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**PROSPECTS FOR SCIENTIFIC
COOPERATION BETWEEN RUSSIA
AND BRAZIL IN THE FIELD
OF SUSTAINABLE DEVELOPMENT
OF THE ARCTIC
THE PRIORITIES
OF BRAZIL'S SUSTAINABILITY POLICY**

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1.1. The National Commission for the Sustainable Development Goals' Action Plan

The socio-economic policy of Brazil is implemented in accordance with the general principles of sustainable development. Currently, the UN SDGs are directly or indirectly integrated into Brazil's national plans, programs and strategies. For example, in the targets outlined in Brazil's national medium-term development plan for 2016-2019 (Plano Plurianual 2016–2019), 86% of the UN SDG sub-targets are reflected¹. In the long-term Brazilian Federal Development Strategy 2020-2031 (EFD 2020-2031²) and the medium-term Development Plan for 2020-2023 (Plano Plurianual 2020–2023³) sustainable development objectives are also considered.

The country has taken a set of measures to create an institutional framework for the implementation of the UN sustainable development agenda: in 2016, the National Commission for Sustainable Development Goals (CNODS) was created, which includes representatives of the federal government, states, districts, municipalities and civil society. Its area of responsibility includes:

- preparation of a plan for the implementation of the Agenda for Sustainable Development for the period up to 2030;
- development of proposals for strategies, tools and programs for the implementation of the SDGs;
- tracking progress in achieving the SDGs and preparing relevant reports;
- identification, systematization and dissemination of best practices and initiatives to achieve the SDGs;
- facilitating the integration of the Agenda at all levels of government⁴.

The National Commission for the SDGs adopted the Action Plan for 2017–2019, which is targeted at adaptation of the UN 2030 Agenda to the national context of Brazil and determining a system of indicators of progress in achieving the SDGs.

- 1 Government of Brazil. (2017). Voluntary National Review on the Sustainable Development Goals. Retrieved March 7, 2023, from https://sustainabledevelopment.un.org/content/documents/15806Brazil_English.pdf
- 2 Government of Brazil. (2020). Estratégia Federal de Desenvolvimento para o Brasil no período 2020-2031. Retrieved March 7, 2023, from https://observatorioplanificacion.cepal.org/sites/default/files/plan/files/efd-2020-2031_v2_1.pdf
- 3 Regional Observatory on Planning for Development in Latin America and the Caribbean. (2020). Plano Plurianual - PPA 2020-2023 do Brasil. Retrieved March 7, 2023, from <https://observatorioplanificacion.cepal.org/en/node/1182>
- 4 Government of Brazil. (2019). 2030 Agenda: SDG – National Targets of Sustainable Development Goals. Retrieved March 7, 2023, from https://portalantigo.ipea.gov.br/agencia/index.php?option=com_content&view=article&id=35192:2030-agenda-sdg-national-targets-of-sustainable-development-goals&catid=420:2019&directory=1

In 2017, the Voluntary National Review on the Sustainable Development Goals in Brazil was published, focusing on policies to combat poverty and inequality, promote inclusiveness, and conserve marine biodiversity⁵. The report highlights the need to help and protect the interests of indigenous peoples in order to achieve progress in these areas.

The following will focus on Brazil's top priorities for implementing the UN SDGs.

1.2. "Clean energy"

The development of "clean energy" plays an important role in Brazil's sustainable development plan (SDG 7 – Affordable and Clean Energy). The diversification of energy sources in the energy balance in favour of renewable energy began in Brazil long before the adoption of the UN SDGs. This was mainly due to the increase in the Brazilian energy mix in the share of hydropower and biofuels, mainly biomass from sugar cane. Thus, the structure of the country's energy balance has been one of the "cleanest" in the world for many years, the share of renewable energy, including hydropower, in 2020 accounted for 48.4%⁶.

New renewable energy sources, namely wind and solar energy, are one of the top priorities of the sustainable development, which also allow to lessen the heavy reliance on hydropower.

Just 10 years ago, the installed capacity of wind energy in Brazil was less than 1 GW, in 2021 the figure exceeded 20 GW, and by 2024, installed capacity is expected to grow to at least 30 GW⁷. On the one hand, the development of wind energy is due to favourable natural conditions, on the other hand, the auction system established in 2004 became an incentive for the development of wind energy. It allowed to reduce risks for investments, introduce a market pricing mechanism while maintaining elements of administrative regulation, increasing the availability of renewable energy and creating an incentive to expand installed capacity. Since 2014, the auction system has been extended to solar energy, which also stimulates the expansion of installed capacity up to 17.4 GW in 2022⁸.

An important aspect of supporting solar energy is the development of technologies and opportunities for solar energy storage, but at present, high taxes, a lack of a regulatory framework and insufficient incentive mechanisms for end users are a barrier to growth in this area. In 2022, with the support of the Brazilian Association of Photovoltaic Solar Energy ABSOLAR, a special working group was created to approve a roadmap to develop the possibilities of solar energy storage, which will include the improvement of legislation in the field of renewable energy support,

5 Government of Brazil. (2017). Voluntary National Review on the Sustainable Development Goals. Retrieved March 7, 2023, from https://sustainabledevelopment.un.org/content/documents/15806Brazil_English.pdf

6 Civil Society Working Group for the 2030 Agenda. (2022). 2030 Agenda for Sustainable Development Spotlight Report. Retrieved March 7, 2023, from https://brasilnaagenda2030.files.wordpress.com/2022/07/en_sr_2022_final_web-1.pdf

7 Airswift Trusted Worldwide. (15.07.2022). Wind energy in Brazil breaks records and creates jobs. Retrieved March 7, 2023, from <https://www.airswift.com/blog/wind-energy-brazil>

8 Government of Brazil. (08.09.2022). Solar energy becomes the third largest source in Brazil. Retrieved March 7, 2023, from <https://www.gov.br/en/government-of-brazil/latest-news/solar-energy-becomes-the-third-largest-source-in-brazil>

taxation system, access to finance and technical regulations⁹.

A relatively new direction of development in the field of “clean” energy is the hydrogen energy. Brazil has the resources to become a world leader in green hydrogen production and renewable energy storage, according to the Council for Environment and Sustainable Development of the Brazilian National Confederation of Industry (COEMAS)¹⁰. In 2022, the government of Brazil adopted a resolution on the development of the National Hydrogen Program (PNH2), which is expected to underlie the creation of a competitive hydrogen market. This will contribute to further decarbonization of the economy and technological development in the field of renewable energy.

1.3. Mineral extraction

Despite the large role of renewable sources, fossil energy sources, namely gas and oil, still occupy a large share in Brazil’s energy mix. The country’s national policy for sustainable oil and gas production is based on a combination of regulations, incentives and technological innovations aimed at reducing the environmental impact of oil and gas exploration and production. Brazil has established a regulatory framework that sets strict environmental and safety standards for oil and gas exploration and production. Compliance is overseen by the National Petroleum, Natural Gas and Bio-fuels Agency (ANP), which is responsible for issuing licenses and imposing fines for non-compliance.

Various programs are being implemented to introduce environmentally friendly technologies in the oil and gas industry in Brazil. For example, the Brazilian Development Bank (BNDES) provides funding for projects that promote energy efficiency and clean technologies in the oil and gas sector¹¹. In addition, financial support is provided to projects in the development of offshore production technologies that reduce the environmental impact of oil and gas exploration and production¹². For example, the use of floating production, storage and offloading (FPSO) vessels reduces the need for permanent offshore platforms that can damage marine ecosystems. Brazil is also considering integrating renewable energy into oil and gas production, for example by using wind and solar energy to power offshore platforms.

Brazil’s rich oil and gas coastal and offshore areas have been called the “Blue Amazon” (Amazônia Azul). The Brazilian Navy’s PROMAR program is actively promoting the economic, environmental and scientific importance of these areas. Brazil intends to expand its exclusive economic zone while retaining special exploration and mining rights by filing a petition with the United Nations Commission on the Limits of the Continental Shelf¹³. The country also emphasizes its interest in the conservation

9 Santos B. Brazil to Become Major Global Solar Market by 2026. PV magazine - Photovoltaics Markets and Technology Subscriptions. (11.05.2022). Retrieved March 7, 2023,

from <https://www.pv-magazine.com/2022/05/11/brazil-to-become-leading-global-solar-market-by-2026-says-solarpower-europe/>

10 Niras. (24.05.2022). Countdown to a Green Hydrogen Economy in 2030. What does Brazil need to do to deliver on its ambitions? Retrieved March 7, 2023, from <https://www.niras.com/projects/building-a-green-hydrogen-economy-in-brazil/>

11 BDNES. (2020). Annual Report 2020. Retrieved March 7, 2023, from https://web.bndes.gov.br/bib/jspui/bitstream/1408/21121/3/PR_BNDES_ANNUAL_REPORT_2020_BD.pdf

12 Ibid

13 Thompson, N., Muggah, R. (2015). The Blue Amazon: Brazil Asserts Its Influence Across the Atlantic // Instituto Igarape. Retrieved March 7, 2023 from <https://igarape.org.br/the-blue-amazon-brazil-asserts-its-influence-across-the-atlantic/>



and rational use of the natural resources of the “Blue Amazon” and the readiness to implement programs for the development and management of territories¹⁴. There is already a program of the Brazilian Navy for the management of the “Blue Amazon” (Sistema de Gerenciamento da Amazônia Azul, SisGAAz), which involves building a system for collecting information in the ocean belt¹⁵.

Brazil is also one of the world’s largest iron ore producers. The country’s main iron ore deposits are located in the states of Para (Sierra Norte and Carajas Sierra deposits) and Minas Gerais (Vargem Grande, Itabira and Paraopeba deposits)¹⁶. Many Brazilian ores have a high iron content (more than 60%), so they are not enriched. In addition, Brazil is the world’s second largest exporter of iron ore, second only to Australia. In 2021, Brazil accounted for 20.8% of global mineral exports¹⁷.

Despite the fact that the environmental aspects of mining in Brazil are not regulated at the legislative level, a number of sustainable practices are implemented by companies in the mining industry on their own. For example, the Brazilian company Vale, the world’s second iron ore producer, has set a goal to reduce emissions from production and energy consumption (scope 1, scope 2) by 33% by 2030. Within scope 1 and scope 2 it also plans to achieve carbon neutrality by 2050. In addition, to reduce the carbon footprint of production, the company will replace some of the pumps operating on fossil fuels, with hydroelectric installations¹⁸. By 2035, the company has set a target to decrease emissions in its production chain (scope 3) by 15% by 2035¹⁹.

14 Wilson, Sons. (21.06.2022). What is the Blue Amazon: you should know about this Brazilian treasure. Retrieved March 7, 2023, from <https://www.wilsonsons.com.br/en/blog/blue-amazon/>

15 Ministério da Defesa Marinha do Brasil. SisGAAz: Proteção e Monitoramento das Águas Jurisdicionais Brasileiras. Retrieved March 7, 2023, from <https://www.marinha.mil.br/sisgaaz-protecao-e-monitoramento-das-aguas-jurisdicionais-brasileiras>

16 Mining Technology. (2021). Five largest iron ore mines in Brazil in 2021. Retrieved March 7, 2023 from: <https://www.mining-technology.com/marketdata/five-largest-iron-ore-mines-brazil-2021/>

17 OECD. (2021). Trade in raw materials. Retrieved March 7, 2023 from: <https://www.oecd.org/trade/topics/trade-in-raw-materials/>

18 Bloomberg. (02.03.2023). Vale to Turn Amazon Mining Waste Into High-Grade Iron Ore to Feed Steelmaking. Retrieved March 7, 2023 from: <https://www.bloomberg.com/news/articles/2023-03-02/vale-to-transform-amazon-mining-waste-into-high-grade-iron-ore>

19 Vale. (09.09.2021). Vale announces ‘green briquette’ capable of reducing CO2 emissions of steelmaking clients by up to 10%. Retrieved March 7, 2023 from: <https://www.vale.com/ja/w/vale-announces-green-briquette-capable-of-reducing-co2-emissions-of-steelmaking-clients-by-up-to-10->



1.4. Water management

Water management is equally high on Brazil's sustainable development agenda (SDG 6 – Clean Water and Sanitation). Brazil accounts for 12% of the world's fresh water, about two-thirds of which belongs to the Amazon basin²⁰. Despite the abundance of water resources for the country as a whole, their uneven distribution, as well as the intensive use of hydropower, create challenges in terms of the need to ensure access to clean water for the population and develop solutions for managing water resources, taking into account the diversity of ecosystems.

Over the past decades, Brazil has developed a multi-level water management system (Fig. 1): a significant part of the authority has been delegated to the states and river basin committees. In 2000, the National Water Agency (ANA) was established, responsible for strengthening the institutional framework for the planning, construction, operation and maintenance of strategic water infrastructure in Brazil. Since 2019, the National Plan for Water Security (Plano Nacional de Segurança Hídric, PNSH) and the related program (Plano de Segurança Hídric, PSH) have also been in place, setting goals for investment in the construction and maintenance of water infrastructure. As a result, Brazil has been able to improve its SDG 6 (Clean Water and Sanitation) performance: in 2020, 99.3% and 90.1% of the population had access to at least basic water and sanitation services, respectively²¹.

20 OECD. (2022). Building Water Resilience in Brazil. Retrieved March 7, 2023, from <https://www.oecd.org/cfe/cities/BuildingWaterResilienceBrazilEN.pdf>

21 SDG index Dashboard. Brazil Sustainable development report. Retrieved March 7, 2023, from <https://dashboards.sdqindex.org/profiles/brazil>

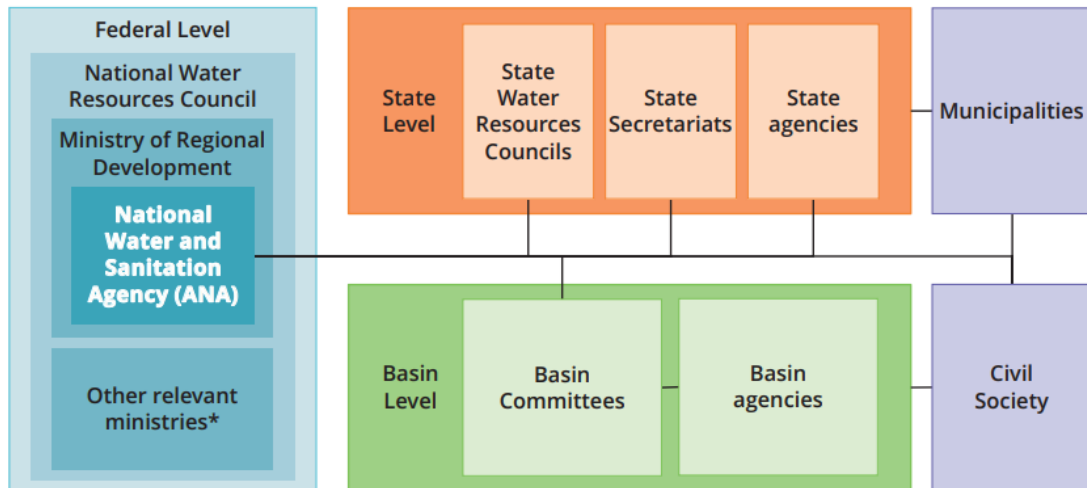


Figure 1. State Institutions for Water Resources Management

Source: OECD. (2022). Building Water Resilience in Brazil. Retrieved March 7, 2023, from <https://www.oecd.org/cfe/cities/BuildingWaterResilienceBrazilEN.pdf>

The management of marine water resources and coastal areas also plays an important role in the sustainable development of Brazil (SDG 14 – Life Below Water). Marine water resources, like freshwater resources, occupy a vast area, are unevenly distributed and characterized by a variety of ecosystems, which creates difficulties in their management. The coastal zone of Brazil covers approximately 514,000 km², of which 324,000 km² is in the coastal municipalities located in 17 states. Coastal zones are inhabited not only by rural residents, of the 36 Brazilian metropolitan areas, 19 are located on the coast²². Thus, parts of the coastal areas are quite densely populated, which creates a high pressure on natural resources and the threat of their depletion. According to the 2010 demographic census, 45.7 million people, i.e. about a quarter of the country’s population lived in the coastal zone. At the same time, densely populated areas are interspersed with sparsely populated areas, where scattered places of residence of indigenous peoples, traditional fishing settlements are located.

Several programs have been adopted at the national level to regulate fisheries and introduce more sustainable practices. For example, the Fisheries and Aquaculture Program has adopted management plans that protect a number of certain species of fish and marine life, such as crabs, lobsters and shrimp. In addition, several fisheries regulations have been published to protect biologically vulnerable marine megafauna²³. Also worth noting is the Vessel Monitoring Satellite System (VMS), which includes the tracking of more than 2,000 vessels that are used on the Brazilian coast

²² Government of Brazil. (2017). Voluntary National Review on the Sustainable Development Goals. Retrieved March 7, 2023, from https://sustainabledevelopment.un.org/content/documents/15806Brazil_English.pdf

²³ Marine megafauna include organisms that weigh more than 45 kg.

to combat illegal fishing²⁴.

In addition, Brazil seeks to contribute to the preservation of the environment, including through increased income and social integration of communities living in protected coastal areas. More than 12 thousand families living in protected areas have been covered by the Green Grants program created for this purpose²⁵.

Brazil is one of the largest maritime powers in the world and plays an important role in the development of international cooperation in the ocean sector. For example, since 1995, Brazil has been participating in the UN TRAIN-SEA-COST program, including coastal management projects in Southeast and Northeast Brazil. The projects aim to train and educate local experts on coastal zone management in the face of climate change²⁶. In addition, in 2017, Brazil joined the UN Clean Seas Campaign, which, among other things, is dedicated to the fight against marine litter and microplastics, which pose a threat to biodiversity and negatively affect human health²⁷.

1.5. Environmental protection and biodiversity conservation

Brazil is rich in natural bioresources, therefore the protection of ecosystems and the conservation of biodiversity are important aspects of the sustainable development policy in the country. For example, the Amazon ecosystem is home to one in ten of the known biological species, which includes plants, animals and microorganisms²⁸.

The main threats to biodiversity in Brazil are the degradation and loss of biological species habitats, the introduction of alien species and exotic diseases, the overexploitation of plants and animals, the use of hybrids and monocultures in agro-industry and reforestation programs, pollution and climate change²⁹.

Brazil has made a number of international commitments related to the sustainable development of ecosystems. Thus, Brazil was one of the first South American countries to accede to the international Convention on Biological Diversity³⁰ and adopt the National Biodiversity Strategy, which consists of a series of documents and initiatives developed to implement the Convention. As part of the strategy, a number of measures have been developed that are directly related to the achievement of the

24 Government of Brazil. (2017). Voluntary National Review on the Sustainable Development Goals. Retrieved March 7, 2023, from https://sustainabledevelopment.un.org/content/documents/15806Brazil_English.pdf

25 Ibid

26 Lagutina, M., Leksyutina, Y. (2019). BRICS Countries' Strategies in the Arctic and the Prospects for Consolidated BRICS Agenda in the Arctic. *The Polar Journal*. Vol. 9(1). P. 45.

27 UN Environment Programme. (27.09.2017). Brazilian Government signs up to UN Clean Seas campaign. Retrieved March 7, 2023, from <https://www.unep.org/news-and-stories/press-release/brazilian-government-signs-un-clean-seas-campaign>

28 Chaikuni Institute. The Amazon Rainforest. Retrieved March 7, 2023, from <https://chaikuni.org/about/the-amazon-rainforest>

29 Convention on Biological Diversity. Country Profiles, Brazil. Retrieved March 7, 2023, from <https://www.cbd.int/countries/profile/?country=br>

30 United nations. (2022). Convention on Biological Diversity, key international instrument for sustainable development Retrieved March 7, 2023, from <https://www.un.org/ru/observances/biological-diversity-day/convention>



Aichi Biodiversity Targets³¹, including³²: the creation of ecological corridors and a system of protected areas, sustainable forest management, sustainable agriculture (for example, Brazil is implementing the National Strategy for the Promotion of Integrated Production in Agriculture). In 2018, there was a significant increase in the areas under state protection through the creation of four marine conservation units (two conservation areas and two national monuments), a conservation area and a national park in the Caatinga biome (Caatinga) and three special conservation areas (Reserva Extrativista) in the state of Maranhao³³. The country has just over 1,600 federal, state, and private conservation units covering 16% of the continental area and 0.5% of the maritime area, according to UNESCO³⁴.

Brazil also has international programs for cooperation and assistance in the field of biodiversity conservation. In particular, UNESCO contributes to the consolidation of the National System for the Protection of Nature, especially in relation to areas recognized as Biosphere Reserves and Natural World Heritage Sites, through technical cooperation and resource management for projects focused on these areas.

1.6. Sustainable agriculture

Over the past decades, Brazil has become one of the world's key producers of food and various raw materials (in particular, soybeans, bioethanol), whose approach to agricultural production is based on the massive implementation of scientific developments that increase agricultural productivity and is consistent with the principles of sustainable development (SDG 2 – Zero Hunger, SDG 7 – Affordable and Clean Energy).

In 1973, in order to expand research in this area, a special Corporation for Research in Agriculture and Animal Husbandry (Empresa brasileira da pesquisa agropecuária, Embrapa) was created, which represents a network of research centers throughout the country. The implementation of R&D results in Brazilian agriculture takes place both with the support of non-governmental farming organizations and in partnership with companies engaged in the agro-industrial complex, including in the production of fertilizers, seeds, plant protection products, etc.

Brazil's agricultural productivity growth has been accompanied by the adoption of sustainable practices. For instance, since 2010, Brazil has been realising the Low-Carbon Agriculture Plan (Plano ABC), which includes sustainable land management, the implementation of adaptation and mitigation measures, including through an increase in the sowing of genetically modified crops. In 2018, the Plan was extended for 2020–2030 (Plano ABC +35), which in addition includes the tasks

31 The Aichi Biodiversity Targets are enshrined in the UN Convention on Biological Diversity and consist of 20 targets aimed at addressing and mitigating biodiversity loss around the world. The main long-term goals include identifying and eliminating the causes of biodiversity loss, reducing direct and indirect pressure on biodiversity.

32 Convention on Biological Diversity. Strategic Plan for Biodiversity 2011-2020, including Aichi Biodiversity Targets. Retrieved March 7, 2023, from <https://www.cbd.int/sp/targets/>

33 Brazilian Platform on Biodiversity and Ecosystem Services. (2019). 1st Brazilian Assessment on Biodiversity and Ecosystem Services Summary for Policy Makers. Retrieved March 7, 2023, from https://www.bpbes.net.br/wp-content/uploads/2019/04/SPM_English_Final.pdf

34 UNESCO. Biodiversity in Brazil. Retrieved March 7, 2023, from <https://en.unesco.org/fieldoffice/brasil/expertise/biodiversity-brazil>

35 Government of Brazil. (2018). Plan for adaptation and low carbon emission in agriculture 2020-2030. Retrieved March 7, 2023 from: <https://www.gov.br/agricultura/pt-br/assuntos/sustentabilidade/plano-abc/arquivo-publicacoes-plano-abc/abc-portugues.pdf>

of reinforcement technology transfer, increasing investment in R&D, as well as the development of economic and command-and-control instruments to stimulate sustainable agriculture, for example, a certification system for agricultural products.

In addition, greenhouse construction and vertical farming are developing in Brazil, which can significantly reduce the water load in agriculture and provide year-round yields. Currently there are vertical farms in Brazil in Sao Paulo, Rio de Janeiro, Belo Horizonte³⁶.

1.7. Protecting the rights and improving livelihood of the indigenous population

The issue of protecting the rights and improving the standard of living of indigenous peoples is closely linked to Brazil's sustainable development policy. According to the 2010 census, there are 896.9 thousand indigenous peoples living in Brazil. In total, there are 305 indigenous ethnic groups in Brazil, who together speak 274 languages. The largest ethnic group in the country is Tikúna, which accounts for 6.8% of the indigenous population. Most of the indigenous population lives in the northern part of the country.

Progress in addressing indigenous issues contributes to meeting UN SDG commitments. It is among the indigenous population that the problem of poverty is especially acute (SDG 1 – No Poverty): in 2021, 31.5% of the indigenous population were below the poverty line³⁷. Most of the indigenous peoples live in rural areas and are highly vulnerable to the devastating effects of floods and natural disasters, which exacerbates the problem of food security (SDG 2 – Zero Hunger)³⁸. This population group is characterized by problems of gender and social inequality (SDG 4 – Quality Education, SDG 5 – Gender Inequality, SDG 10 – Reducing Inequalities): the level of illiteracy and child mortality is higher among indigenous peoples³⁹. Thus, in order to achieve the sustainable development targets, Brazil needs to meet the challenge of implementing effective socio-economic policies to improve the living standards of indigenous peoples.

Indigenous peoples have unique knowledge of the plants and animals of Brazil's ecosystems. Indigenous peoples also defend their interests in the preservation of natural capital in relatively isolated areas of their residence. Thus, they play an important role in the conservation of biodiversity (SDG 14 – Life Below Water; SDG 15 – Life on Land). For example, in some states, such as Maranhao, the last intact patches of forest are found only in First Nations territories⁴⁰.

Today, the problem of protecting the interests of indigenous peoples occupies a significant place in political discourse not only at the level of civil initiatives, but also at the federal level of

36 Verticalfarm daily. (23.09.2021). Vertical farming on the rise throughout Brazil. Retrieved March 7, 2023 from: <https://www.verticalfarmdaily.com/article/9357405/vertical-farming-on-the-rise-throughout-brazil/>

37 CEPALSTAT. Statistics and Indicators. Retrieved March 7, 2023, from <https://statistics.cepalstat.org/portal/cepalstat/dashboard.html?theme=1&lang=en>

38 Civil Society Working Group for the 2030 Agenda. (2022). 2030 Agenda for Sustainable Development Spotlight Report. Retrieved March 7, 2023, from https://brasilnaagenda2030.files.wordpress.com/2022/07/en_sr_2022_final_web-1.pdf

39 Ibid

40 Survival International. (2022). The Brazilian Indians. Retrieved March 7, 2023, from <https://www.survivalinternational.org/tribes/brazilian>

power. In particular, in 2023, the Ministry of Indigenous Peoples (Ministério dos Povos Indígenas) was established, the purpose of which is to protect and promote the interests of indigenous peoples, the preservation of their natural and cultural heritage. Demarcation of the 13 Indigenous Areas is highlighted as a priority, as is the repeal of regulations that legalize the exploitation of natural resources in Indigenous areas, such as Decree 10.965 allowing mining on Indigenous lands⁴¹.

Thus, in terms of supporting indigenous peoples, the challenge for Brazil is to strike a balance between following the principles of inclusiveness, which implies increasing the level of education, economic well-being and ensuring access to health services, and preserving cultural and linguistic identity, along with protecting the natural environment.

BRAZIL'S POLAR POLICY

Brazil's geographical location has determined its primary interest in the South Pole – Antarctica. Brazil's involvement in this region began in the late 20th century and has focused on geophysical research and the study of climate processes, providing a large scientific basis for the country in these areas, and is generally consistent with the principles of sustainable development. Nevertheless, the Arctic, far from Brazil, is today also considered a territory of sustainable development. This region represents a special area of research interest for Brazilian researchers in the context of the effects of climate change, including on the dynamics of the Gulf Stream, which directly affects the Atlantic climate, as well as maritime regulation issues.

2.1. Brazil's Antarctic policy

Antarctica holds a particular interest for Brazil in terms of implementing its own sustainable development policy and promoting it jointly both for the implementation of its own policies and for cooperation with other countries in the implementation of the SDGs. The Antarctic Treaty of 1959 forms the foundation of the international regime of Antarctic governance, prioritizing scientific research, international cooperation, and preserving the ecosystem while prohibiting military activities, including establishment of military bases, weapons testing, and burial of radioactive materials⁴². Additionally, the Protocol on Environmental Protection to the Antarctic Treaty of 1991 prohibits the development and extraction of mineral resources for 50 years⁴³. The Antarctic management regime contributes to combating climate change (SDG 13), conserving marine and terrestrial ecosystems (SDG 14 and SDG 15), and partnering for sustainable development (SDG 17).

As Antarctica is a peaceful and scientific partnership zone, opportunities for states to enter

41 Mato Grosso do Sul. (29.12.2022). Indigenous people deliver report with alerts and priorities of native peoples to the Lula government. Retrieved March 7, 2023, from <https://g1.globo.com/ms/mato-grosso-do-sul/noticia/2022/12/29/com-ministerio-indigenas-entregam-relatorio-com-alertas-e-prioridades-dos-povos-originais-no-governo-lula.ghtml>

42 Antarctic Treaty № 5778. (1961). United Nations – Treaty Series. Retrieved March 10, 2023, from https://www.un.org/ru/documents/decl_conv/conventions/pdf/antarctic.pdf

43 Protocol on Environmental Protection to the Antarctic Treaty (1991, October 4). Electronic collection of legal, regulatory and technical documents. Retrieved March 10, 2023, from <https://docs.cntd.ru/document/901886692>

Antarctica are limited to joint research and scientific stations on the continent. Brazil has been an advisory party to the Antarctic Treaty since 1983 and established its permanent research station⁴⁴, Comandante Ferras, in 1984.

Brazil implements its Antarctic policy through the Brazilian Antarctic PROANTAR program, established in 1982 and coordinated by the Brazilian Ministry of Defence, mainly the Brazilian Navy, in partnership with other governmental organizations. For instance, the Brazilian Ministry of Science and Technology determines research directions in the region, while the National Council for Scientific and Technological Development finances and coordinates research activities⁴⁵. Under PROANTAR, the Antarctic Research Plan was implemented from 2013 to 2022, covering five areas of scientific activity⁴⁶:

- the Antarctic-Southern Hemisphere climate relationship;
- monitoring global climate change's effects on the Antarctic ecosystem;
- changes in Southern Ocean circulation and implications for Brazilian and South Atlantic climate;
- geodynamics and geological history of Antarctica;
- upper atmosphere dynamics, the effects of ozone depletion on Antarctica's climate and on the continent's ecosystems.

Climate change

The PROANTAR has prioritized protecting the Antarctic environment and combating climate change. In 2022, Brazilian researchers conducted the largest expedition deep into the Antarctic to collect data on carbon dioxide concentrations and investigate the history of the Antarctic Pine Island Glacier. In the last five years, glacier's melting has accelerated significantly, undermining regional stability. To study trends in the glacier's surface, scientists utilized GPR and seismic surveys.

The CARBMET project⁴⁷, initiated in 2017, aims to investigate the impact of climate change on organic carbon and metallic elements in the Antarctic environment. Laboratory analyses of organic and inorganic samples are conducted at the Brazilian Antarctic station Comandante Ferras to assess environmental changes in the region.

Logistics

Brazilian specialists play a crucial role in solving logistical issues related to sea and air trans-

44 Report of the Fifth Special Antarctic Treaty Consultative Meeting, 1983.

45 Andrade I. O. et al. Brazil in Antarctica: The Scientific and Geopolitical Importance of PROANTAR in the Brazilian strategic surrounding area. – Discussion Paper. 2020. Nº 251.

46 Simões J. C. et al. Antarctic Science for Brazil: An action plan for the 2013-2022 period // Brasília, Ministério da Ciência, Tecnologia e Inovação. 2013.

47 A CARBMET. CARBMET. Retrieved March 10, 2023, from <http://carbmet.com.br/a-carbmet>



port, control over Brazilian Antarctic facilities and maintenance of scientific station Comandante Ferras⁴⁸. The delivery of a Caterpillar D5 bulldozer to the Brazilian Antarctic station in November 2022 is an example of such efforts⁴⁹. Brazilian specialists also have experience in organizing flights to relocate equipment and workers to the mainland. As part of the PROANTAR program, Brazilian specialists provided logistical support to the Ecuadorian Pedro Vicente Maldonado (PEVIMA) research station on Greenwich Island in Antarctica during the exchange between researchers from Brazil and Ecuador from 31 December 2022 to 20 January 2023.

2.2. Brazil's Arctic interests

Brazil's involvement in the Arctic is currently limited and lacks an institutional framework. The country's interest in the region emerged in 2010, the potential for Brazil to get involved in the Arctic became part of the country's domestic agenda in 2010. In particular, the signing of the Svalbard Treaty and the application for observer status in the Arctic Council (AC) were discussed. However, discussions on Brazil's Arctic interests and prospects for participation in the region's various governing institutions only resumed in 2019, when a "Technical Panel on Arctic Activities"⁵⁰ was established at the Naval Centre for Political and Strategic Studies in Rio de Janeiro with the support of the Brazilian Ministry of Foreign Affairs. This panel was tasked with considering the signing of the Svalbard Treaty and Brazil's application to join the Arctic Council as an observer country. In 2022, these issues were included on the official agenda of the Brazilian government⁵¹. The Inter-ministerial Commission for Marine Resources recommended that the president sign the Svalbard Treaty and apply to join the Arctic Council as an observer.

One of the reasons for Brazil's increased interest in the Arctic is the importance for the country, as one of the world's largest economies, to get involved into tackling global problems, including climate change, biodiversity conservation, and marine resource management, through participation in various international forums⁵² such as the Arctic Council, the Barents Euro-Arctic Council, and the International Arctic Science Committee. It is also worth noting that in 2013, China and India, which, like Brazil, have no territories above the Arctic Circle, were granted observer status in the Arctic Council, which also reinforces Brazil's interest in engaging with the AC. India and China also have their own research stations in Svalbard.

Membership in the AC will provide an opportunity for Brazil to deepen national research on climate change by integrating knowledge on the impact of changes in the Arctic and Antarctic on

48 Estrutura do Programa Antártico Brasileiro. Comissão Interministerial para os Recursos do Mar. Retrieved March 10, 2023, from <https://www.marinha.mil.br/secirm/pt-br/proantar/estrutura>

49 Marinha realiza apoio logístico à Estação Antártica búlgara (2023, January 8). Comissão Interministerial para os Recursos do Mar. Retrieved March 10, 2023, from <https://www.marinha.mil.br/secirm/pt-br/proantar/noticias/apoio-bulgaria>

50 The Arctic Institute. Brazil in the Arctic Council: Not as Crazy as it Sounds (2023, February 7). The Arctic Institute. Retrieved March 10, 2023, from <https://www.thearcticinstitute.org/brazil-arctic-council-not-crazy-sounds/>

51 Ibid

52 Revista *Máritima Brasileira*, 1851.



the global environmental balance^{53,54}. In addition, the signing of the Spitsbergen Treaty will open up opportunities for Brazil to carry out research on climate and resources, including through the possible establishment of its own research station on Spitsbergen Island. Brazil's participation, for example, in the International Arctic Science Committee will also open new horizons for national research and set the stage for Brazil to build its own research station in the Arctic.

In matters of maritime regulation, Brazil's immediate interest is the opening of new maritime routes in the Arctic and cooperation with Arctic countries in Arctic shipping lanes to secure navigation in the region. In addition, another area of focus for Brazil is the protection of fishery resources in international waters (SDG 14 – Life Below Water), which is coordinated by the National Inter-ministerial Commission for Marine Resources established in 1974.

Brazil's involvement in the Arctic agenda and the system of international Arctic cooperation can also contribute to expanding Brazil's portfolio of joint projects with leading countries in oil and gas exploration. At the same time, Brazil can offer Arctic countries an exchange of experience in hydrocarbon extraction in Atlantic waters.

At present, Brazil does not have systematic partnerships with the Arctic states, mainly collaborating on environmental preservation in the Arctic, climate change research and oil extraction. For example, two Brazilian research organizations have a cooperation agreement with Finland: the National Council for Scientific and Technological Development (CNPq) since 2008 and the São Paulo Research Foundation (FAPESP) since 2012⁵⁵. As part of the UTFORSK education project, Brazil is collaborating with Norway to develop teaching materials on a wide range of topics. For example, 4 research courses have been developed for master's degrees in logistics: marine logistics (including oil, gas and wind), renewable energy logistics, oil and gas processing and marketing, and logistics planning under uncertainty⁵⁶.

In addition to Brazil's cooperation with Norway in the field of education, the two countries have developed joint projects in the oil sector. In 2010, the Norwegian company "Innovation Norway" signed a technology cooperation agreement in the oil sector with the Brazilian company "Petrobras", enabling Norway to enter the Brazilian market and the Brazilian company to gain access to technology⁵⁷. A new energy cooperation program, Norway-Brazil Energy Cooperation 2020, was established in 2020, where the international oil and gas partnership network INTSOK assists Norwegian companies to enter the Brazilian market⁵⁸. One of the most recent oil deals between Brazil and Norway is the agreement for BW Energy to

53 dos Santos L. E. F. et al. O Brasil e o Ártico // Finisterra. 2018. Vol. 53. Nº. 107.

54 Revista [Máritima Brasileira](#), 1851.

55 Brazil. Academy of Finland. Retrieved March 10, 2023, from <https://www.aka.fi/en/about-us/what-we-do/international-cooperation/global-partnerships/bilateral-international-partnerships/brazil/>

56 Norway-Brazil UTFORSK-project (2020, August 21). Molde University College. Retrieved March 10, 2023, from <https://www.himolde.no/english/research/research-groups/oil-and-gas-logistics/utf-brazil/results.html>

57 New agreement with Petrobras opens doors (2010, March 12). Norway exports. Retrieved March 10, 2023, from <https://www.norwayexports.no/news/new-agreement-with-petrobras-opens-doors/>

58 Ibid.



acquire the Norwegian deepwater oil fields of Golfinho and Camarupim⁵⁹.

In the field of mining, Brazil also cooperates with Canada. Since 2005, the largest Brazilian company Vale has been mining nickel, cobalt, and copper in the territory of Canadian Newfoundland (Voices Bay)⁶⁰, and in 2006 a subsidiary company Vale Canada Limited was opened to carry out work at the mine. Brazil has a number of bilateral cooperation agreements with Canada as well, including a framework cooperation agreement on science, technology and innovation that entered into force in 2009. The agreement includes arrangements for cooperative research, the organization of scientific seminars, the transfer of expertise and the exchange of technical specialists, students and scientists. Moreover, it was Weatherhaven Canada that hosted Brazilian emergency Antarctic modules at Comandante Ferras in 2013⁶¹.

Brazil has the tightest cooperation among the Arctic countries with Russia. The countries conduct a wide range of projects, of particular importance in the context of Brazil's Arctic interests is the study of the oceans. In this area, experts of the two countries compare hydrophysical and biogeochemical processes that take place in the Amazon and major Arctic rivers such as the Lena, the Yenisei and the Ob⁶².

Brazil cooperates with Russia not only on bilateral basis, but also within multilateral formats, especially within the BRICS working group on cooperation in ocean and polar research aimed at coastal research in the Arctic. At the BRICS meeting in 2015, China proposed organising an expedition to the East Siberian, Chukchi, Kara and Laptev Seas to study processes crucial to the protection of the Arctic environment⁶³.

Given the existence of bilateral and multilateral cooperation agreements with several Arctic states, it is reasonable to assume that Brazil's presence in the Arctic will provide opportunities for the country to develop national research projects, for example in climate change research and resource extraction, and to cooperate with the international scientific community, including joint expeditions and exchanges of experts. Membership in the Arctic Council with observer status is likely to allow the country to engage in global issues at a higher political level.

59 Norway will extract gas from offshore Brazil. BW Energy buys Petrobras' deepwater assets (2022, June 4). Neftegaz.ru. Retrieved March 10, 2023, from <https://neftgaz.ru/news/shelf/741792-norvegiya-budet-dobyvat-gaz-na-shelfe-brazili-bw-energy-pokupaet-glubokovodnye-aktivy-petrobras/>

60 Vale Canada. Voisey's Bay. Retrieved March 7, 2023 from: <https://www.vale.com/voisey-s-bay>

61 da Silva A. P. Brasil e Canadá nas relações internacionais polares. Brazil and Canada in the polar international affairs // Canoasio 2013. V. 13. № 16. P. 67–89.

62 Russian and Brazilian scientists work on environmental security projects in the Amazon and the Arctic rivers of Siberia (2022, April 28). Ministry of Science and Higher Education of the Russian Federation. Retrieved March 10, 2023, from <https://minobrnauki.gov.ru/press-center/news/mezhdunarodnoe-sotrudnichestvo/50737/>

63 Joint statement on the 4th meeting (2021). BRICS. Retrieved March 10, 2023, from <https://brics.land-ocean.ru/>

Prospects for cooperation between Russia and Brazil in the field of sustainable development in the Arctic region

3.1. Bilateral cooperation

Although, at present, Brazil's involvement in the development of the Arctic region is quite modest, the country has considerable accumulated potential for sustainable development, including areas beyond the South Polar Circle, which provides a basis for Brazil to be engaged in various formats of cooperation and development in the Arctic. Moreover, given the close ties between Brazil and Russia, both in bilateral cooperation and in multilateral formats, of which BRICS is a key one, the current geopolitical environment provides a window of opportunity for Brazil and Russia to expand their partnership for cooperation in the sustainable development of the Arctic. Potential cooperation priorities between Russia and Brazil include:

- environmental protection and climate change, water resources management;
- sustainable agriculture;
- support for indigenous peoples;
- energy cooperation, including mining and green energy development.

Protecting the environment and combating climate change.

Climate change is the most serious global challenge for both Russia and Brazil: its effects pose significant threats to long-term socio-economic development and are already evident today in the form of weather anomalies, gradually increasing seasonal forest fires, etc. For example, the shrinking ice cover and thawing permafrost is having a negative impact on the state of Arctic marine and onshore ecosystems, endangering the loss of biodiversity and economic activity in the region. Similar processes and challenges characterise the South Pole.

Russia and Brazil have a solid research background in the area of climate change impacts on the environment. This includes, for example, the Antarctic science plan of Brazil for 2013–2022 (Antarctic science for Brazil⁶⁴) and the Antarctic program of Brazil PROANTAR⁶⁵ cover the study of the relationship between the Arctic and Antarctic regions in the context of climate change. The involvement of Brazil in the study of climate change in the Arctic, in partnership with Russia, will facilitate the exchange of expertise and consolidate research on polar issues.

As a cooperative initiative between Russia and Brazil, scientific research could be carried out at the Russian International Arctic Station Snezhinka, serving as a new platform for exchanging

64 Antarctic Science for Brazil. An Action Plan for the 2013–2022 period. Retrieved March 10, 2023, from URL: <https://www.ufrgs.br/inctcriosfera/arquivos/BrazilianActionPlanEnglish.pdf>

65 Programa Antártico Brasileiro (PROANTAR). Marinha do Brasil. Retrieved March 10, 2023, from <https://www.marinha.mil.br/secirm/pt-br/proantar/sobre>



and developing various “green” technologies, research on pollution, ocean acidification and climate change. A similar platform for sea ice research, permafrost melting monitoring and climate change forecasting is the Russian ice-resistant self-propelled platform North Pole, which first set sail in September 2022⁶⁶ (SDG 13 – Climate Action; SDG 14 – Life Below Water).

An important area of cooperation between Russia and Brazil in the Arctic is the study of microplastics pollution in the Arctic Ocean and the launch of projects to collect marine litter and microplastics in the region (SDG 14 – Life Below Water), in which Brazil has considerable experience through its participation in the UN Clean Seas Campaign.

Biodiversity preservation is also one of the potential aspects of cooperation between Russia and Brazil, as it meets the priorities of the countries’ Arctic and Antarctic policies. Thus, Brazil’s Antarctic PROANTAR program, among other things, aims to study the impact of climate change at polar latitudes on biodiversity reduction, as well as to develop ecological models for the management of the Antarctic environment. Preservation of biodiversity and the protection and restoration of onshore and marine ecosystems are also part of the agenda of Russia’s chairmanship of the Arctic Council and the development of Russia’s Arctic zone⁶⁷, hence joint research projects on the impact of climate change on biodiversity loss in the Arctic (SDG 13 – Climate Action; SDG 14 – Life Below Water; SDG 15 – Life on Land) and exchange of experience in environmental protection management seem highly promising.

In terms of water resources management, the experience of Brazil in organizing the water basins of large rivers in South America, such as the La Plata and Amazon rivers, is particularly relevant to Russia, as climate change in the Arctic affects rainfall patterns and the depth of permafrost melting, which affects the river mouths in the Arctic region.

Sustainable agriculture

Brazil’s significant potential in the design and construction of vertical farms and modern greenhouses creates a window of opportunity to attract Brazilian investment in Russian Arctic agriculture, as well as technological exchange, which may significantly reduce the cost and increase the availability of vegetable products in the Russian Arctic territories. In addition, Brazil is a major importer of mineral fertilizers from Russia, due to which it is possible to increase supplies between the countries.

66 The world’s first ice-resistant platform, the North Pole, has set off (2022, September 2). TASS. Retrieved March 10, 2023, from <https://tass.ru/ekonomika/15629883>

67 Presidential Decree No. 645 of 26.10.2020 “On the Strategy for Development of the Arctic Zone of the Russian Federation and National Security for the Period up to 2035” // Electronic Fund of Legal and Regulatory and Technical Documents. Retrieved March 10, 2023, from <https://docs.cntd.ru/document/566091182>



Support for Indigenous Peoples

Climate change has a significant negative impact on the way of life of Arctic indigenous peoples, requiring not only increased state support for this vulnerable segment of the population, but also increased importance of their representation in the Arctic system of institutions⁶⁸. Increased participation of indigenous peoples in regional governance would make state policy for Arctic development more balanced, inclusive and responsive to local interests⁶⁹. At present, at the national level, the interests of the Indigenous Peoples of the North, Siberia and the Far East (IPNF) are represented by the respective Association established in 1990⁷⁰. It is also a member of the Arctic Council. However, the Association of Indigenous Minorities is not part of the Russian Federation's state institutions, but is a public organisation, which significantly limits its weight in the system of governance. In this context, the Brazilian experience of establishing a Ministry of Indigenous Peoples⁷¹ is relevant to Russia, which aims to protect and promote their interests.

Along with institutional support for indigenous peoples, it is crucial to ensure food security, which requires, inter alia, the accumulation of knowledge about potentially dangerous areas in the region based on traditional indigenous knowledge (SDG 2 – Zero Hunger).

Energy cooperation

The energy sector seems to be one of the most promising in the context of bilateral cooperation between Russia and Brazil in the Arctic region. In terms of geological exploration and mining, it is possible to involve Brazilian companies in the Russian projects Yamal LNG, Arctic LNG-2, Vostok Oil, as well as further expand the portfolio of investment projects in the field of oil and gas production on the Arctic shelf. In this area, it is also important for Russia to use the Brazilian experience in implementing offshore technologies for oil and gas production, which Brazil uses in the Blue Amazon zone. In the future, this will stimulate technological cooperation and mutual supplies of equipment between countries, including equipment with a reduced impact on the environment and marine ecosystems, which is extremely important in the context of the implementation of the UN SDGs in Brazil and Russia (SDG 7 – Affordable and Clean Energy; SDG 13 – Climate Action; SDG 14 – Life Below Water).

In addition, countries can cooperate in the production and supply of iron ore. For example, the Brazilian mining company Vale already has operations in Arctic conditions, since it has been mining in Newfoundland since 2005, which opens a window of opportunity for attracting Brazilian companies to joint projects for the extraction of iron and copper-nickel ores. For example, a number of projects in the mining industry in the Arctic are being implemented by Norilsk Nickel, in particular in the Komsomolsky, Oktyabrsky and Taimyrsky mines. It is also worth mentioning that Russia is

68 Burkhart K., McGrath-Horn M. C., Unterstell N. Comparison of Arctic and Amazon regional governance mechanisms // *Polar Geography*. 2017. DOI: 10.1080/1088937X.2017.1303755.

69 Brazil in the Arctic Council: Not as Crazy as it Sounds (2023, February 7). The Arctic Institute. Retrieved March 10, 2023, from <https://www.thearcticinstitute.org/brazil-arctic-council-not-crazy-sounds/>

70 Association of Indigenous Peoples of the North, Siberia and the Far East. Retrieved March 10, 2023, from <https://raipon.info>

71 O Ministério dos Povos Originários (2022, November 16). Instituto de Estudos Latino-Americanos. Retrieved March 10, 2023, from <https://iela.ufsc.br/o-ministerio-dos-povos-originarios/>



Brazil's largest foreign trade partner in the export of iron ore⁷².

In the future, it is possible for Brazil and Russia to jointly develop the Afrikanda deposit of rare earth metals (Murmansk region), in particular titanium⁷³, which is widely used in the aircraft industry, which will increase the export of titanium within the trade flows of Russia and Brazil and within the BRICS.

Since Brazil has a great backlog in the development and implementation of green energy technologies, its experience is relevant for Russia in terms of wind power installations and the use of tidal energy, given the presence of several deep-sea ports on the Arctic coast of Russia. In addition, the experience of Brazil in the field of wind energy, as well as in the development of solar energy storage technologies, is relevant for Russia, which can make it possible to replace some of the power plants in the polar latitudes operating on hybrid or diesel fuel (SDG 7 – Affordable and Clean Energy).

In the medium term, the implementation of Russian-Brazilian projects in the field of hydrogen production is possible, given the adoption by both countries of hydrogen strategies, which also seems relevant in the context of the implementation of the SDGs, reducing emissions in the energy sector and energy supply to the Arctic territories (SDG 7 – Affordable and Clean Energy).

3.2. Multilateral cooperation

Despite the fact that the Arctic region is traditionally considered a zone of peace and cooperation due to its fragility and uniqueness, in the context of geopolitical turbulence, the former formats of interaction between the Arctic and non-Arctic states, including the Arctic Council, the Council of the Barents Euro-Arctic Region, cease to be viable. After the exclusion of Russia from the activities of the Arctic Council and other institutions of governance in the region in March 2022, against the background of the military-political crisis in Ukraine, the effectiveness of existing multilateral platforms has significantly decreased due to the isolation of one of the key actors. With the fragmentation of the system of institutions of international cooperation in the Arctic, the window of opportunity for creating alternative platforms for interaction and involving new non-Arctic states in the region is expanding.

One of the potential formats with the participation of Russia as the main stakeholder in the Arctic region and Brazil, which has significant expertise in natural resource management and experience in Antarctic exploration, is BRICS. The involvement of India and China in the Arctic began long before the current geopolitical crisis, by now the countries have adopted their own strategic documents for the development of the region – China's White Paper of 2018⁷⁴ and India's Arctic Strategy⁷⁵: Building Partnerships for Sustainable Development of 2022. These documents fix the priorities of cooperation in the field of combating climate change, protecting the environment, supporting the indigenous population of the

72 OECD (2021). Trade in raw materials. Retrieved from <https://www.oecd.org/trade/topics/trade-in-raw-materials/>

73 Stotsky A. The Arctic today: titanium, platinum and oil. (07.01.2020). GoArctic. Retrieved March 7, 2023 from: <https://goarctic.ru/news/arktika-segodnya-titan-platina-i-neft/>

74 The State Council the People's Republic of China. (2018). Full text: China's Arctic Policy. Retrieved March 7, 2023, from https://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm

75 Government of India. (2022). Full text: India's Arctic Policy: Building a partnership for sustainable development. Retrieved March 7, 2023, from https://www.moes.gov.in/sites/default/files/2022-05/India_Arctic_Policy_2022.pdf



Arctic, and strengthening scientific dialogue. In particular, India's strategy points to the need to harmonize polar research between the two poles – the Arctic and Antarctic, and the third pole – the Himalayas, which is seriously exposed to the risks of global warming⁷⁶. The relationship between the melting of Arctic ice and the Himalayan glaciers is noted in the IPCC Special Report on the Ocean and Cryosphere⁷⁷.

In this regard, one of the key areas of cooperation within the framework of the BRICS on the sustainable development of the Arctic should be scientific dialogue, in particular research on the melting of Arctic glaciers, ocean acidification, migration of Arctic species through joint scientific expeditions and the establishment of scientific exchange between research centers in Russia, China, India and Brazil. Given the existing backlog of BRICS in the field of space monitoring of the environment⁷⁸, it is possible to improve the quality of assessments and forecasts of climate change in the Arctic, develop measures to reduce climate risks, and improve navigation along the Northern Sea Route.

Taking into account the temporary “freeze” and scientific dialogue within the framework of established institutions in the Arctic, including the University of the Arctic and the Arctic Science Committee, it is possible to build a network of research centers within the framework of BRICS, the focus of which is the study of climate change, glaciology, the development of a “green energy”. To date, Dalian University of Information Technology, Harbin University of Engineering, National Laboratory of Marine Science and Technology of Qingdao, Harbin Polytechnic University, National Center for Polar and Oceanic Research of the Ministry of Land Tenure of India, Center for Cryosphere Sciences of Brazil based on the Federal University of Rio Grande have such expertise.

One of the alternative platforms for dialogue between Russia, Brazil and other states on sustainable development of the Arctic can be the G20, which is currently chaired by India, which has observer status in the Arctic Council and is interested in exploring the Arctic due to the relationship of climate change in the polar latitudes and melting glaciers in the Himalayas. However, the opportunities for active promotion of the Arctic agenda and, in general, full-fledged cooperation within the G20 are currently largely blocked.

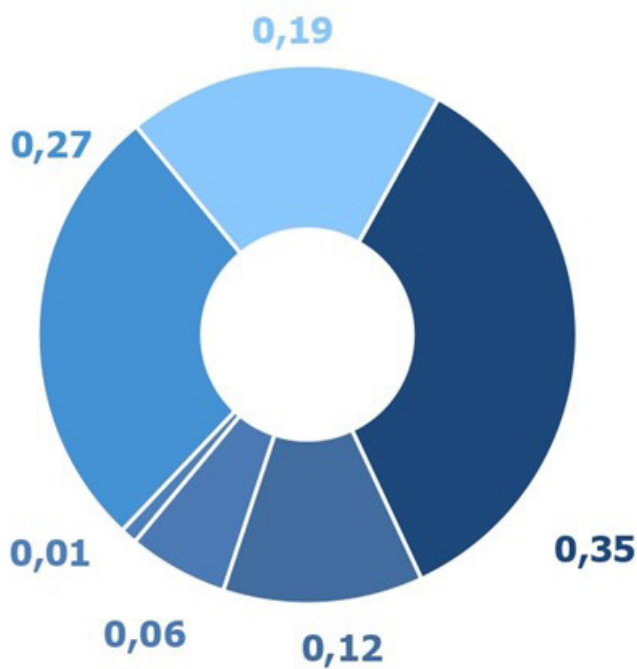
The current geopolitical context does not allow Russia to be fully involved in key formats for managing the Arctic and cooperate with Western countries that dominate the traditional institutions of governance in the region. However, given the role that Russia plays in the Arctic, sustainable development The Arctic region is not possible without the participation of Russia and in the medium term will require the resumption of a dialogue based on mutual respect for the interests of actors in the region. Despite the fact that Brazil is not yet part of the architecture of Arctic governance institutions, in particular, it does not have the status of an observer of the Arctic Council, it can become a mediator in establishing a dialogue between Russia and Western countries, since it is not a party to the conflict in Ukraine and has great political weight in the international arena.

76 The Arctic Institute. (28.02.2023). India's G20 Presidency: Opportunity to Resume Engagement in the Arctic. Retrieved March 7, 2023, from <https://www.thearcticinstitute.org/india-g20-presidency-opportunity-resume-engagement-arctic/>

77 IPCC. (2019). Special Report on the Ocean and Cryosphere in a Changing Climate.

78 Ministry of Science and Higher Education of the Russian Federation. (27.05.2022). Scientists from Russia, India and China are improving the methods of space monitoring of the environment. Retrieved March 7, 2023, from <https://minobrnauki.gov.ru/press-center/news/mezhdunarodnoe-sotrudnichestvo/51915/>

Brazil's Energy Sector



Primary energy consumption by fuel (2021 r.)

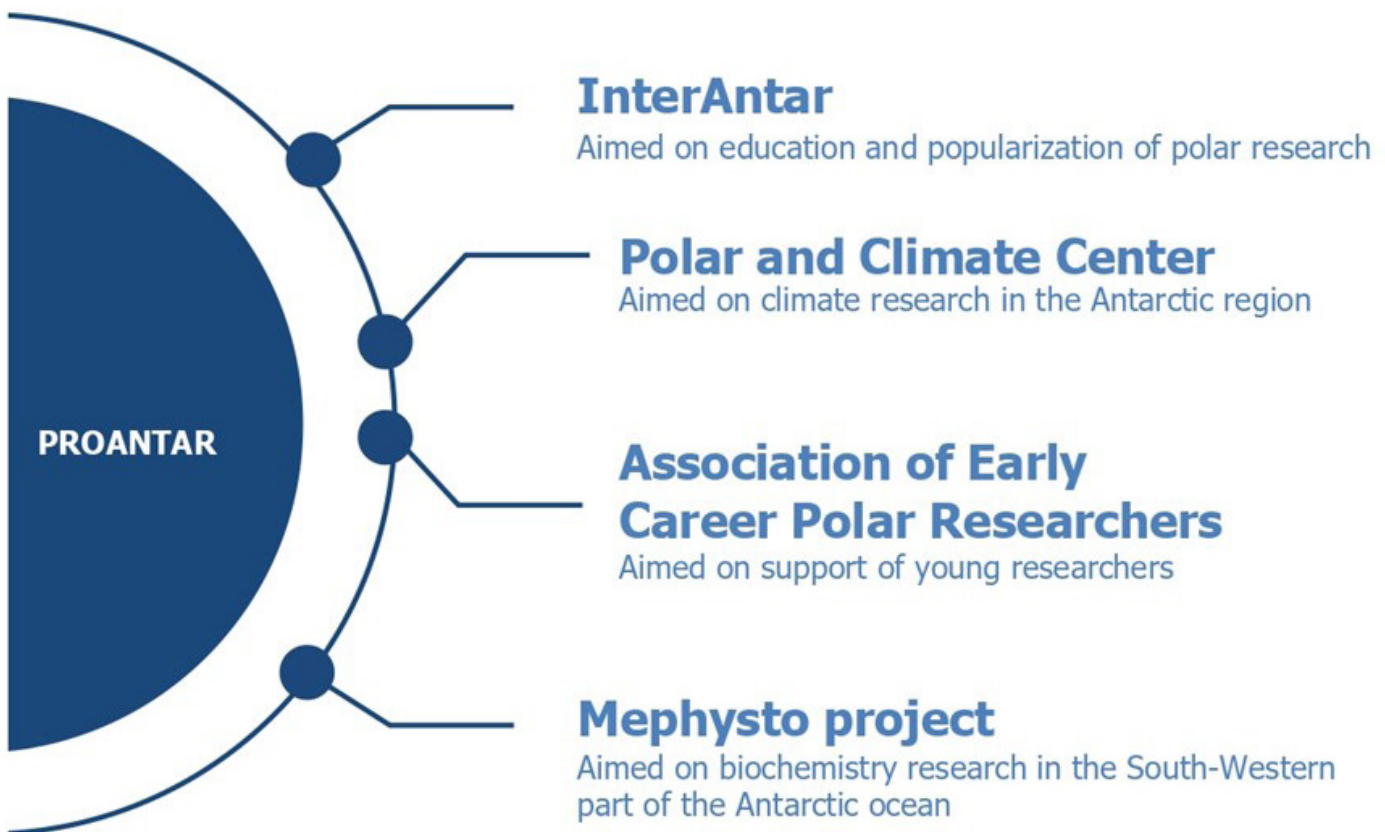
- Oil
- Gas
- Coal
- Nuclear power
- Hydroelectricity
- Renewables

Share of green energy in the primary energy consumption: 47%

CO2 emissions in the energy sector (millions tons)



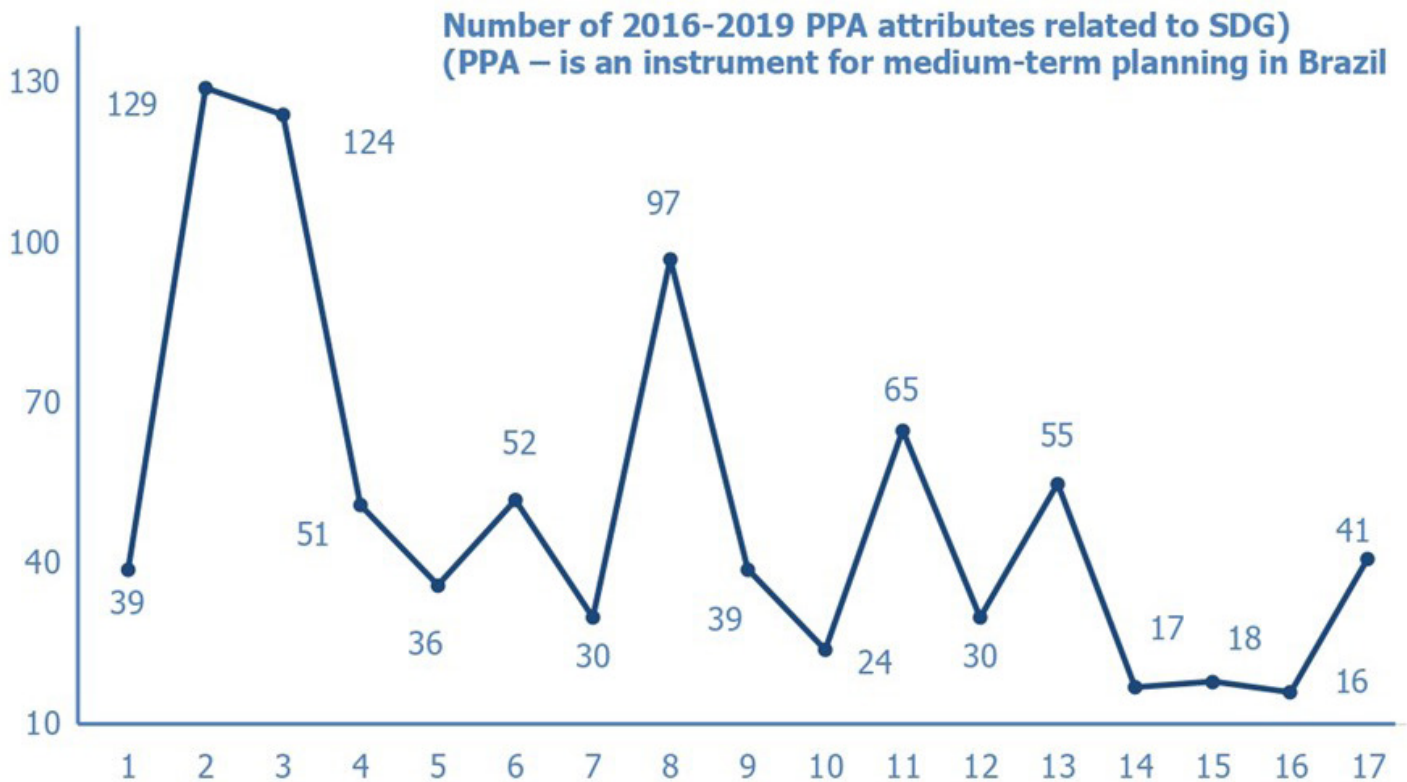
Brazil in Antarctica



Number of facilities in the Antarctic per country

| Country | Year-round stations | Seasonal stations | Other facilities | Total |
|---------|---------------------|-------------------|------------------|-------|
| Brazil | 1 | 0 | 1 | 2 |
| Russia | 7 | 5 | 0 | 12 |
| USA | 3 | 0 | 4 | 7 |
| China | 2 | 1 | 1 | 4 |

Implementation of the SDGs in Brazil



Priority SDG:

2 (zero hunger), **3** (good health and well-being),
8 (decent work and economic growth), **11** (sustainable cities and communities)

Promising areas of sustainable development cooperation in the Arctic

«Green» energy
technologies

Sustainable exploitation
of marine resources



Scientifics cooperation
in the field of climate
change research

Indigenous
peoples' rights



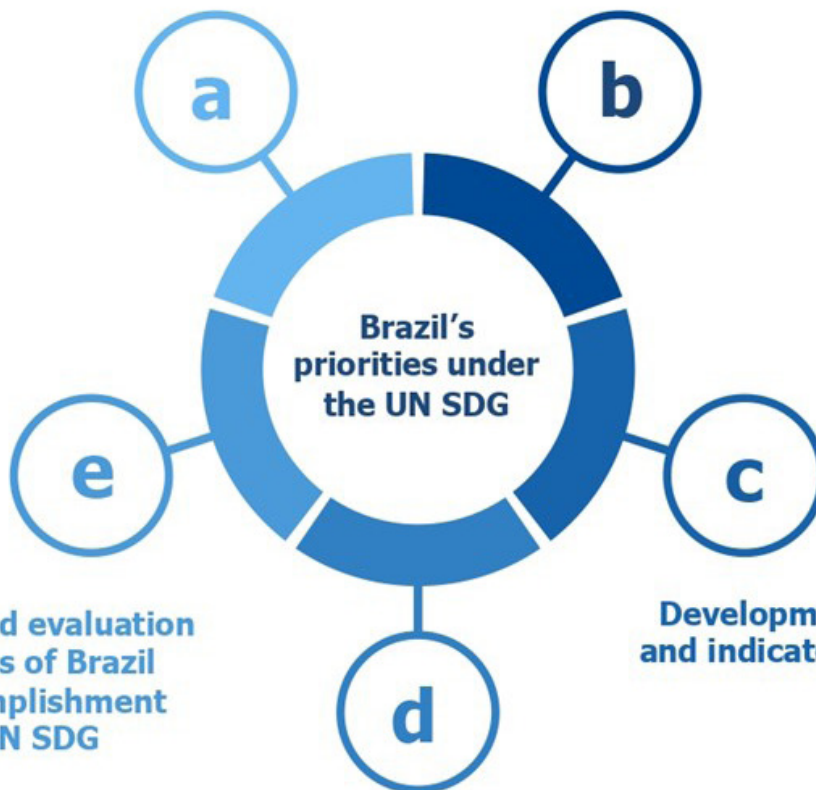
G20 countries



Brazil's priorities under the UN SDG

Establishment a governance committee,
which will ensure the integration,
participation, communication, operation,
and effectiveness of the Un SDG

Promotion and coordination public policies
and civil society initiatives
within the framework of the UN SDG

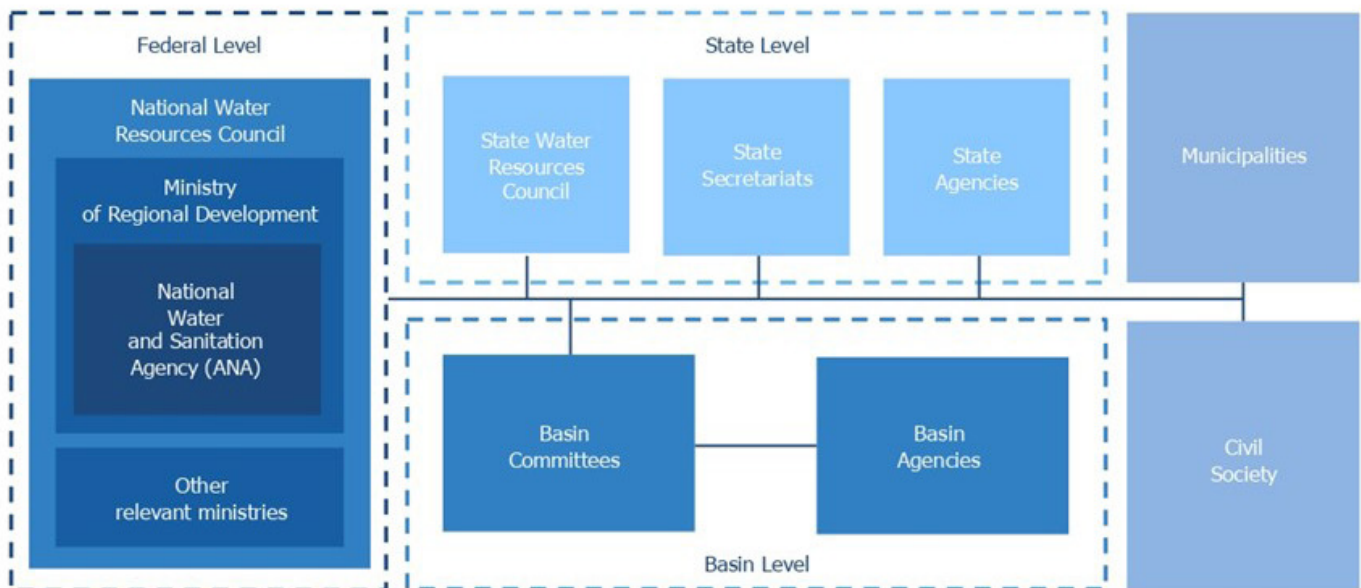


Monitoring and evaluation
the progress of Brazil
in the accomplishment
of the UN SDG

Development of national goals
and indicators under the UN SDG

Spread and popularization
of the UN SDG

State Institutions for Water Resources Management



Indigenous peoples of Brazil



896,9 thsd

indigenous peoples living



305

indigenous ethnic groups



274

languages of indigenous peoples

Promising areas of cooperation between Russia and Brazil in the Arctic



Ore mining industry in Brazil

20,8%

Brazil accounted for the world export
of mineral raw materials in 2021

Main iron ore deposits



Sierra Norte
(state of Para)



Carajas Sierra
(state of Para)



Vargem Grande
(State of Minas Gerais)



Itabira
(State of Minas Gerais)



Paraopeba
(State of Minas Gerais)