, Final Report 2004, 13.

¹¹The 2013 meeting granted the Czech Republic consultative status "as of 1 April 2014". See para. 56–60 in ATS, Final Report 2013, 28–29; and Decision 1, *ibid*, 223–224.

¹²para. 92–98 in ATS, Final Report 2016, 35–36; para. 32–34 in ATS, Final Report 2018, 28.

¹³Molenaar, "Participation in the Antarctic Treaty", 374.

¹⁴Belarus, "On the intention of the Republic of Belarus".

¹⁵para. 86–87 in ATS, Final Report 2021, 35; Hughes & Convey, "Implications of the COVID-19 pandemic for Antarctica".

¹⁶Molenaar, "Participation in the Antarctic Treaty", 375–376.

was an event with a major impact upon the Antarctic Treaty system.¹⁷ Belarus' bid for consultative status in 2021 was postponed by the ATCM to 2022; however, possibly realising the lack of consensus before ATCMXLIV (2022) due to the invasion of Ukraine, Belarus sent the host country secretariat an official request to postpone consideration of its application until ATCMXLV in 2023.¹⁸ When Belarus resubmitted its bid to the 2023 meeting, it was opposed by some Consultative Parties who considered that substantial scientific research activity had not been demonstrated.¹⁹ However, the involvement of Belarus in the illegal invasion of Ukraine by the Russian Federation was likely a factor in its failure to secure consultative status in 2023.²⁰ Belarus made a bid for consultative status at ATCM 46 in Kochi, India (20–30 May 2024), but was again unsuccessful due to concerns regarding the quality of its science and diversity of its programme, as well as the current geopolitical circumstances. The bid by Belarus will be considered again at ATCM 47 (2025).

Canada's bid for consultative status was introduced initially in 2021 when it presented a paper outlining its intention to request recognition of consultative status.²¹ The bid was formally presented in 2022, where all but two Parties agreed that Canada had met the necessary requirements. However, China and the Russian Federation raised concerns regarding Canada's request, stating '*procedural as well as substantive*' grounds, and the consideration of the request was postponed to the following meeting.²² It has been suggested that this was an attempt to synchronise the requests by Belarus and Canada in 2023, therefore, 'tying' the fates of these two consultative status bids together.²³ Canada did resubmit its bid in 2023, but when the bid of Belarus failed and it understood that there had not been any change beyond the positions expressed in 2022, Canada postponed its bid until ATCM 46 in 2024.²⁴ At ATCM 46, Canada was again unsuccessful in attaining consultative status. While most Parties supported Canada's bid, China and the Russian Federation did not consider that it had met the requirement to have conducted substantial scientific research activity in Antarctica, with few scientific and national operational activities provided in the Electronic Information Exchange System or detailed in Information Papers presented to the ATCM. As is the case for Belarus, the bid by Canada will be reconsidered at ATCM 47.

Aim of this article

In this article, we examine the level of progress by selected non-Consultative Parties in the demonstration of 'substantial scientific research activity' through (i) analysis of their academic paper outputs, (ii) their establishment of infrastructure to support research activities, (iii) their accession to the Protocol and (iv) their level of membership of SCAR and COMNAP, as set out in Decision 2 (2017) and the accompanying Guidelines.

¹⁷Hemmings, "Does the Antarctic Treaty System have a moral duty".

¹⁸Fedchuk et al., "Russian aggression against Ukraine", 250.

¹⁹para. 124–126 in ATS, Final Report 2023, 33–34.

²⁰Silver, "Ukraine freezes Belarus out of Antarctic research work".

²¹Canada, "Notification of the intention of Canada to request recognition".

²²para. 118–122 in ATS, Final Report 2022, 36; Silver, "Russia and China accused of blocking Antarctic role for Canada"; Boulègue, "Five Eyes strategic interests in Antarctica".

²³Fedchuk et al., "Russian aggression against Ukraine", 250.

²⁴para. 127–130 in ATS, Final Report 2023, 34–35.

Consultative Parties may, to some degree, in practice, take broader indicators of a non-Consultative Party's engagement in Antarctic affairs into consideration during their assessment of a bid for consultative status. Therefore, we also examined other factors, including the level of engagement by selected non-Consultative Parties in (v) other instruments of the Antarctic Treaty system, including the Convention for the Conservation of Antarctic Marine Living Resources (CAMLR Convention) and Convention for the Conservation of Antarctic Seals (CCAS), (vi) their membership of extra-Antarctic regional groups and the Association of Polar Early Career Scientists (APECS), (vii) their degree of policy engagement at ATCMs and meetings of the Committee for Environmental Protection (CEP) as demonstrated by policy paper output and (viii) the regulation of, and their citizens' participation in, the tourism industry. We acknowledge that we have been selective in which criteria we have examined, with our choice influenced by the availability of relevant information for all the Parties that were under investigation. Finally, we make an objective assessment of how close the analysed non-Consultative Parties are to fulfilling the selected criteria for attainment of consultative status.

Methods

Selection of non-Consultative Parties for analysis

All non-Consultative Parties have been entitled to attend Treaty meetings since 1985 (ATCMXIII Recommendation 15). The level of ATCM attendance may provide an indication of which non-Consultative Parties consider greater engagement with the Treaty system to be aligned with their strategic objectives, and thus may be interested in attaining consultative status. Level of attendance at the ten ATCMs during the period 2013–2023 was examined (the meeting planned for 2020 did not take place, while the 2021 and 2022 meetings had a hybrid 'virtual/in person' format). Information on Party attendance was obtained from the ATCM Final Reports.²⁵ There was a clear division between heavily engaged and less engaged non-Consultative Parties. Eight Parties (Belarus, Canada, Colombia, Malaysia, Portugal, Romania, Switzerland, and Türkiye) attended all ten meetings; two others, Monaco and Venezuela, attended nine. The Party with the next highest level of attendance was Slovakia, which attended five meetings, and the remainder of non-Consultative Parties attended once or twice, if at all. Based on these data, we selected the ten non-Consultative Parties that had shown sustained attendance for comparison against the five most recent Consultative Parties. These fifteen Parties were allocated to one of three groups:

- (1) Recent Consultative Parties. These were the five Parties to have attained consultative status most recently. The only recent example was the Czech Republic (2014), but for completeness, we also assessed Ukraine (2004), Bulgaria (1998), Ecuador (1990) and the Netherlands (1990).
- (2) Active Parties. This group comprised the three Parties that have actively made unsuccessful bids for consultative status at recent Treaty meetings (i.e. Venezuela

²⁵ATCM Final Reports: <https://www.ats.aq/devAS/Info/FinalReports?lang=e>.

in 2016 and 2018 and the on-going bids of Belarus (in 2021, 2023 and 2024) and Canada (in 2022, 2023 and 2024)).

- (3) Prospective Parties. The final group comprised seven other non-Consultative Parties that had regularly attended the ATCM and that were identified as potentially well-placed to attain consultative status at some point in the future, or which have expressed an interest in doing so (i.e. Colombia, Malaysia, Monaco, Portugal, Romania, Switzerland, and Türkiye).

Criteria relevant to Decision 2 (2017)

Evidence of Parties' fulfilment of selected criteria detailed in Decision 2 (2017) and the associated Annex '*Guidelines on the procedure to be followed with respect to Consultative Party status*' are detailed below.

(i) Demonstration of scientific research activity – bibliometric analysis

Article XI(2) of the Treaty makes the demonstration of substantial scientific research activity in Antarctica the principal hurdle to the attainment of consultative status. While the criteria for assessing this requirement are set out in Decision 2 (2017), many are rather subjective in nature, and it may be a challenge to make comparisons between Parties. With this in mind, we decided to adopt a more objective approach through the analysis of academic paper outputs. While there are some limitations to the approach, bibliometric analyses do provide some useful insights.²⁶

Antarctic scientific research activity was evidenced based upon the production of relevant academic outputs. A set of 'Antarctic papers' was identified using a keyword search on Web of Science and exported to InCites for analysis. The search string has been used previously,²⁷ and consists of:

Topic Search (TS) = ((antarct* NOT (candida OR 'except antarctica' OR 'not antarctica' OR 'other than Antarctica')) OR 'transantarctic' OR 'ross sea' OR 'amundsen sea' OR 'weddell sea' OR 'southern ocean')

This detailed search string allows consistency with earlier work. It is believed to be significantly more comprehensive than using a simple search, for example, *antarct** or *Antarctic*,²⁸ and avoids some common false positives. The search used here will return only papers that are indexed by Web of Science, a selective database which only indexes material in a defined set of international journals that are predominantly English language. We also chose to narrow it to the core types of peer-reviewed research publications – articles, reviews, and proceedings papers. This means that the figures reported here may not include material in some more obscure publications nor will they count material such as conference abstracts and technical reports. The figures quoted in some bids for consultative status (e.g. Belarus 2021, 2023)²⁹ often include a more expansive definition and so the numbers in this study may not be directly comparable.

²⁶Gray & Hughes, "Demonstration of 'substantial research activity'"; Xavier et al., "The rise of Portuguese Antarctic research"; Karatekin et al., "The emerging contribution of Türkiye".

²⁷Gray & Hughes, "Demonstration of 'substantial research activity'", 3; Xavier et al., "The rise of Portuguese Antarctic research", 12; Karatekin et al., "The emerging contribution of Türkiye", 302.

²⁸e.g., in Dastidar, "National and institutional productivity and collaboration in Antarctic science", 175–176.

²⁹Belarus, "On the intention of the Republic of Belarus"; "Republic of Belarus in the System of the Antarctic Treaty".

The Web of Science search, after export to InCites, contained 83,574 records from 1980 onwards, of which 78,134 were articles, reviews, and proceedings papers – this document type filter was used throughout. Of those documents 77,429 had country data associated with the institutional affiliation, and were suitable for analysis. The overall data showed a steady growth in papers since 1980, with a small drop in 2022 and a larger one in 2023 that can be attributed to incomplete indexing (i.e. delays in indexing can cause a ‘lag’ in InCites data). For this reason, 2023 and 2024 data were omitted from the analyses.

Analysis of some papers identified a potential source of error involving inaccurate matching to geographic keywords; for example, a paper which was unambiguously about the Canadian Arctic was apparently matched to a keyword search for ‘Weddell Sea’ when using a Topic Search. Further investigation identified that this issue appears to be affected by geographical keywords in the ‘Keywords Plus’ field and is unlikely to affect more than a very small percentage of papers.

Using the bibliometric data for each of the selected Parties, a number of analyses were undertaken. The selected time periods, which differ for each criterion, are based on the availability of reliable data.

Research paper output by group. The paper output by each of the selected Parties was aggregated for the Active, Prospective and Recent Consultative Parties groups, and these were assessed for the period 2003–2022 (the Recent Consultative Parties group was treated as including all five Parties throughout the 2003–2022 time period, even though in 2003 only three of the five Parties had attained consultative status).

Research paper output by Party. The paper output by each of the selected Parties was assessed individually from 1980 to 2022. For the Recent Consultative Parties, a note was made of the year consultative status was attained. The graphs showing the data were scaled to cut off at 40 papers per year, which is in excess of the number published by the Czech Republic at the time it received consultative status (i.e. 31 papers in that year). The 40 papers per year number is not intended to be indicative of a notional threshold required for consultative status to be attained – Consultative Parties must take a holistic view across all the established criteria when making this assessment – however, the number was selected to assist in data visualisation and was considered sufficiently high, especially when considering the low paper output by some longstanding Consultative Parties (see Results section).

Research paper corresponding authorship. The proportion of corresponding authorships was considered to be an indicator of whether or not a Party has taken a leadership role in the research in which it was involved. To detect any change in scientific leadership, the percentage of Antarctic papers where each Party was the corresponding author during the 5-year time periods 2013–2017 and 2018–2022 was examined. For comparison purposes, data were also collected for the Czech Republic (as the last Party to attain consultative status in 2014) and the mean level of corresponding authorship was calculated for the Consultative Parties as a whole.

Research as a share of national output. Gray and Hughes (2016) suggested ‘national focus’, the proportion of a nation’s output which is comprised of Antarctic papers, as a means to measure the share of national research capacity focused on Antarctic science, thus allowing size-independent comparisons. This analysis was undertaken for the most recent five-year period for which reliable data were available (2018–22). The Czech Republic had a share of 0.15% of its output in the year it became a Consultative Party and this could potentially be seen as a useful benchmark.³⁰

International collaboration. The Guidelines attached to Decision 2 (2017) establish that the level of international scientific cooperation is an accepted criterion for the assessment of a Party’s demonstration of substantial scientific research activity in Antarctica. Consequently, we examined the proportion of international collaboration in papers produced by the selected Parties during the period 2013–2022. Furthermore, the most frequent collaborators for each Party were also examined.

(ii) Antarctic research infrastructure

Information on Antarctic infrastructure operated by each Party was obtained from the COMNAP Antarctic Station Catalogue.³¹ The Guidelines attached to Decision 2 (2017) state that a Party seeking to attain consultative status should provide ‘details of its research facilities and logistics resources existing or planned to support its Antarctic research activities’ (paragraph f). The Treaty suggests that the establishment of a research station might contribute to a Party’s demonstration of substantial scientific research activity in Antarctica (Article IX (2)). However, research station construction generally has an impact that is greater than ‘*minor or transitory*’, and the Protocol advocates minimising environmental impact when undertaking activities in Antarctica, including research (Annex I to the Protocol). Consequently, compared to earlier years, station construction to demonstrate substantial scientific research activity may no longer be viewed positively, particularly if established at a location where existing infrastructure, potentially with spare capacity, already exists. Furthermore, the Treaty promotes the concept of scientific cooperation (Article II) and Parties’ shared use of existing research infrastructure may facilitate increased international scientific research and cooperation in Antarctica (see also the Guidelines attached to Decision 2 (2017), paragraph h). It should also be noted that the Guidelines make it clear that methods exist, other than the establishment of a scientific station, to demonstrate substantial research activity in Antarctica (paragraph d). Taking these factors into consideration during the assessment of a Party’s consultative status bid, there may be some debate over how Consultative Parties might view sole operation of a research station, versus shared use of existing station facilities through some form of collaborative arrangement.

(iii) Accession to the Protocol

Accession to the Protocol is a condition of attaining consultative status (Article 22(4)). Details of which Parties had signed the Protocol were obtained from the website of the Secretariat of the Antarctic Treaty.³²

³⁰Gray & Hughes, “Demonstration of ‘substantial research activity’”, 5–9.

³¹COMNAP, Antarctic Facilities Information: <https://www.comnap.aq/antarctic-facilities-information>.

³²Secretariat of the Antarctic Treaty: https://www.ats.aq/index_e.html.

(iv) Membership of SCAR and COMNAP

The level of membership of Parties to SCAR and COMNAP were obtained from the respective organisational websites.³³

Broader indicators of engagement in Antarctic affairs not detailed in Decision 2 (2017)

To some degree, in practice a Consultative Party may take factors other than those detailed in Decision 2 (2017) into consideration when assessing a non-Consultative Party's bid for consultative status. The relative importance of these factors in a Consultative Party's assessment is not known, but their consideration may help the Party form a view regarding the level of engagement of the non-Consultative Party in broader Antarctic affairs.

(v) Accession to the CAMLR Convention and CCAS

Details of which non-Consultative Parties had acceded to the CAMLR Convention and Parties' level of membership of CCAMLR were obtained from the CCAMLR website.³⁴ Membership of CCAMLR is indicative of a Party's interest and engagement in marine conservation and the management of fishing activities within the CAMLR Convention area. Parties that have acceded to the CAMLR Convention may also provide scientific data to facilitate the management of the fishery, some of which may have been collected within the Treaty areas and may be relevant to the demonstration of substantial scientific research activity and a potential consultative status bid. Accession to CCAS may indicate a willingness to engage in all instruments of the Antarctic Treaty system, although it is recognised that CCAS has been largely superseded by the Protocol (i.e. through Annex II to the Protocol 'Conservation of Antarctic Fauna and Flora').³⁵

(vi) Membership of extra-Antarctic regional groups and the APECS

Information on Parties' membership of the three extra-Antarctic regional groups, the Asian Forum for Polar Science (AFoPS), the Reunión de Administradores de Programas Antárticos Latinoamericanos (RAPAL), the European Polar Board (EPB) as well as APECS was obtained from the websites of the respective organisations.³⁶

(vii) Policy outputs and engagement with the ATCM and CEP

Although not a formal criterion assessed during bids for consultative status, prior engagement with the ATCM and CEP is likely to be a factor taken into consideration by Consultative Parties in their assessment. Policy papers many also contain details of scientific and logistical collaborative agreements (e.g. Memorandums of Understanding) with other Parties (see Karatekin, Uzun, Ager, Convey and Hughes 2023), which is a criterion for consultative status mentioned in the Guidelines attached to Decision 2 (2017) (paragraph h). Details of papers submitted by Parties to the ATCM and CEP were

³³SCAR: <https://scar.org>; COMNAP: <https://www.comnap.aq>.

³⁴CCAMLR: <https://www.ccamlr.org>.

³⁵Secretariat of the Antarctic Treaty, Conservation of Antarctic Flora and Fauna: <https://www.ats.aq/e/faflo.html>.

³⁶AFoPS: <https://afops.org/>; RAPAL: <https://www.rapal.org.ar/>; EPB, Membership: <https://www.europeanpolarboard.org/about-us/membership/>; APECS, National Committees: <https://www.apecs.is/who-we-are/national-committees.html>.

retrieved from the Meeting Documents Archive of the Secretariat of the Antarctic Treaty.³⁷

(viii) Tourism

The presence of the citizens of a Party as tourists within Antarctica may be an indicator of the profile of the region within that nation's public consciousness and its engagement in Antarctic education and outreach initiatives. Additionally, national tourist visitor numbers could be seen as an alternative indicator of national 'presence' within the Treaty area (as compared with the number of national Antarctic programme personnel sent to the continent each year). The regulation and permitting of tour operators within the Antarctic Treaty area may provide a strong justification for any Party taking on these responsibilities to have a say in Antarctic governance and decision-making through the attainment of consultative status (although we note that this may be a driver for a Party to attain consultative status, rather than a metric for the assessment of a non-Consultative Party's bid for consultative status). Previously, the ATCM was made aware that some tourist vessels operating in Antarctic waters were chartered by tourism operators organising their expeditions within the territories of non-Consultative Parties. Given the potential for a major incident involving one of these vessels and the corresponding environmental impact, the ATCM agreed Resolution 6 (1999) that encouraged non-Consultative Parties with tourism activities organised in their territory to sign the Protocol.

Antarctic tourist visitation data for the 2022/23 summer season were provided by the International Association of Antarctica Tour Operators (IAATO). Data for the 2022/2023 season were used as these were the most recent available at the time of analysis.

Results

Criteria relevant to Decision 2 (2017)

i) Demonstration of scientific research activity – bibliometric analysis

Research paper output by group. The number of Antarctic research papers produced globally has grown steadily over the last two decades, from around 2000 papers per year in 2003 to a peak of almost 3800 in 2021 (90% increase). The paper number fell back slightly in 2022, to around 3400 (75% increase); this decline is a global phenomenon and not restricted simply to Antarctic research. On average, the levels of paper output by the Parties within the three analysed groups have increased at a faster rate; between 2003 and 2022, the Active, Prospective and Recent Consultative Party groups increased their paper number outputs by 120% (91 to 201), 422% (45 to 235) and 257% (63 to 221) respectively. In 2022, the Active and Prospective Parties together produced around 10% of all Antarctic papers and the Recent Consultative Parties around 6% (in comparison, in 2022 the United States, the United Kingdom, Germany and Australia produced 30%, 16%, 12% and 11% of Antarctic papers, respectively). However, the group data masked a high level of variability in paper production by the individual Parties within each group with, for example, the majority of paper output by the Recent Consultative Parties group

³⁷Secretariat of the Antarctic Treaty, Meeting Documents Archive: <https://www.ats.aq/devAS/Meetings/DocDatabase?lang=e>.

being attributable to Canada and around half of the Prospective Parties' output being attributable to Switzerland (see next section). Given that many of the non-Consultative Parties examined are still building momentum within their Antarctic research communities, it is perhaps not surprising to see a greater increase in percentage output of papers over time, compared to total national research output, as their programmes mature.

Research paper output by Party. When the paper output by each Party is assessed individually, there is a great deal of variation. Figure 1(a) shows the number of papers produced each year since 1980 by each Recent Consultative Party, with the year consultative status was attained indicated by a vertical arrow. The Netherlands initially had few papers followed by a rapid increase in numbers in the years following the attainment of consultative status. Bulgaria also had very few papers initially, but once consultative status was attained, there followed a period of slow but steady growth in numbers. Ecuador gained consultative status in 1990 but paper output remained low for two decades, with a slight increase in numbers noted in the past 3–4 years. In contrast to the Netherlands, Bulgaria and Ecuador, the Czech Republic and Ukraine only attained consultative status following a period of steady growth in paper output, albeit at a low level for Ukraine and a higher level for the Czech Republic.

Figure 1(b) shows the number of papers produced each year by each Active Party and Prospective Party, and reveals a wide variation. Three countries had high historic growth rates, and paper numbers remain high (e.g. in 2022, the number of papers produced by Canada, Switzerland and Portugal were, 190, 107 and 47, respectively, and all have already surpassed the level of academic output demonstrated by the Czech Republic

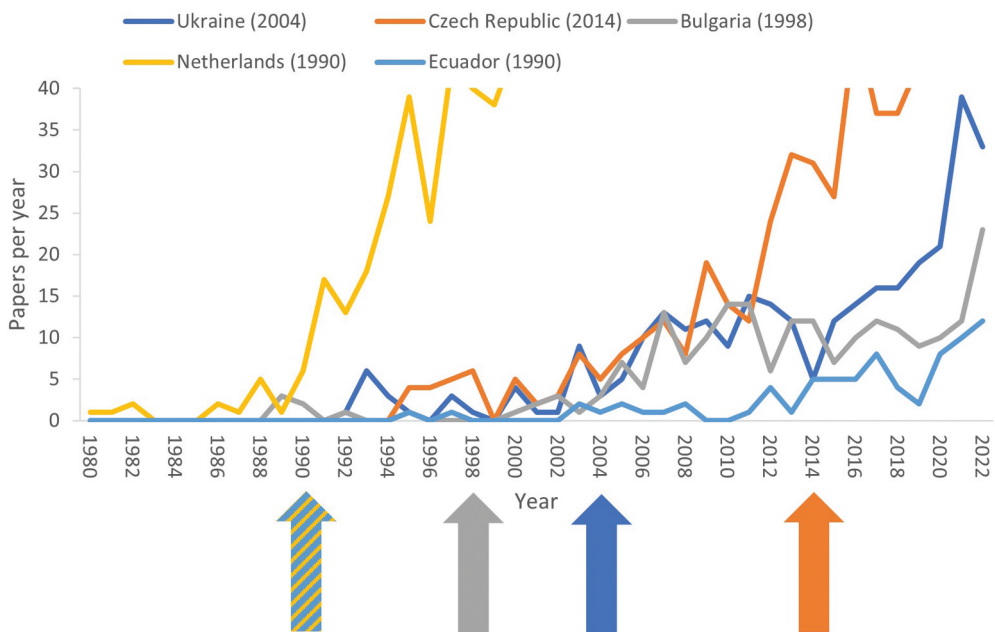


Figure 1a. Papers produced each year during the period 1980 to 2022 (scaled off at 40 papers per year) by the last five Parties to attain consultative status. The vertical arrows indicate the year the respective Parties attained consultative status. Note that Ukraine only became independent from the Soviet Union in 1991. The Czech Republic became independent in 1993 (prior to which it was part of Czechoslovakia). Publication data prior to independence are not shown.

when it attained consultative status, i.e. 31 papers in that year). Malaysia reached a high of 50 papers in 2018, but output has since fallen back that could be linked to disruption caused by the COVID-19 pandemic.³⁸ Türkiye has increased its academic output rapidly in the past five years and is close to the level of output demonstrated by the Czech Republic in 2014, while Colombia's increase in paper numbers has been substantial but less striking. The research communities of Belarus, Monaco, Romania and Venezuela have produced consistently low numbers of papers per year.

When we examined the level of paper output by the five Parties that attained consultative status most recently, we saw a dramatic shift in the level deemed acceptable by the Consultative Parties that assessed their bids. Prior to 2014, Ecuador, the Netherlands, Bulgaria and the Ukraine all attained consultative status based on extremely low levels of academic output, i.e. in the range of zero to five papers in the year when they became Consultative Parties (Figure 1(a)). By contrast, in 2014 when the Czech Republic attained consultative status, it produced 31 papers. Nevertheless, from Figure 1(b), it is clear that most, if not all, of the Active and Prospective Parties have attained an equivalent (albeit low) level of academic output to the Parties that successfully attained consultative status between 1990 and 2004.

Given that in the United Kingdom a typical post-doctoral researcher might reasonably be expected to produce two papers per year, the levels of output (2–5 papers) for entire national Antarctic programmes that attained consultative status between 1990 and 2004 appear extremely low. On first sight, it may be difficult to understand how this level of output could conceivably demonstrate substantial scientific research activity.

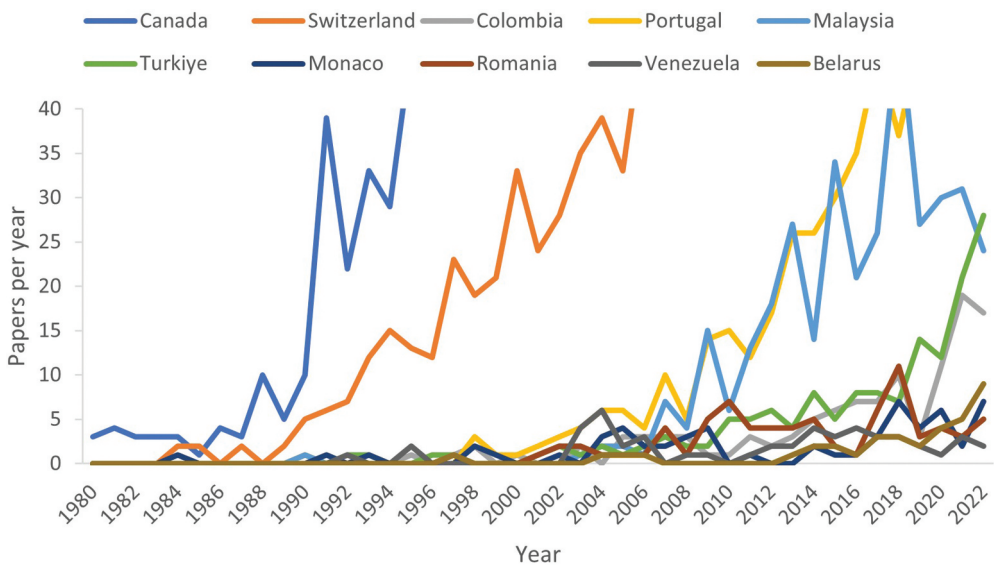


Figure 1b. Papers produced each year during the period 1980 to 2022 by non-Consultative Parties. Note that Belarus only became independent from the Soviet Union in 1991.

³⁸Hughes & Convey, "Implications of the COVID-19 pandemic".

Nevertheless, scientific traditions across Parties may differ, with differing emphases placed on the importance of publications compared with the various other forms of scientific outputs (e.g. academic papers vs. conference proceedings vs. research datasets, non-peer-reviewed reports and other grey literature). The data were also obtained from a database that selectively focuses on internationally oriented publications in higher-profile journals, with low coverage of smaller, or specialist, non-English titles. Consequently, the apparently low (or very low) levels of output by some entire national Antarctic research communities may not always reflect the total amount of scientific activity being undertaken.

Research as a share of national output. Looking at the most recent five-year period under analysis (2018–22), Antarctic papers represented 0.17% of global output as recorded in InCites, with all 29 existing Consultative Parties averaging 0.33% of their national output as Antarctic papers, and the five Recent Consultative Parties averaging 0.19%. However, these data concealed a very wide distribution – at one extreme, China (0.07%) and India (0.08%) had apparently little focus on Antarctic research, while at the other, Argentina (1.07%), New Zealand (1.08%) and Chile (1.09%) demonstrated a high proportion of Antarctic research paper outputs.

The three Active Parties (Belarus 0.22%, Canada 0.17%, and Venezuela 0.15%) all met or exceeded the level attained by the Czech Republic (0.15%) in the year it became a Consultative Party (2014), as did three of the Prospective Parties (Monaco 2.27%, Switzerland 0.23%, and Portugal 0.16%). Malaysia had a national focus rate of 0.12%, while Colombia reached 0.09% and Romania and Türkiye both had 0.03%.

Research paper corresponding authorship. Figure 2 shows the percentage of Antarctic papers where each Party is the corresponding author during the five-year periods 2013–2017 and 2018–2022. The data showed variability across all three groups, but it was most pronounced for Parties with a low level of paper output. The mean percentage of corresponding authorship across the period 2013–2022 for all 29 Consultative Parties was roughly 56% and this was used as a baseline. Czech Republic, which was the last Party to attain consultative status, had a similar percentage of corresponding authorship to the mean value for the other Consultative Parties (i.e. 58% and 56%, respectively, over the period 2013–2022). Canada, Portugal and Switzerland remained consistent across the time-periods but below the baseline, Malaysia showed both a relatively high and consistent percentage of corresponding authorships for the periods. Several of the non-Consultative Parties show a distinct increase in percentage of corresponding author papers over the later five-year period (e.g. Colombia, Romania and Türkiye), while Venezuela and Monaco have seen substantial decreases.

With the exception of Ecuador, the Recent Consultative Parties saw little change in percentage of paper corresponding authorship between 2013–2017 and 2018–2022 (Figure 2). In contrast, some of the Prospective Parties, including Colombia, Romania and Türkiye, showed a marked increase in percentage of corresponding authorship, a pattern also seen in the Active Party, Belarus. The increase may indicate a greater level of scientific leadership over the two time periods.

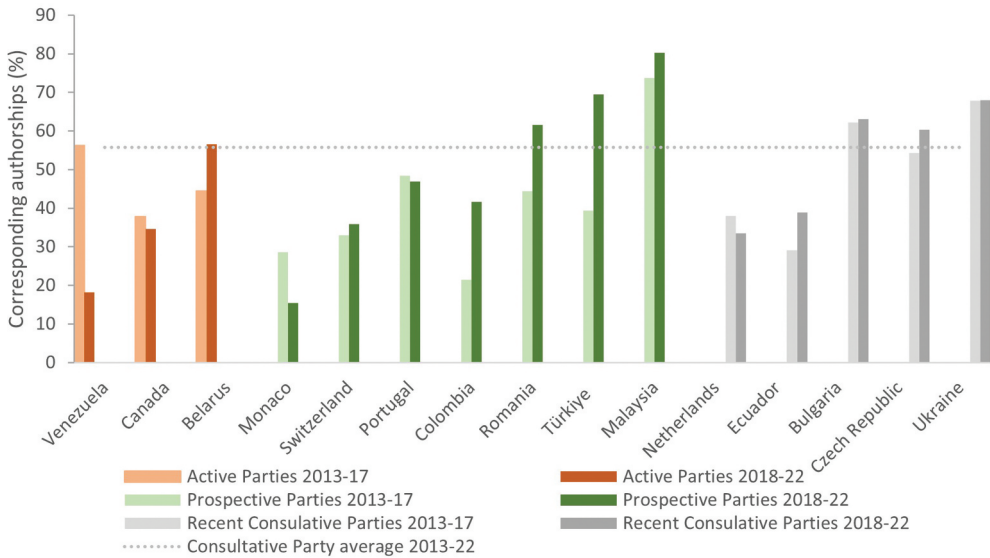


Figure 2. Percentage of corresponding authorships for each Party during the five-year periods 2013-17 and 2018-22. The dotted line represents the average percentage of corresponding authors across the 2013-2022 period for all 29 Consultative Parties (roughly 56%). The Czech Republic, the last Party to attain consultative status, averaged 58% corresponding authorships during the period 2013-2022.

International collaboration. Figure 3 shows the proportion of international collaboration in papers produced by the selected Parties during the period 2013–2022. There was no particular pattern distinguishing the three groups by their overall rates of international collaboration, although the three Active Parties tended to have higher international collaboration rates. The collaboration rates were high for some nations, with Switzerland, Portugal, Monaco, Netherlands and Ecuador at or above 90%. For comparison, the 29 existing Consultative Parties averaged a collaboration rate of around 70% over the ten-year period as did the most recent Consultative Party, the Czech Republic (69.9%). These data may not be unexpected given the emphasis within the Treaty on international scientific collaboration (Articles II and III).

The most frequent collaborators for each Party are shown in Table 1. Several Parties had consistent patterns of collaboration, with Canada, Venezuela and Monaco all having over 50% of their papers published in collaboration with their most frequent partner. Other Parties' patterns of collaboration were more diffuse; for example, Romania and the Czech Republic did not have a single dominant partner. Belarus had a high level of collaboration with the Russian Federation likely due to their close Antarctic logistical ties, while Canada had high levels of collaboration with the United States and the United Kingdom. These scientific connections likely exist alongside geopolitical allegiances. For some Parties with low numbers of papers, there were insufficient data to determine a meaningful pattern of collaborations. However, the analysis did highlight the dominance of collaborations by some long-established Consultative Parties, such as the United States, Germany and the United Kingdom, which may provide evidence of science diplomacy in action. It is notable that China, as a growing Antarctic power, did not feature on Table 1 as a major collaborative nation, but this may change as China's scientific programme expands alongside its influence

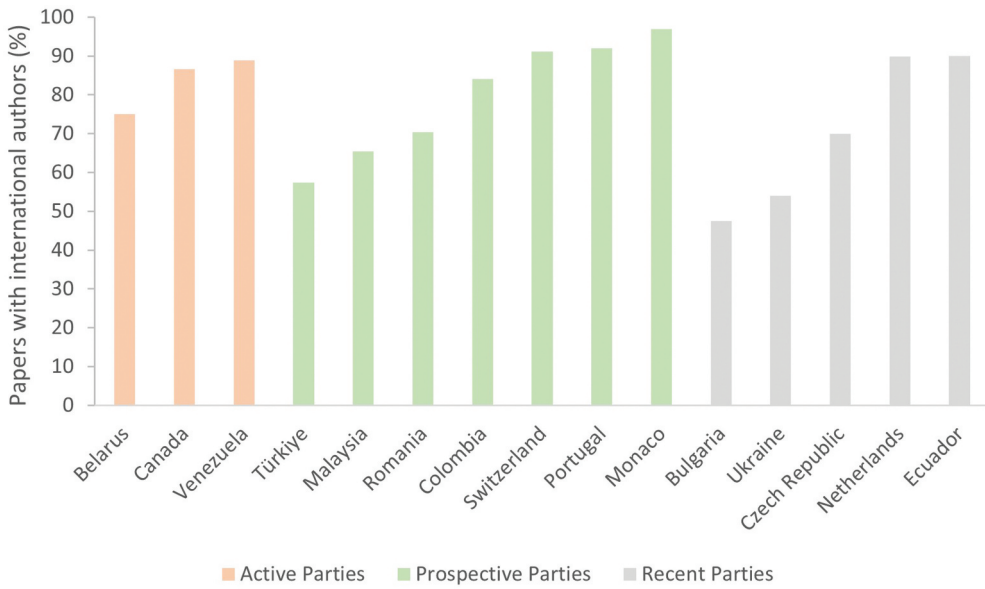


Figure 3. Proportion of international collaboration in papers produced during the period 2013-2022.

in the region.

(ii) Antarctic research infrastructure

During the first three decades after the Treaty entered into force, it was considered almost essential for a Party to have established a research station in order to attain consultative status. However, in 1990 the Netherlands set a precedent whereby it attained consultative status using infrastructure operated by another Party, possibly reflecting the

Table 1. Main collaborative countries on academic papers produced by each of the 15 Parties under analysis (2013-2022).

	Party	Most frequent collaborating Parties ^a		
Active Parties	Belarus	Russian Federation (43%)	USA (21%), Germany (21%), Poland (21%)	
	Canada	USA (54%)	UK (26%)	Germany (18%)
	Venezuela	USA (58%)	Germany (42%)	UK (38%)
Prospective Parties	Colombia	USA (33%)	Chile (29%)	France (24%), Australia (24%)
	Malaysia	UK (44%)	Japan (21%)	Chile (20%)
	Monaco	France (59%)	USA (56%)	UK (26%)
	Portugal	UK (42%)	Spain (32%)	France (27%)
	Romania	Chile (24%)	USA (22%)	France (20%), Germany (20%)
	Switzerland	USA (47%)	Germany (40%)	UK (35%)
	Türkiye	USA (38%)	Germany (25%)	Australia (24%)
Recent Consultative Parties	Bulgaria	Belgium (31%)	Czech Republic (20%)	Germany (19%), Italy (19%)
	Czech Republic	USA (25%)	Belgium (19%), UK (19%)	
	Ecuador	USA (38%), Spain (38%)	Chile (32%)	
	Netherlands	UK (37%), USA (37%)	Germany (36%)	
	Ukraine	USA (33%)	Russian Federation (21%), Poland (21%)	

^aThe total percentage for each of the 15 Parties can add up to more than 100% because more than one collaborating country can be included on any individual paper.

increasing interest in limiting environmental impacts that accompanied the development of the Protocol that was signed a year later. The Netherlands still remain the only Party to have attained consultative status using this logistical model, with Ecuador, Bulgaria, Ukraine and the Czech Republic all acquiring or establishing their own stations prior to becoming Consultative Parties. Given the impact station construction can have on Antarctic environments, including habitat destruction, pollution, wildlife disturbance and the risk of non-native species introduction,³⁹ it is encouraging to see that only three of the ten Active and Prospective Parties have established Antarctic infrastructure (see Table 2).

Of the Active and Prospective Parties, Belarus is the only one with a permanent research station flagged solely under its name which is located within the past operational footprint of Russian activities. Vechernyaya Base is a summer-only station operated by the National Academy of Science of Belarus. The station is located in East Antarctica c. 28 km from the Russian Molodyozhnaya Station and Belarusian researchers rely upon the Russian Federation for logistical support. Romania operates the summer-only Law-Racovița-Negoitã Station (Larsemann Hills, East Antarctica) with Australia.⁴⁰ During the 2018–19 season, Türkiye constructed a temporary scientific research camp, comprising three ISO containers, at a previously undeveloped location on Horseshoe Island, Marguerite Bay, and has plans to replace this with a larger permanent station in the near future.⁴¹

Most of the other Parties have, to some degree, adopted the shared infrastructure logistical model of the Netherlands and decided at this stage not to establish infrastructure on the continent, but to use ships or spare capacity on other research stations to support their scientific activities, possibly in an effort to minimise their environmental impact, but also to save costs. For example, Portugal regularly collaborates with other Parties to access space on their research stations while also chartering an aircraft to transport its researchers and scientific cargo.⁴² As an alternative example, Switzerland organised the Antarctic Circumpolar Expedition (ACE) during the 2016–17 summer season and involved scientists from 23 countries.⁴³

(iii) Accession to the Protocol

One potential indicator that a Party is interested in becoming a Consultative Party is its signature of the Protocol. Our analysis revealed that all of the Active and Prospective Parties are signatories to the Protocol (Table 2), as are all of the Recent Consultative Parties.

(iv) Membership of SCAR and COMNAP

One of the most objectively assessable criteria set out in Decision 2 (2017) is a Party's membership of SCAR and COMNAP (Table 2). Given the need to demonstrate 'substantial scientific research activity' it was somewhat surprising that of the Active Parties,

³⁹Tin et al., "Impacts of local human activities"; Hughes & Convey, "The protection of Antarctic terrestrial ecosystems"; Pertierra et al., "High resolution spatial mapping".

⁴⁰Hemmings, "Why did we get an international space station before an international Antarctic station?", 9–10; Romania, "Cooperation between Romania and Australia".

⁴¹Wenger, "Turkey plans its own Antarctic station"; Karatekin et al., "The emerging contribution of Türkiye", 309–311.

⁴²Xavier et al., "The rise of Portuguese Antarctic research".

⁴³Halo et al., "South Africa in the Antarctic Circumnavigation Expedition", 1.

Table 2. Non-Consultative Parties and details of their accession to Antarctic Treaty system agreements and membership of Antarctic-focused organisations (●: Full Member of the Scientific Committee on Antarctic Research (SCAR), Member of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Full Member of the Council of Managers of National Antarctic Programs (COMNAP), Member of the European Polar Board (EPB), full member of the Asian Forum for Polar Sciences (AFoPS), National Committee to the Association of Polar Early Career Scientists (APECS); ○: Associate Member of SCAR, Acceding State to the CAMLR Convention, Observer to the Reunión de Administradores de Programas Antárticos Latinoamericanos (RAPAL); Observer to COMNAP). Costa Rica, Cuba, Guatemala, Hungary, Kazakhstan, the Democratic People's Republic of Korea, Mongolia, Papua New Guinea, San Marino, Slovakia and Slovenia are non-Consultative Parties, but have not signed the Protocol, CCAS or the CAMLR Convention, nor are they members of SCAR, COMNAP, the European Polar Board or APECS.

Treaty Party	Antarctic Treaty system agreements										
	Antarctic Treaty	Environmental Protocol	CCAS	CAMLR Convention	SCAR	COMNAP	EPB	RAPAL	AFoPS	APECS	Antarctic research infrastructure
Canada	●	●	●	○	●	●	1	1	1	●	—
Türkiye	●	●	—	—	●	●	●	1	1	●	Scientific camp
Portugal	●	●	—	—	●	●	●	1	1	●	—
Switzerland	●	●	—	—	●	○	●	1	1	●	—
Malaysia	●	●	—	—	●	○	1	1	●	●	—
Colombia	●	●	—	—	●	○	1	○	1	●	—
Venezuela	●	●	—	—	○	○	1	○	1	—	—
Belarus	●	●	—	—	○	●	—	1	1	—	Summer station
Monaco	●	●	—	—	○	—	—	1	1	—	—
Romania	●	●	—	—	○	—	—	1	1	—	Joint station

¹Indicates that the Party is unlikely to be eligible to join the organisation.

only Canada is a full member of SCAR, with Belarus and Venezuela possessing only Associate Membership. Of the Prospective Parties, Colombia, Portugal, Malaysia, Switzerland and Türkiye are full members of SCAR with the classification of ‘initial stage programmes’, while Monaco and Romania are Associate Members.⁴⁴

Non-Consultative Parties are allowed to become members of COMNAP if their countries have agreed to the Antarctic Treaty and the Protocol, which all ten Active and Prospective Parties have done. However, Monaco and Romania are not COMNAP members and Colombia, Malaysia, Switzerland and Venezuela are currently only Observers. That Romania is not a COMNAP member is puzzling, given its operation of a research station jointly with Australia. So too is Venezuela’s Observer status, as opposed to full Membership, given the emphasis on COMNAP membership set out in Decision 2 (2017) and its earlier bids for consultative status. Belarus, Canada, Portugal and Türkiye have all attained full COMNAP Membership despite only Belarus and Türkiye having established a summer research station or camp. This might suggest that COMNAP recognises that the establishment and operation of permanent infrastructure is not a prerequisite for the demonstration of the highest level of engagement in Antarctic logistics.

Broader indicators of engagement in Antarctic affairs not detailed in Decision 2 (2017)

(v) Accession to the CAMLR Convention and CCAS

Of the Recent Consultative Parties, Ecuador, the Netherlands and Ukraine are Members of CCAMLR while Bulgaria is an acceding state to the CAMLR Convention (Table 2). None of the Recent Consultative Parties have acceded to CCAS. To date, Canada is the only one of the ten Active and Prospective Parties to have acceded to the CAMLR Convention in its own right (rather than as a member of the European Union) and only Canada has signed CCAS (see Table 2). Accession to CCAS and the CAMLR Convention may be of less direct relevance to the attainment of consultative status but may indicate more general engagement across the diverse range of Antarctic issues.

(vi) Membership of extra-Antarctic regional groups and the APECS

Six of the ten Active and Prospective Parties have joined extra-Antarctic regional groups⁴⁵ Colombia and Venezuela are members of RAPAL; Malaysia is a member of AFoPS; and Türkiye, Portugal, and Switzerland are members of the EPB. Of those potentially eligible for membership of a regional group, Monaco, Romania and Belarus have not joined the EPB (see Table 2). All five of the five Recent Consultative Parties have joined regional groups: Bulgaria, the Czech Republic, the Netherlands and Ukraine are represented on the EPB, while Ecuador is a member of RAPAL.

⁴⁴SCAR. “SCAR Membership Guide 2023”.

⁴⁵Colombo, “International co-operation in Antarctica”.

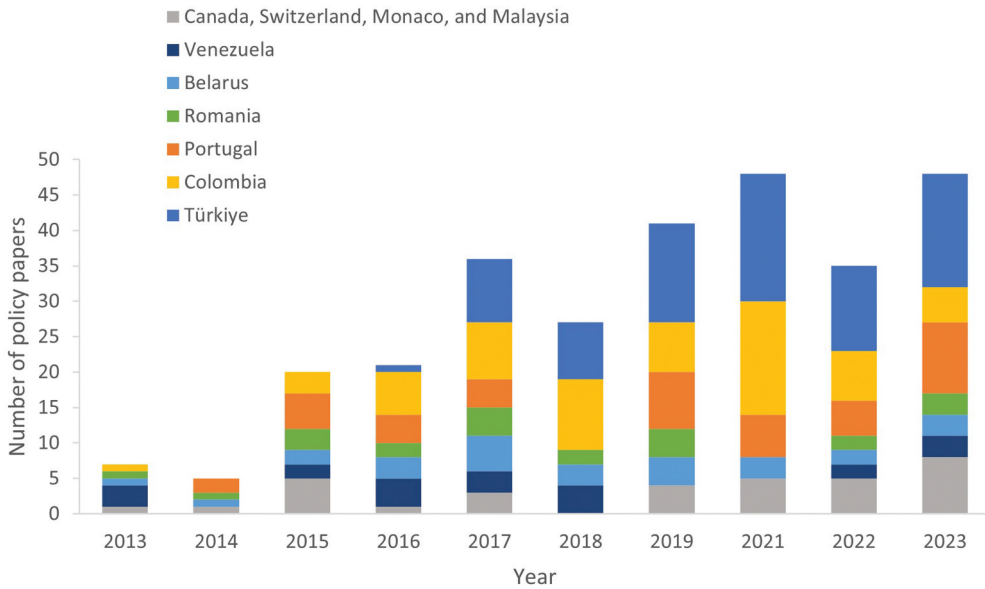


Figure 4. Number of policy papers submitted to the ATCM and CEP by selected Parties from 2013 to 2023.

Six of the ten selected non-Consultative Parties have national committees for APECS; Venezuela, Belarus, Monaco and Romania do not. Of the five Recent Consultative Parties, only Bulgaria and the Netherlands have national committees for APECS.

(vii) Policy outputs and engagement with the ATCM and CEP

The level of engagement and contribution to the ATCMs and CEP meetings was proxied by the number of papers (Working, Information and Background Papers) submitted by each of the selected non-Consultative Parties (see Figure 4). For simplicity, where a paper was submitted jointly by two or more Parties, it was counted as one paper for each of the Parties. Overall, the total number of papers submitted to the ATCMs and CEP meetings by the ten Active and Prospective Parties increased almost seven-fold between 2013 (seven papers) and 2023 (48 papers). During the ten years when meetings occurred during the period 2013–2023, the Active Parties produced only modest numbers of papers (i.e. Belarus, Venezuela and Canada produced 27, 18 and 13 papers, respectively) compared to some of the Prospective Parties (e.g. Türkiye, Colombia and Portugal produced 78, 63, and 44 papers, respectively). However, not all Prospective Parties produced high numbers of papers with Malaysia producing 11, Switzerland five and Monaco five papers over the same period. As a point of comparison, the Czech Republic submitted 15 papers to the ATCM and CEP in the ten years prior to its attainment of consultative status in 2014 (i.e. 2004–2013), indicating the comparative effort that some non-Consultative Parties are putting into policy paper production (e.g. in 2021 alone, Colombia and Türkiye produced 16 and 15 Information Papers, respectively). The most notable change in the level of paper production was that of Türkiye, who submitted only one paper up to 2016, but as of 2019 has been the largest single submitter of papers by a non-Consultative Party. In many instances, the papers submitted by some non-

Consultative Parties have not been particularly impactful and may have reported, for example, a new domestic Antarctic educational initiative or new collaborative agreement between Parties. However, the sheer weight of paper numbers could be seen as evidence of policy engagement, which non-Consultative Parties may struggle to demonstrate relative to Consultative Parties who can independently submit Working Papers that include policy recommendations.

Production of policy papers may require far fewer resources relative to academic outputs and it is notable that some Parties that had low levels of academic output often had high levels of policy paper production. For example, Belarus and Venezuela produced roughly one academic paper for every policy paper, while in contrast, Canada produced 145 and Switzerland 217 academic papers for every policy paper. In general, non-Consultative Parties with the highest academic outputs (i.e. Canada and Switzerland) often had comparatively low levels of policy paper output and may be missing an opportunity to showcase their scientific and logistical engagement in Antarctica via an established communication mechanism.⁴⁶ It is notable that Portugal achieved a high level of academic output and has shown substantial engagement in the ATCM, including through leadership of the Meeting's 'Education and Outreach' work.⁴⁷

(viii) Tourism

Levels of engagement with the tourism industry varied widely. Of the ten Active and Prospective Parties, Canada is the only Party that provides permits to tour operators through its domestic legislative system for working in Antarctica (e.g. the delivery of the EIA process under the Protocol and provision of permits). The only other non-Consultative Party managing Antarctic tour operations in recent years was Denmark, with a single tourist vessel in 2019.⁴⁸ Denmark only attended one Treaty meeting in the period under analysis and so was not included in the Prospective Party group. Canada's long-term permitting of tour operators may be a potential further driver for Canada to attain consultative status in order to have a say in the regulation of the Antarctic tourism industry.

In terms of the country of origin of Antarctic tourists, Canada was the fifth largest source of tourists worldwide, with over six thousand during the 2022–23 summer season (Table 3). On a per-capita basis, they were likewise one of the largest, with 15 tourists per hundred thousand of population, behind Australia (28.6) and at a similar level to the United States (16.3). Switzerland was also a significant source of tourists, with over 1200 in 2022–23, and 13.9 per hundred thousand of population. The Netherlands, in the Recent Consultative Party group, had a similar total number, but about half as many per capita. Monaco had a high number per capita (25.6; one of the highest in the world) but this was an artefact of its small population, with only ten actual visitors.

Discussion

For non-Consultative Parties, the attainment of consultative status to the Antarctic Treaty is likely to be a long and costly process, but for some it is one

⁴⁶Dudeney and Walton, "Leadership in politics and science".

⁴⁷Xavier et al., "The rise of Portuguese Antarctic research"; Xavier et al., "Education and outreach by the Antarctic Treaty Parties".

⁴⁸IAATO, "IAATO overview of Antarctic tourism".

Table 3. Number of tourists from each selected Party visiting Antarctica during the 2022-23 summer season.

	Party	Total visitors	Visitors per 100,000 of population
Four Parties with the highest levels of tourist visitation	United States	54416	16.3
	United Kingdom	7585	11.3
	Australia	7571	28.6
	Germany	6606	7.8
Recent Consultative Parties	Netherlands	1198	6.8
	Czech Republic	106	1.0
	Ukraine	99	0.2
	Bulgaria	40	0.6
	Ecuador	51	0.3
Active Parties	Canada	6044	15.1
	Belarus	12	0.1
	Venezuela	8	0.0
Prospective Parties	Switzerland	1234	13.9
	Malaysia	216	0.6
	Colombia	139	0.3
	Romania	136	0.7
	Portugal	129	1.2
	Türkiye	88	0.1
	Monaco	10	25.6

that is deemed worthy of pursuit to be entitled to engage in decision-making within the Treaty area. When considering the number of Parties entitled to participate in Antarctic governance, the ATCM is caught between (i) being 'inclusive', thereby ensuring that Parties are kept within the fold of the Antarctic Treaty system, and (ii) not allowing so many Consultative Parties into the governance 'club' that the potential variety of views makes decision-making almost impossible. We know of no recent formal discussion of this issue by the ATCM. However, it has been suggested that a transition to a system of majority rule might be appropriate for decision-making on at least some issues.⁴⁹

What factors are taken into consideration when assessing consultative status bids?

Through Decision 2 (2017), the ATCM increased the information available to Parties seeking to attain consultative status concerning how this might be achieved but, despite these developments, the system still lacks objectivity and transparency:

The Antarctic Treaty and the Protocol

The Antarctic Treaty states that Parties can attain consultative status by demonstrating substantial scientific research activity in Antarctica. However, interpretation of what this means in a practice might differ between Parties. The term 'substantial' could be understood to mean a large quantity of research and/or it could be understood as research that is of high importance or quality. The Antarctic Treaty system already acknowledges that all science is not of equal quality, with the Protocol stating that the ATCM should base their work upon the 'best scientific and technical advice available' (Article 10(1)) and the

⁴⁹Yermakova, "Legitimacy of the Antarctic Treaty System", 352.

CAMLR Convention stating that the Commission should formulate, adopt and revise conservation measures on the basis of the ‘best scientific evidence available’ (Article IX (1f)). The great variability in the quantity and quality of scientific output by existing Consultative Parties may lead to considerable differences in Parties’ understanding of what constitutes ‘substantial scientific research’. The Treaty goes on to provide examples of indicators of ‘substantial scientific research’, including the operation of a research station or delivery of an Antarctic expedition, but these indicators demonstrate national ‘presence’ in Antarctica and say little about the delivery and quality of scientific outputs.⁵⁰ Given the high cost of attaining consultative status in terms of time and resources, Parties may favour increasingly the more economical option of sharing the infrastructure of other more established Parties rather than constructing their own research facilities. While acknowledging recent geopolitical complexities, the current failure of Canada’s consultative status bid based on the stated lack of evidence for research activity within the Treaty area itself may be closely monitored by Parties adopting the ‘no station’ model of scientific research delivery (e.g. Portugal, Switzerland and Malaysia). Furthermore, it remains to be seen whether, or not, the Consultative Parties are willing to stand by the principles of the Protocol and continue to recognise that substantial research activity can be demonstrated without the need for permanent Antarctic infrastructure.

Criteria included under Decision 2 (2017)

With Decision 2 (2017), the ATCM first set out expectations of information that would facilitate an assessment of whether or not ‘substantial scientific research’ had been demonstrated. However, currently, non-Consultative Parties have been provided with no clear understanding of where the standards or thresholds for attainment of consultative status are likely to lie, making it difficult to be confident that a bid is likely to be successful. For example, how many (lead author) papers does a Party need to produce? How much international collaboration is acceptable? What level of paper citation is considered sufficient? The rather opaque approach currently in place may be considered a practical solution given the extremes of national scientific capacity seen across Parties. For example, expectations concerning scientific output and impact would likely differ greatly should Parties consider potential consultative bids by, e.g. Monaco *cf.* Canada. SCAR has established a system whereby Parties self-declare the scale and/or state of development of their national scientific activity in Antarctica to determine membership fee contributions (Full Member categories include ‘special contributors’, well-developed programmes’, ‘initial-stage programmes’, as well as Associate Members) and such information could be used to frame expectations regarding scientific delivery when consultative status bids are under consideration.⁵¹

SCAR and COMNAP are closely integrated into the Antarctic Treaty system, and full membership would clearly indicate some level of activity in Antarctica. But how much of a box-ticking exercise is this, and how well does it demonstrate ongoing engagement in Antarctic research? In some ways reflecting consultative status itself, once a Party’s SCAR and COMNAP membership is attained and the annual membership fee is paid, a Party’s

⁵⁰Gray & Hughes, “Demonstration of ‘substantial research activity’”.

⁵¹SCAR. “SCAR Membership Guide 2023”.

level of subsequent engagement may not need to be high to retain this ‘tick’ on the list of criteria set out in Decision 2 (2017). It may be appropriate for assessing Parties to undertake due diligence by enquiring about the current levels of a non-Consultative Party’s engagement with SCAR and CONMAP initiatives.

Further criteria not included in Decision 2 (2017)

In our analysis, we also took into consideration criteria not included in Decision 2 (2017) and the associated Guidelines. We cannot know to what degree, if at all, these criteria are taken into consideration by Consultative Parties when considering a bid for consultative status; however, the same is also true for the criteria included in Decision 2 (2017) due to the opaque nature of the assessment process. At the very least, each of these additional criteria may be taken as an indicator of national engagement in broader Antarctic affairs, and some may be of higher importance. For example, in the ATCM 46 Final Report under Agenda Item 6a, insufficient presentation of Information Papers detailing scientific and national operational activities was cited as a reason for concluding that Canada had failed to demonstrate that it had conducted substantial scientific research activity in Antarctica.

An objective assessment of Parties’ engagement with Antarctic affairs

The non-Consultative Parties included in this study have shown variability in the criteria they have prioritised to demonstrate substantial research activity in Antarctica and the timescale over which progress towards this goal has occurred (Table 4).

Based solely upon the numbers of scientific outputs, Canada, Switzerland and Portugal have clearly surpassed the level attained by the Czech Republic when it attained consultative status, with Türkiye and Malaysia close behind. Canada’s academic output significantly exceeds that of any of the other nine Prospective or Active Parties and is greater than 21 of the 29 existing Consultative Parties, although domestically, its Antarctic focus must be considered in the context of its much greater Arctic interests.⁵² Canada is also the only Party to have acceded to all of the major instruments of the Antarctic Treaty system (the Treaty, Protocol, CCAS and CAMLR Convention), indicating an interest in a wide range of Antarctic issues. Switzerland’s high academic output is further supported by the establishment of the Swiss Polar Institute, and it is noticeable that Switzerland re-commenced submitting papers to the ATCM in 2022 after an 18-year hiatus.⁵³ Portugal’s strong academic output is further strengthened by its high level of active engagement and leadership in the ATCM and collaboration with many other national Antarctic programmes.⁵⁴ However, neither Canada, Switzerland nor Portugal operate their own Antarctic infrastructure, which may make evidencing scientific activity in Antarctica more challenging.

In comparison, Türkiye’s efforts to satisfy the criteria for consultative status have been focussed, comprehensive and delivered over a relatively short period of time.⁵⁵ At ATCM 46, they provided the Turkish Polar Science Strategy 2025–2035 that details their planned

⁵²Nuttall, “Organizing polar science”.

⁵³Gillet, “The Swiss Polar Institute”.

⁵⁴Xavier et al., “The rise of Portuguese Antarctic research”.

⁵⁵Karatekin et al., “The emerging contribution of Türkiye”.

Table 4. Overall assessment of Parties' level of engagement in Antarctic affairs, including via means other than science and associated logistics as detailed in Decision 2 (2017). **science output** - based on Antarctic research papers produced in the most recent publication year: + low-level output (<10 papers); ++ mid-range output (10-29 papers); +++ high output (≥ 30 papers); **policy engagement** - as evidenced by the average number of policy papers submitted to the last five ATCMs and meetings of the Committee for Environmental Protection: + low-level (<2 papers); ++ mid-level (2-5 papers); +++ high-level (>5 papers); **Antarctic infrastructure** - demonstration of Antarctic presence through operation of stations/facilities on the continent: + seasonal/summer-only facility; ++ shared facility; +++ nationally owned and operated facility; **tourism activity** - demonstration of presence through national visitor numbers relative to population size (i.e. visitor numbers per 100,000 of population) and regulation of national Antarctic tourism activities: + low-level (<2 visitors); ++ substantial (≥ 2 visitors); +++ substantial national tourist numbers (≥ 2 visitors) and regulation of national Antarctic tourism activities; **CCAMLR** - as a demonstration of a Party's interest in marine conservation and/or fishing: + not acceded to the CAMLR Convention in own right, but may be represented at CCAMLR via European Union (EU) Membership; ++ accession to the CAMLR Convention; +++ membership of CCAMLR.

		Means of engagement in Antarctic affairs				
		Science output	Policy engagement	Antarctic infrastructure	Tourism activity	CCAMLR
Recent Consultative Parties	Bulgaria	++	++	+++	+	++
	Czech Republic	+++	++	+++	+	+
	Ecuador	+	+++	+++	+	-
	Netherlands	+++	+++	++	++	+++
	Ukraine	++	++	+++	+	+++
Active Parties	Belarus	+	++	+++	+	-
	Canada	+++	+	-	+++ ^a	++
	Venezuela	+	+	-	+	-
Prospective Parties	Colombia	+	+++	-	+	-
	Malaysia	++	+	-	+	-
	Monaco	+	+	-	++	-
	Portugal	+++	+++	-	+	+
	Romania	+	++	+	+	+
	Switzerland	+++	+	- ²	++	-
	Türkiye	++	+++	++	+	-

^aCanada is the only non-Consultative Party that currently regulates an Antarctic tourism operator.

^bSwitzerland has no terrestrial infrastructure, but organised the Antarctic Circumpolar Expedition (ACE) that took place during the 2016–17 summer season (Halo, Dorrington, Bornman, De Villiers, and Fawcett 2016).

commitment to Antarctica research over the next decade and specifically mentions their focus on becoming a Consultative Party.⁵⁶ Türkiye's increasing academic output coupled with their developing infrastructure, high level of international collaboration and engagement in the Antarctic Treaty system means a bid for consultative status may be expected soon. Malaysia has already expressed its desire to become a Consultative Party and although its academic output has declined from a peak in 2018, it has still taken considerable steps to fulfil the criteria for acquiring consultative status.⁵⁷

In contrast, despite already having put forward a bid for consultative status, the academic outputs of Belarus and Venezuela fall short of many of the other non-Consultative Parties; however, as a proportion of their national academic outputs (i.e. 'national focus'), both Parties met or exceeded the level attained by the Czech Republic in

⁵⁶Türkiye, "Turkish Polar Science Strategy".

⁵⁷Shah et al., "Malaysia strategies in sustaining its Antarctic endeavours".

2014. Neither Belarus nor Venezuela have yet attained full membership of SCAR and neither have a national APECS committee. Nevertheless, both Parties regularly submit papers to the ATCM and Belarus' research station and full membership of COMNAP probably indicates as a strong statement of commitment to an Antarctic presence, at least. Colombia's academic outputs are slightly better than those of Venezuela or Belarus, it has recently attained full membership of SCAR and it also submits many papers to the ATCM; however, as for all Parties, securing long-term governmental commitment to funding Antarctic science and logistics may be a challenge.⁵⁸ Romania's academic output is low (despite recent collaborations with the Republic of Korea), it has not attained full membership of SCAR and is not a member of COMNAP despite joint operation of a station with Australia.⁵⁹ Monaco, as a small country, may struggle to demonstrate substantial production of independent research, yet Monaco has already established its role as an advocate for science and environmental protection, e.g. through assessments of Antarctic biodiversity and its conservation status, as supported by the Prince Albert II of Monaco Foundation.⁶⁰

It is likely to take several years for the development of a scientific programme, passage of relevant domestic legislation, establishment of bodies to implement obligations under the Protocol, and the fulfilment of the requirements to become a full member of SCAR and COMNAP.⁶¹ We have shown that ten non-Consultative Parties may currently be within the 'pipeline' that (they may hope) will lead to a voice in the governance of Antarctica. As we see more Parties accede to the Treaty, with Iceland,⁶² Mongolia,⁶³ Kazakhstan,⁶⁴ Slovenia, Costa Rica,⁶⁵ San Marino and Saudi Arabia all becoming Contracting Parties since 2015 and some expressing their interest in consultative status, we should expect to see some of these Parties enter the 'pipeline' and, eventually, the number of Consultative Parties increase.

The provision of information in Decision 2 (2017) enabled non-Consultative Parties and assessing Consultative Parties alike to re-orient their approach in interpreting and applying the original Treaty criteria of Article IX(4). Jabour described Decision 2 (2017) as a '*major policy deviation for the actors of the Antarctic Treaty system*' because for the first time the concept of 'quality' was applied to Antarctic scientific research.⁶⁶ Although no specific thresholds or standards are stated explicitly for the attainment of consultative status, with the agreement of Decision 2 (2017) non-Consultative Parties now understand better the 'rules of the game' and some have responded accordingly. Interestingly, Türkiye's first Antarctic expedition and its marked increase in policy paper output coincided with the agreement of Decision 2 (2017).⁶⁷ Türkiye may have subsequently benefited from the additional clarity that the Guidelines provided and they will likely have informed Türkiye's focussed and methodical efforts to delivering the stated

⁵⁸ Alejandro Sanchez, "An overview of Colombia's Antarctic programme".

⁵⁹ Romania, "Cooperation between Romania and Australia in Antarctica"; "Antarctic research accomplishments acquired under cooperation between Romania and the Republic of Korea".

⁶⁰ Fondation Prince Albert II de Monaco: <https://www.fpa2.org/>; SCAR and Monaco, "Antarctica and the Southern Ocean".

⁶¹ Barrett, "Securing the polar regions through international law", 325.

⁶² Tamm et al., "Iceland's Accession to the Antarctic Treaty".

⁶³ Anudari, "Mongolia setting up its research station in Antarctica".

⁶⁴ Mazbayev et al., "Kazakhstan polar research in Antarctica".

⁶⁵ Quesada, "Costa Rica y el Tratado Antártico".

⁶⁶ Jabour, "So what? Using Scientific Knowledge".

⁶⁷ Karatekin et al., "The emerging contribution of Türkiye".

requirements. Our data show that some of the other non-Consultative Parties have taken a similar approach (see [Tables 2 and 4](#)) but, recent geopolitics aside, many will be trying to predict at what point they will have delivered scientific research of sufficient quantity and quality to ensure attainment of consultative status, as few may want to expend more resources than absolutely necessary in order to attain a place at the top table of Antarctic governance.

Raising the bar?

Our analysis has shown that levels of scientific output that were deemed sufficient for consultative status in the 1990s and early 2000s were in some cases substantially lower than those presented by Parties who failed to acquire consultative status in the past 10 years. Similarly, the level of scientific output produced by the Czech Republic when it attained consultative status in 2014, was far in excess of that achieved by many Parties that enjoyed successful bids for consultative status in earlier decades. Therefore, it is conceivable that the Czech Republic could have attained consultative status with a lower level of scientific output.

Levels of scientific output are not the only metrics under consideration by Consultative Parties when assessing a Party's bid for consultative status, as clarified through Decision 2 (2017). Currently, we have no clear evidence that the ATCM has increased its expectation regarding Parties' demonstration of substantial research activity in Antarctica in order to attain consultative status. Such an assessment has been made difficult (i) due to the lack of recent examples of Parties attaining consultative status and (ii) because it has been impossible to control for the geopolitical manoeuvring surrounding the bids of Belarus and Canada (although it is acknowledged that to some degree geopolitical factors influence almost all decisions within the ATCM). Nevertheless, times have changed since the 1980s when India became a Consultative Party only 24 days after acceding to the Treaty.⁶⁸ At that time, the Antarctic Treaty Parties were eager to get greater representation within the Treaty system of states from the Global South in response to a push within the United Nations for Antarctica to be governed as a common heritage of mankind through the UN.⁶⁹

Unblocking the 'pipeline'

Wider geopolitics have overshadowed the process for attainment of consultative status by Belarus and Canada, although it is noted that each bid may have had some real and/or perceived weaknesses (e.g. Belarus' very low level of academic output⁷⁰ and Canada's apparent failure to adequately demonstrate sufficient scientific activity within the Treaty area⁷¹). Both Parties requested that the ATCM consider their dossier of evidence to support their attainment of consultative status at three separate ATCMs, and all have ended in failure. At the most recent ATCM 46 (May 2024), all but two Parties agreed that

⁶⁸Chaturvedi, "India and the Antarctic Treaty System", 370–371.

⁶⁹For further discussion of the 'Question of Antarctica', see Beck, "Twenty years on: the UN and the 'Question of Antarctica'"; Dodds, "Post-colonial Antarctica".

⁷⁰ATS. "Antarctic Treaty Consultative Meeting 46 Final Report", paragraph 153.

⁷¹ATS. "Antarctic Treaty Consultative Meeting 46 Final Report", paragraph 147.

Canada should attain consultative status; in contrast, the support for the bid by Belarus was considerably weaker. Our analysis suggests that Canada has made a strong case for attainment of consultative status, even though they do not operate an Antarctic station. However, Canada currently finds itself hostage to events taking place in Ukraine. The situation may not change until Consultative Parties also agree to allow Belarus into the Consultative Party ‘club’, despite the more obvious weaknesses in its dossier of evidence.

Notwithstanding increasingly entrenched geopolitical positions, it is not known how long the Consultative Parties will be able to sustain the increasingly long-lived tactic of postponing decision-making regarding non-Consultative Parties’ bids for consultative status. Parties such as Türkiye and possibly Portugal may be wondering how to time their bids for consultative status – should they wait until the on-going issues with Canada and Belarus are resolved, or should they simply proceed with their bids and hope that they are not thwarted as the collateral damage resulting from Consultative Parties’ increasingly complex geopolitical manoeuvrings? The rapid increase in bids for consultative status in the 1980s that coincided with the negotiation of CRAMRA clearly showed that states take an interest in Antarctic governance when economic resources are at stake.⁷² The increase in the scale of the tourism industry and the renewed efforts to negotiate a comprehensive and consistent framework for the regulation of Antarctic tourism and other non-governmental activities (Decision 6 (2023); Decision 5 (2024)) are likely to create renewed interest in attaining a voice in Antarctic governance from both existing non-Consultative Parties and Parties new to the Treaty system alike. Indeed, in light of the recent seismic surveys on the Antarctic continental shelf undertaken by the Russian state-owned company Rosgeologia that could be considered as prospecting and contrary to the Protocol, some of the interest in eventual attainment of consultative status that we see from non-Consultative Parties today may be driven by longer-term interests in receiving a ‘just share’ of any potential economic benefits derived from within the Treaty area.⁷³ If the Consultative Parties continue to block new states from engagement in Antarctic decision-making then they will not only put the legitimacy of the Treaty system as an international governance regime into question but also may put its future at risk. Rather, the Treaty’s future may be secured by facilitating participation by new states and ensuring that they see the Antarctic Treaty system as the most suitable vehicle for the governance of the continent ‘in the interests of all mankind’.⁷⁴

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⁷²Flamm & Hemmings, “Now and Never: Banning Hydrocarbon Extraction in Antarctica Forever”; Sampaio, “Diplomatic culture and institutional design”, 8–9.

⁷³Afanasiev & Esau, “Cold war: Russian research ship”; Watkins, “Russia makes move”.

⁷⁴Preambles of the Antarctic Treaty and the Protocol; Barrett, “International governance of the Antarctic”, 330–332; Sampaio, “Diplomatic culture and institutional design”.

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