TÜRKİYE'S SCIENCE DIPLOMACY IN THE POLAR REGIONS

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Abstract

Science diplomacy aims to increase international cooperation and support scientific research by science in diplomatic relations. The regions where science diplomacy is most clearly applied and where international agreements encourage peaceful and science-based cooperation are the polar regions, particularly Antarctica. Türkiye has strengthened its scientific presence in these regions in recent years by using science diplomacy. The development of the Turkish polar program gained momentum with the establishment of the Polar Research Center (PolReC) at İstanbul Technical University (İTÜ) in 2015. A scientific research camp was established on Horseshoe Island (West Antarctic Peninsula) in 2019, along with an automatic meteorological station. Türkiye's scientific contributions in the polar regions are funded by the Scientific and Technological Research Council of Türkiye (TÜBİTAK). Thanks to the support provided to scientific projects, a 75% increase was observed in scientific outputs on polar sciences between 2016 and 2022. In addition, joint studies were carried out with scientists from different countries. Science diplomacy in Antarctica is a tool that strengthens not only scientific activities but also international cooperation. In this context, Memorandums of Understanding (MoUs) have been signed with different countries to encourage the exchange of information and joint research in polar regions. This also contributed to the goals of the Antarctic Treaty with its work in the field of environmental protection. As a result, Türkiye's science diplomacy in the polar regions increases international cooperation and provides an important platform in the fields of environmental protection and scientific research.

Keywords

Polar Regions, Polar Research, Science Diplomacy, Turkish Polar Program, International Cooperation

Introduction

The concept of science diplomacy has received the attention of numerous scientists and policymakers in the contemporary era as a result of the narrowing of all known areas of interaction between states as a result of global development trends. Despite the fact that competition for the control of land, air, water, natural resources, and transportation routes is intensifying, the demand for international cooperation mechanisms is consistently increasing. Simultaneously, the results of human activity on the environment are catastrophic, necessitating technologies and solutions that are founded on science (Konyshev, 2023).

In recent years, states have been trying different ways to increase their visibility in the international arena. These have been defined as hard power, soft power and smart power. Especially with the increasing effectiveness of soft power, states aim to increase the effectiveness of public diplomacy by allocating budgets for new institutions and practices (Caymaz & Özsoy, 2022; Nye Jr, 2008). On the other hand, it is seen that scientific and technological advances have a significant impact on world politics. Science diplomacy, which is at the center of global politics more than ever, offers a different window to interpret science diplomacy as a concept at the center of the developments in world politics and the world of science and international cooperation (Caymaz & Özsoy, 2022; Su & Mayer, 2018).

The role of scientific research is most apparent in the Arctic and Antarctica. The reason for this is that international agreements explicitly condition the necessity of scientifically based and coordinated human activity in all domains. This is due to the uniqueness and fragility of natural-ecological complex scientific programs, as well as the necessity of altering data obtained from vast areas (Konyshev, 2023). Some views base the conceptualization of science diplomacy on the Antarctic Treaty, as the first book on science diplomacy was produced within the scope of the Antarctic Treaty Summit, organized by the Smithsonian Institution in 2009. While highlighting polar research in the context of planetary sustainability, the importance of inclusive, international and interdisciplinary studies was emphasized in the book (Berkman et al., 2011b). Nevertheless, science is not only a means of acquiring new knowledge, but also a foundation for other types of joint activities among states. In other words, the political processes that are taking place in both polar regions are directly influenced by science. In a sense, the establishment of international relations in Antarctica functions as an example of the concept of peaceful coexistence (Yao, 2021).

This study addresses Türkiye's presence in the Polar Regions by using its science diplomacy power. The studies conducted to make a country an important player in the polar regions, especially in Antarctica, through scientific studies and their importance are emphasized. The cooperation studies conducted with different countries and their scientific outputs are examined. In addition, the polar research strategy of Türkiye is elaborated, and information is provided on its achievements.

What is Science Diplomacy?

The term 'science diplomacy' first emerged over twenty-five years ago and has given rise to a multitude of meanings, agendas, relationships and practices. During this time, attempts have been made to develop a definition or classification for science diplomacy and a consensus has been reached on the following meaning: science diplomacy has been introduced to refer to new foreign policy activities that serve “humanity” and “establish constructive international partnerships” (Kaltofen & Acuto, 2018).

In its most general sense, the term "science diplomacy" refers to the interplay between diplomatic efforts and research within the context of increasing the relationship with other nations and societies and justification with the scientific method. There is a widespread perception among scholars that science diplomacy is a form of public diplomacy (Gutenev & Sergunin, 2022). When it comes to science diplomacy, the cornerstone is international scientific and technical activities that are established on the principle of mutual benefit for the participants. Science diplomacy is a method that assists in the development of general interaction rules in both the scientific and political sectors, and it coordinates the interests of states. Nevertheless, in the context of science diplomacy, the participants might be policy players from both states and non-states. Science diplomacy can be thought of as a symbiosis between science and diplomacy, and it features a number of different conceivable dimensions (Gutenev & Sergunin, 2022).

The first of these is called "science within diplomacy," and it involves providing consulting services to government officials in order to assist them in making decisions that align with scientific principles. Scientists, from their point of view, also begin to have a better understanding of the mechanisms that are used in political decision-making, and they can express to the administration the societal significance of scientific projects with greater precision. The other term “diplomacy for science” refers to the fostering of scientific research through diplomatic efforts. Particularly pertinent to global issues, such as the investigation of the consequences of climate change, is the fact that this is the case. Science for diplomacy refers to how scientific collaboration contributes to the strengthening of trust in the political spectrum. The manifestation of this phenomena is most noticeable in the activities that take place at scientific forums and conferences. The implementation of science diplomacy takes place within the framework of a number of different ways, concerning the subject. It is not required to analyze these in their purest form; rather, they are more analogous to analytical structures that reflect "ideal types." (Gutenev & Sergunin, 2022)

Science diplomacy is defined as a mechanism that brings together experts from different countries with a “technical” approach. It is possible to interpret this definition as scientific cooperation in polar regions (Gutenev & Sergunin, 2022; Konyshev, 2023). Another perspective suggests that it is considered as "soft power" among states. In the Arctic and especially in Antarctica, this perspective is an open policy implemented by states. An alternative viewpoint suggests that it has evolved into a type of “public diplomacy” that incorporates political mechanisms as part of the process. When this situation does not

coincide with the interests of the state, it harms international cooperation (Rogozhina, 2020). In summary, science diplomacy is seen as a strategic tool used by all states in the Arctic and especially in Antarctica.

The Antarctic Treaty was signed in 1959, following the International Geophysical Year. It was negotiated by the first signatories (Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the United Kingdom, the Soviet Union and the United States) and came into force in 1961 (Naylor et al., 2008). Antarctica is defined as, all land, ice and sea south of 60th degrees south latitude. The signatories agreed to the use of the continent only for scientific purposes, where all existing territorial claims were suspended. Besides, the treaty reaffirms freedom of movement and scientific work on the continent (Scott, 2003) and mandates regular meetings to ensure the circulation of information and the expression of ideas (Berkman et al., 2011a; 2011b). These meetings are known as Antarctic Treaty Consultative Meetings (ATCM), where 29 of the 58 parties have the right to make decisions unanimously (Pedersen, 2021). To gain "consultative status" under the treaty, a party must demonstrate its interest in Antarctica by conducting scientific activities. Governments have demonstrated this by establishing a research station or sending a scientific mission to Antarctica (Hughes, 2010). However, ATCM has stated that it is not mandatory for countries wishing to gain consultative status to build stations. The Netherlands is the only consultative party that has run an Antarctic programme without building any stations (ATCM, 2017).

According to the decision taken in the ATCM XL at 2017, the Party requesting consultative status should prepare a detailed dossier showing all the scientific activities, contributions and logistic planning carried out in Antarctica in the last decade. This includes the links with organizations such as the Council of National Antarctic Managers (COMNAP) and the Scientific Commission for Antarctic Research (SCAR). The number of published articles on Antarctica is only a rough guide. It shows the degree to which the resulting policy and scientific impacts have changed. In addition, the scope of scientific activities on the continent, participation in scientific organizations and interaction with these organizations are taken into account (Dudeney & Walton, 2012; Jabour, 2019; Xavier et al., 2018). Since military activities are prohibited in Antarctica by the treaty, it is considered as a unique environment for scientific collaborations. International scientific and technical collaboration in polar regions is necessary and science diplomacy is a coordination tool (Gutenev & Sergunin, 2022).

In this study, the concept of science diplomacy, which is increasingly important in world politics, is examined in the context of polar science diplomacy. While the importance of science diplomacy is emphasized at the beginning of the study, its different definitions in the literature are included. The gains that Türkiye has achieved with its science diplomacy power and the evolution of polar science diplomacy are gradually explained. Then, the current reflections of polar science diplomacy, which started in the past and its international successful examples, are mentioned.

Türkiye's Science Diplomacy on Polar Regions

The Turkish government has actively pursued scientific diplomacy to advance its interests in the Arctic and Antarctica, achieving notable success in this effort. Beginning with their research in polar regions in the 1960s, Turkish scientists continued their polar journey when Türkiye became a party to the Antarctic Treaty in 1995. The Polar Research Application and Research Center was founded within the Istanbul Technical University (İTÜ) in 2015, and national polar research activities were placed under the auspices of the Presidency in the year 2017. Since this year, Turkish Antarctic Expeditions (TAE) have been regularly conducted to Horseshoe Island in the West Antarctic Peninsula. A scientific research camp was established in TAE-III in 2019 (Fig. 1). An automatic meteorological station has also been established for scientific purposes in the same year and a regular data flow is maintained (Arslan et al., 2024). In December 2019, Polar Research Institute (KARE) was established under TÜBİTAK Marmara Research Center (MAM) to coordinate Türkiye's polar research activities.

Figure 1

Turkish Scientific Research Camp Horseshoe Island (Marguerite Bay, West Antarctic Peninsula).

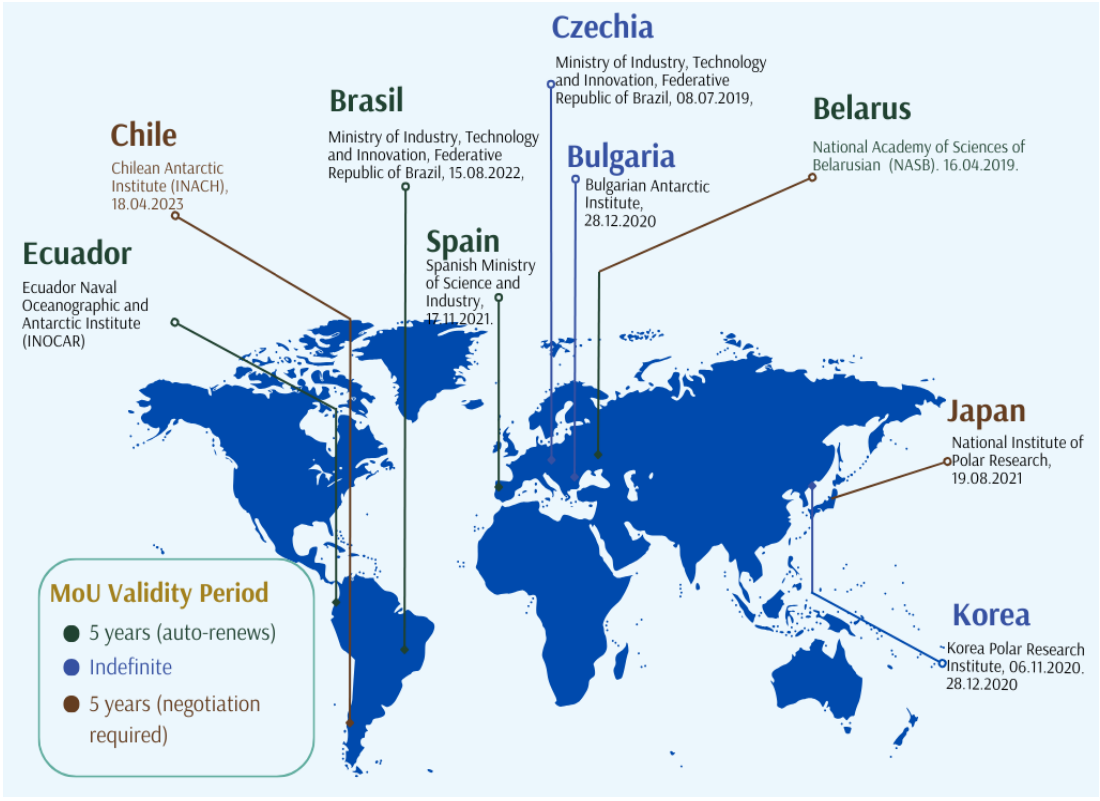


The Antarctic Treaty prioritizes cooperation in the region and strengthens the foundations of the cooperation to be provided with memorandums of understanding (MoU) texts. As a continent dedicated to science, information and know-how exchange between countries in order to increase science and contributions to world literature in Antarctic research are gaining great value. For this and many other reasons, mutual expert exchanges and joint projects are prioritized in the context of cooperation. Türkiye, with the desire to contribute to the development of international scientific cooperation on Antarctica, is aware of the increasing importance of Antarctica for scientific studies,

especially for the protection of the global environment and for the contribution of these researches to the continuous development of humanity. Türkiye stated that cooperation in Antarctica is of great importance for scientific research and believes that the implementation of national polar research programs will be beneficial and will contribute to the development of friendly relations with other countries. As a result of encouraging effective and result-oriented cooperation between scientific institutions and organizations, the MoUs signed between Türkiye and various countries with the aim of logistic and scientific cooperation in polar regions are shown in Fig. 2.

Figure 2

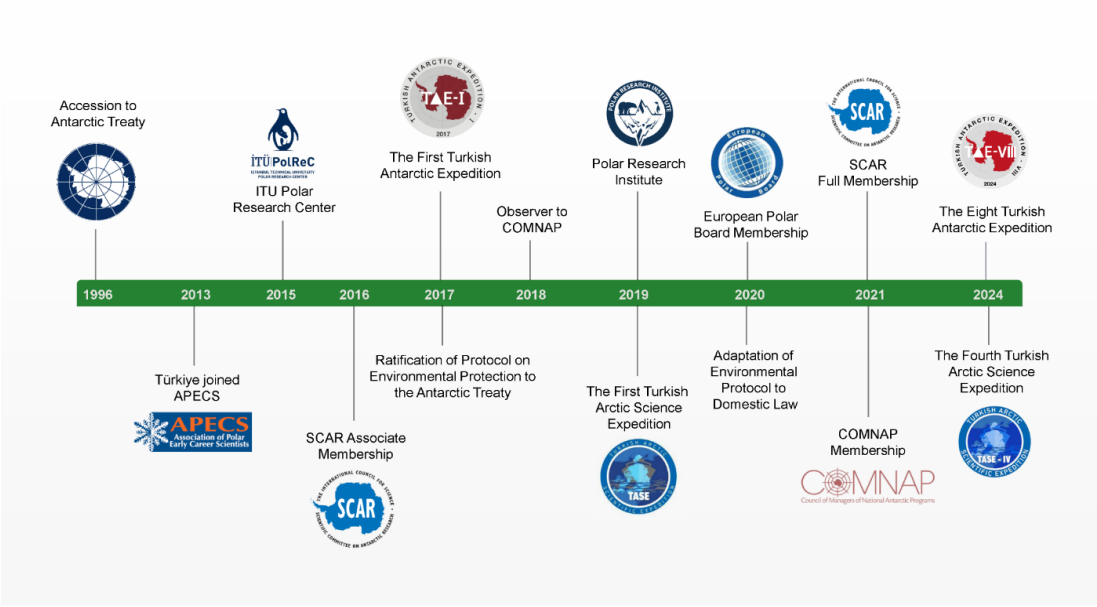
Signed MoUs between Türkiye and Other Countries



Türkiye's achievements in the polar regions through science diplomacy began with its inclusion in the Antarctic Treaty System in 1995. In addition to significant achievements in the following years, it has become a member of many international institutions and organizations, and its work continues at full speed. Fig. 3 shows a timeline of important developments. Türkiye has become a member of important organizations from the European Polar Board to SCAR.

Figure 3

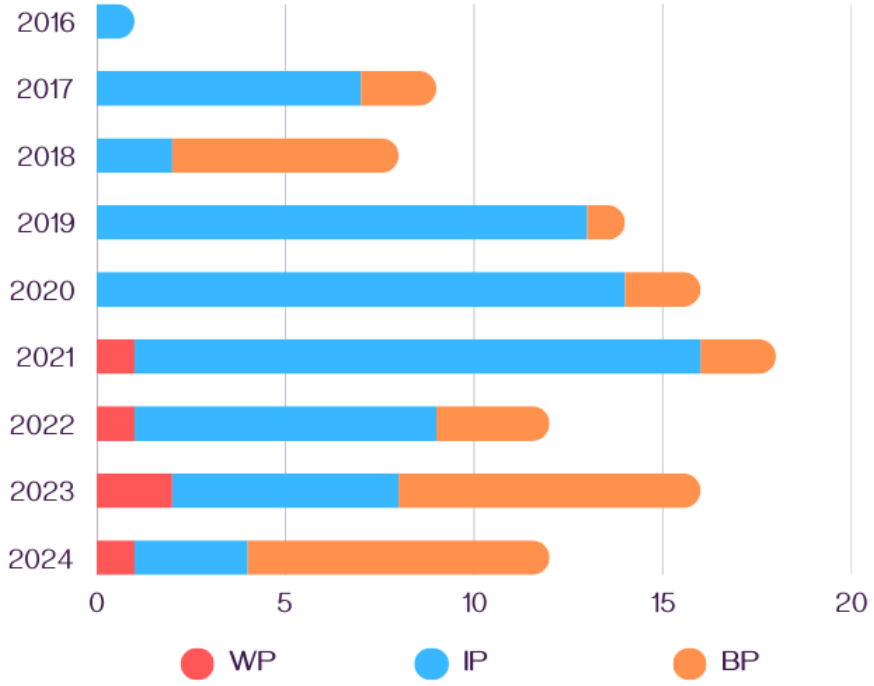
Timeline of Major Events in Türkiye's Participation in Legal and Institutional Affairs in Antarctica (APECS: Association of Polar Early Career Scientists)



The documents submitted to ATCMs are tools of information for parties to demonstrate their development and interest in the Antarctic-related issues. These documents are labelled as working paper (WP), information paper (IP), and background paper (BP). WPs are usually submitted by consultative parties, which contain issues that the meeting should consider. IPs can be submitted by all participants attending the meeting. BPs are similar to IPs, but not usually read during the meeting (Karatekin et al., 2023). The analysis of the documents submitted by Türkiye to the Antarctic Treaty Consultative Meeting and the Committee for Environmental Protection (CEP) is given below. The numbers of working, information and background papers submitted by Türkiye on an annual basis between 2016 and 2024 are illustrated in Fig. 4. The total number of these submissions is 5, 69 and 32, respectively. A WP proposing the establishment of a new Antarctic Special Protection Area was submitted in cooperation with Belgium and the United Kingdom, with Türkiye as co-sponsor. This shows that Türkiye is interested in increasing its participation in the use of conservation management tools already available under the Antarctic Treaty System.

Figure 4

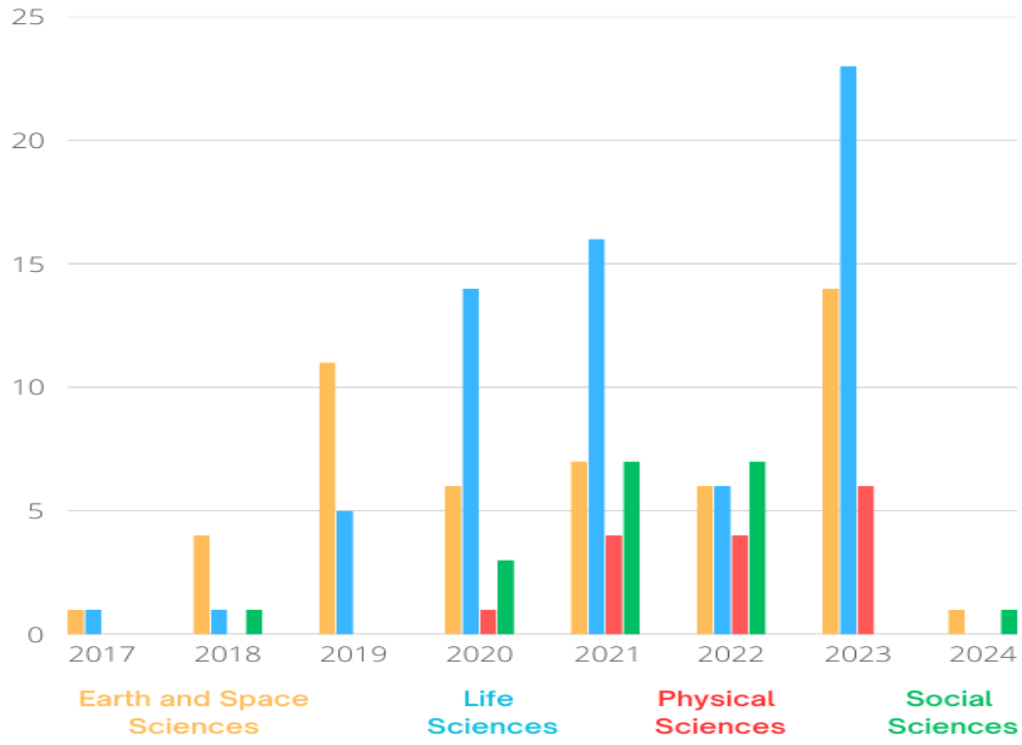
Number of Documents Submitted by Türkiye to ATCM 2016-2024 Period



Previous studies have shown that the level of scientific output produced by the parties varies greatly. It encouraged parties, particularly after achieving consultative status, to undertake regular international peer reviews of their scientific programs to ensure the continued production of high-quality international research (Dastidar & Persson, 2005; Gray & Hughes, 2016). Türkiye has shown a significant increase in the number of scientific articles in the 2017-2024 period, compared to 21 research articles created in the 2011-2015 period (Gray & Hughes, 2016). This shows that Türkiye has significantly advanced its Antarctic research activities in the recent period. The reasons for this growth include the special funding provided by TÜBİTAK to polar research since 2019. In addition, studies such as symposiums organized nationwide and the publication of polar special issues in Turkish academic journals with a large consortium have supported the increase in the number of articles produced. Fig. 5 shows the distribution of the number of articles published in the 2016-2024 period by field. Accordingly, the total number of articles published in earth & space, life, physical and social sciences categories were determined as 40, 124, 16 and 18, respectively. The most articles were published in the earth & space sciences category in 2019 and 2023. It has been observed that the number of articles in the life sciences and physical sciences (as of 2020) category has increased gradually from year to year, and the most articles in these categories were published in 2023. Although most articles were published in social sciences in 2022 and 2023, it was evaluated as the category with the least number of articles published.

Figure 5

Distribution of Articles by Year Based on Different Scientific Disciplines



The approval of Türkiye's full membership in SCAR in 2021 is a milestone in terms of Türkiye's increasing participation in polar research as well as its political determination and diplomatic engagement to produce concrete contributions in the fight against global challenges. Türkiye has also participated in COMNAP as an observer since 2018, while its full membership application was accepted in 2022. Integration into polar organizations is the most important parameter that shows that Türkiye's polar science diplomacy has become official in the international context (Caymaz & Özsoy, 2022).

As a national manifestation of Türkiye's political will and diplomatic determination towards its polar vision, the National Polar Science Program for the period 2018-2022 was prepared by the Ministry of Science, Industry and Technology of the Republic of Türkiye with the contributions of over 100 scientists from 40 institutions. The program aims to implement polar research with a systematic approach. The vision of the program is "to be one of the scientifically successful programs". A new document titled "National Polar Science Strategy 2023-2035" was announced following this, where the mission of Türkiye was defines as "to consistently develop scientific research and science diplomacy activities", while the vision was specified as "to be among the leading countries in polar research with its unique scientific studies that draw its strength from its well-equipped infrastructure, expert manpower, and cooperation network". A special emphasis was given on science diplomacy in the document, declaring the term "collaborative" among the three core values of the strategy (Ministry of Industry and Technology, 2023)

In summary, Türkiye, which traces its scientific interest in polar regions back to the 1500s, resumed its efforts in 2017 with state support after a long hiatus. With steady progress and continuous advancements each year, it is striving to become a significant actor in polar research. Türkiye upholds the principle of international cooperation, actively increasing its engagement in the international organizations it is a member of, thereby contributing to science diplomacy. Over time, the increasing number and expanding scope of collaborations stand as the best examples of this progress. Cooperation in these challenging regions is expected to open new opportunities for Türkiye in various fields, just as it has for other countries in the past.

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PART II

SCIENCE DIPLOMACY IN SUSTAINABLE DEVELOPMENT AND GLOBAL CHALLENGES

- **MEASURING PERFORMANCE FOR SUSTAINABLE DEVELOPMENT GOALS: A REVIEW FROM SOCIAL, ECONOMIC, AND ENVIRONMENTAL PERSPECTIVES UNDER SCIENTIFIC DIPLOMACY**
- **GLOBAL MEDIA REPRESENTATION OF CAMPUS PROTESTS IN AMERICAN UNIVERSITIES IN THE RESOLUTION OF THE GAZA CONFLICT**
- **LNG AND STRATEGIC DIPLOMACY BETWEEN THE U.S.-JAPAN: PAST, PRESENT, AND FUTURE**
- **THE ROLE OF SCIENCE DIPLOMACY IN ACHIEVING SDG2: ZERO HUNGER**
- **THE ROLE AND IMPORTANCE OF LIBRARIES IN SCIENCE DIPLOMACY IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT GOALS**
- **CLIMATE CHANGE AS A NEW COMMUNICATION TOOL IN THE CONTEXT OF SCIENCE DIPLOMACY**
- **SCIENCE DIPLOMACY, SUSTAINABLE DEVELOPMENT GOALS, AND DRUG POLICY**
- **HISTORICIZING INDIAN SCIENCE CONGRESS ASSOCIATION AND INTERNATIONAL RELATIONS IN SCIENCE**
- **IMMIGRATION FOR SUSTAINABLE DEVELOPMENT: A SCIENCE DIPLOMACY PERSPECTIVE**