THINK ARCTIC

ОТВЕТСТВЕННОЕ УПРАВЛЕНИЕ ДЛЯ УСТОЙЧИВОЙ АРКТИКИ

2021–2023
АРКТИЧЕСКИЙ СОВЕТ
ПРЕДСЕДАТЕЛЬСТВО РОССИИ

PROSPECTS FOR BRICS COOPERATION ON SUSTAINABLE DEVELOPMENT IN THE ARCTIC

The Arctic Policy of the BRICS countries

Today, BRICS is one of the key interstate groups in the international arena; four of the five states are among the world's top ten economies. In recent years, the interests of the BRICS countries have been increasingly focused on the North and South Poles. The growing attention of the BRICS states to the Arctic is due to the leading role of Russia in the region: the country is the only Arctic state in BRICS and a member of the Arctic Council (AC). India and China gradually became involved in the region. As a result, in 2013 both states were granted observer status in the AC and soon adopted national strategies that enshrine their priority policies in the Arctic. Brazil's and South Africa's polar policies are rather focused on the South Pole, but a significant expertise in Antarctic research determines the possibilities for Brazil and South Africa's to get involved in the Arctic region as well.

Russian Arctic Policy

Russia's interest in the Arctic is primarily due to its geographical location: more than 20% of the country's territory is located above the Arctic Circle. The Arctic accounts for about 10% of Russia's GDP[1]. The Arctic region is extremely rich in resources and is of great economic importance to Russia because it provides the opportunity to develop oil fields and extract metals[2]. In addition, the Arctic is a strategically important area for Russia in the context of national security.

Russia is a key actor in the region's governance system, having been a member of the Arctic Council since its establishment in 1996, a permanent member of other Arctic institutions, such as the Barents/Euro-Arctic Council, and an initiator of significant multilateral cooperation projects. For example, within the Northern Dimension initiative Russia has implemented joint projects with the EU, Norway and Iceland on environmental protection (SDG 13 – Climate Action, SDG 14 - Life Below Water, SDG 15 – Life on Land), improving health (SDG 3 – Good Health and Well-Being) and improving transport infrastructure (SDG 9 – Industry, Innovation and Infrastructure).

The strategy for the development of the Arctic zone of the Russian Federation and ensuring national security for the period up to 2035[3], as the main directions of state policy in the region enshrines: 1) development of the social sphere, in particular modernization of the healthcare system, improvement of the quality and accessibility of education; 2) economic development, including transition to a circular economy and industrial modernization; 3) infrastructure development, in particular development of the Northern Sea Route (NSR)[4], modernization of ports, reconstruction of

1 Likhacheva A., Stepanov I. A. Russian Arctic Policy: Opportunities for the Development of the Siberian and Far Eastern Regions // Regional Research of Russia. 2021. Vol. 11. P. S13-S22

2 Stepanov I., Makarov I., Makarova E., Smolovik E. Climate change and challenges to sustainable development in the Russian Arctic // Climatic Change. 2023. 176. P. 2.

3 Decree of the President of the Russian Federation No. 645 of October 26, 2020 // President of Russia. 26.10.2020. URL: http://www.kremlin.ru/acts/bank/45972 (accessed: 03.05.2023)

4 Decree of the Government of the Russian Federation dated August 1, 2022, No. 2115-r // Government of the Russian Federation. 01.09.2022. URL: http://static.government.ru/media/files/StA6ySKbBceANLRA6V2sF6wbOKSyxNzw.pdf (accessed: 03.05.2023)

roads; 4) support for science and technology development; 5) environmental protection and ensuring environmental safety; 6) international cooperation, as well as 7) ensuring protection of the population and territories of the Arctic zone from emergencies and ensuring 8) public and 9) military security.

The updated Foreign Policy Concept of the Russian Federation of 2023[5] defines among the priorities of the Russian policy in the Arctic the peaceful settlement of international disputes concerning the Arctic management, neutralization of the policy of "unfriendly countries to militarize the region", compliance with the "historically established international legal regime of internal sea waters of the Russian Federation[6]", as well as building cooperation with non-Arctic states on mutually beneficial terms.

The Arctic is a unique natural ecosystem that is subject to climate change more than any other region on the planet. For this reason, the study of climatic processes occurring in the region is one of the main vectors of Russia's activities in the Arctic. The greatest risk for the country in the context of climate change is thawing of permafrost, which covers about 65% of the country[7]. In this direction, Russia aims to prevent emergencies. For example, as part of the Sustainable Development Working Group, Russia took part in the project "Building Resilience in the Arctic"[8] aimed at creating roadmaps to address the consequences of permafrost melting (SDG 9 – Industry, Innovation and Infrastructure, SDG 11 – Sustainable Cities and Communities, SDG 13 – Climate Action, and SDG 17 – Partnerships for the Goals)[9].

In addition to climate risks, the Russian Arctic is facing socio-economic challenges, in particular a decline in population growth and migration outflow associated with low quality of life and development of transport and social infrastructure, low entrepreneurial activity, etc. As a consequence, a significant role in Russia's Arctic agenda is assigned to the development of seaport infrastructure and navigable transport routes, primarily the Northern Sea Route, and highways (SDG 9 – Industry, Innovation and Infrastructure, SDG 11 – Sustainable Cities and Communities). Given the region's existing and new socio-economic development challenges, the state administration system for the Arctic was substantially modernized in 2019: the Ministry for the Development of the Russian Far East was transformed into the Ministry for the Development of the Russian Far East and the Arctic, the competencies of the Far East and Arctic Development Corporation were significantly expanded, special economic zones were created to support entrepreneurship in the region, etc.

5 Decree of the President of the Russian Federation of 31.03.2023 No. 229 "On Approval of the Foreign Policy Concept of the Russian Federation" // Official Internet Portal of Legal Information. URL: http://publication.pravo.gov.ru/Document/View/0001202303310007?index=1&rangeSize=1 (accessed: 03.05.2023)

6 Ibid.

7 Porfiriev B.N., Eliseev D.O., Streletsky D.A. Economic assessment of the consequences of permafrost degradation for the health facilities of the Russian Arctic // Bulletin of the Russian Academy of Sciences. 2021. №12. P. 1125-1136.

8 Advancing Arctic Resilience: exploring aspects of arctic resilience connected to the impacts of permafrost thaw // Arctic Council. URL: https://sdwg.org/what-we-do/projects/advancing-arctic-resilience-exploring-aspects-of-arctic-resilience-connected-to-the-impacts-of-permafrost-thaw/ (accessed: 03.05.2023)

9 Advancing Arctic Resilience: Information, capacity, and networks for navigating impacts of permafrost thaw SDWG Project Proposal // Artic Council, 2019. – URL: https://oaarchive.arctic-council.org/bitstream/handle/11374/2744/SDWG_2021-10_Online_Plenary-07a1_Arctic-Resilience-Project-Proposal_2021-09-06-3.pdf?sequence=1&isAllowed=y (accessed: 03.05.2023)

Thus, Russia is a key actor in the Arctic and actively engages in the governance of the region based on the interests of national security, realization of the region's transport and resource potential, and improvement of living standards and well-being of the population. Russia is also concerned about the impact of climate change on the state of Arctic ecosystems and socio-economic development of the region, and therefore a major role in the Arctic policy is attributed to research in this area.

China's Arctic Policy

China's increasing interest in the Arctic is primarily due to the economic, in particular resource and transport potential of the region. China considers the NSR as a shorter strategic route to Europe[10], which is why the country is developing the initiative of the "Ice Silk Road" associated with the NSR. During Xi Jinping's visit to Moscow in March 2023, the two heads of state expressed their interest in jointly exploring the "transit potential of the Northern Sea Route[11]" and discussed the possibility of establishing a joint working body to develop this route to promote trade[12].

China is improving its technical capabilities, including the development of the icebreaker fleet[13]. In particular, the country uses for polar expeditions a large icebreaker Xuelong (雪龙), which was purchased from Ukraine in 1994. Meanwhile, China also has an icebreaking ship Xuelong 2, which is the country's first icebreaker of its own manufacturing. At the moment it is successfully operated[14].

Although China has no territory above the Arctic Circle, the country calls itself a "Near-Arctic state"[15] and has had observer status at the AC since 2013[16]. It is also a member of several governance institutions in the region, such as the International Arctic Science Committee, which conducts research on environmental protection and climate change.

China's Arctic policy priorities are articulated in the White Paper[17] adopted in 2018 and include understanding, protecting and developing the region, as well as participating in Arctic governance. Among the key areas enshrined in the White Paper are exploring the region, protecting the environment and combating climate change in the Arctic, environmental management, international

10 Hongjie C. China's Northern Sea Route Strategy: Cooperation and Competition // Symbol of Science. – 2016. – №. 4-4. – P. 230.
11 Russia and China ready to create joint body on Northern Sea Route development // Interfax. – 21.03.2023. – URL: https://www.interfax.ru/russia/892174 (accessed: 24.04.2023)
12 Ibid.
13 Leksyutina Y. V. China and India in the Arctic: interests, strategies and cooperation with Russia // Oikumena. Regional Studies. – 2019. – №. 4 (51). – P. 40-48.
14 Chinese icebreaker Xuelong-2 set off on second expedition to the Arctic // TASS 12.07.2021. URL: https://nauka.tass.ru/nauka/11879883 (accessed: 24.04.2023)
15 Lagutina M., Leksyutina Y. BRICS countries' strategies in the Arctic and the prospects for consolidated BRICS agenda in the Arctic// The polar Journal. 2019. Vol. 9. № 2. P. 1–19.
16 Stephen M. D., Stephen K. The Integration of Emerging Powers into Club Institutions: China and the Arctic Council // Global Policy. 2020. Vol. 11. № S3. P. 51–60.
17 Full text: China's Arctic Policy // The State Council the People's Republic of China. URL: http://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm (accessed: 11.04.2023)

cooperation in the region, and promoting peace and stability in the Arctic. Within the implementation of activities in the Arctic, China pursues four basic principles, namely respect, cooperation, mutual benefit, and sustainability[18].

China's strategy assigns a special role to scientific cooperation to promote sustainable development in the Arctic. The critical areas of China's research in the Arctic are SDG 13 – Climate Action, and the SDGs related to environmental protection (including SDG 6 – Clean Water and Sanitation, SDG 14 – Life Below Water, and SDG 15 – Life on land) because the climate changes in the region have an impact on agriculture, forestry, and marine industries in China[19].

As for conserving natural resources, China also pursues sustainable fishing and the rational use of fisheries (SDG 12 – Responsible Consumption and Production, SDG 14 - Life Below Water). To this end, China actively participates in the UN ocean and fisheries governance mechanisms, including the UN Consultation on Sustainable Fisheries. The outcome of the last meeting was the adoption of a draft Resolution on Sustainable Fisheries in December 2022[20]. China also sponsors contracts for international seabed exploration projects. For example, on May 12, 2017, China Minmetals Corporation signed an ocean exploration contract with the International Seabed Authority[21].

Through international partnerships, China supports initiatives to promote SDG 17 – Partnerships for the Goals, including the country's reliance on the Spitsbergen Treaty, under which all countries have the opportunity to be present in the Arctic[22]. China views the Arctic as an international space in which states that do not have their own territories in the region will also have the opportunity to participate in its collective governance[23].

An important area of China's activity in the Arctic is to promote innovation and increase the region's technological capacity for research, which corresponds with SDG 9 – Industry, Innovation and Infrastructure. In particular, China aims to modernize equipment in the Arctic, including equipment for deep-sea exploration.

Thus, although China is not an Arctic state, it is already actively involved in the socio-economic development of the region. The country has a number of multilateral initiatives in joint research on climate change in the Arctic, infrastructure and technology development, as well as it is committed to fulfill of the region's resource potential, while consistently adhering to the principles of sustainable

18 Ibid.

19 China in the Arctic. Policies, Strategies and Opportunities for Alaska // Roscongress. 24.09.2020. URL: https://roscongress.org/materials/kitay-v-arktike-politika-strategii-i-vozmozhnosti-dlya-alyaski/ (accessed: 11.04.2023).

20 Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments // The UN General Assembly. – 15.12.2022. – URL: https://documents-dds-ny.un.org/doc/UNDOC/GEN/N22/746/22/PDF/N2274622.pdf?OpenElement (accessed: 2.05.2023)

21 China Minmetals Corporation Signs Exploration Contract with the International Seabed Authority // International Seabed Authority. URL: https://www.isa.org.jm/news/china-minmetals-corporation-signs-exploration-contract-international-seabed-authority/ (accessed: 2.05.2023)

22 Treaty of Spitsbergen of 9 February 1920 // Codex Consortium. URL: https://docs.cntd.ru/document/902038168 (accessed: 11.04.2023)

23 Full text: China's Arctic Policy // The State Council the People's Republic of China. URL: http://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm (accessed: 2.05.2023)

development.

India's Arctic Policy

In March 2022, India's Ministry of Earth Sciences published "India's Arctic Strategy: Building Partnership for Sustainable Development[24]". The document reflects the main directions of India's state policy in the Arctic – "India's Arctic mission". Among the priority areas of India's Arctic strategy are strengthening scientific cooperation in the region, environmental protection, economic development, governance and international cooperation, solving logistic problems, as well as building national capacities in the region[25].

Although India is geographically distant from the North Pole, its Arctic policy is part of the country's national policy and is enshrined in its Arctic Strategy. India has been an observer at the AC since 2013. In addition, India is a member of a large number of Arctic institutions, including the Expert Group on Black Carbon and Methane, the Council of the University of the Arctic, and the Asian Forum for Polar Sciences.

Climate research in the Arctic is seen as a strategically important aspect of India's economic, especially food security, so harmonizing polar research in the South and North Poles, as well as in the Himalayas, the "third pole"[26] (SDG 13 – Climate Action) is of particular importance for the country. As part of India's Arctic strategy, it plans to expand research through cooperation with Arctic states and other partners. India also intends to provide financial support for Arctic research at the national level to build expertise in this area. In addition, under its Arctic Strategy, India is focusing on strengthening pollution control of marine and terrestrial ecosystems, conserving biodiversity of the Arctic region, and sustainable development of the region's resources with other Arctic states (SDG 13 – Climate Action, SDG 14 – Life Below Water, and SDG 15 – Life on Land).

In addition, according to the Arctic Strategy, it is planned to strengthen India's cooperation both with the Arctic states and with other partner countries. For example, among the objectives of India's Arctic activities that include international cooperation are the establishment of partnerships with research institutions around the world, the development of digital technologies, and the production of clean energy[27], which corresponds to SDG 7 – Affordable and Clean Energy.

Another interest of India in the Arctic is seed storage projects in Arctic conditions[28]. The country is primarily concerned with the types of seeds that are used for food and that are important for sustainable farming. It is particularly important for developing countries such as India, where

24 Full text: India's Arctic Policy: Building a partnership for sustainable development. – URL: https://www.moes.gov.in/sites/default/files/2022-05/India_Arctic_Policy_2022.pdf (accessed: 11.04.2023)

25 Ibid. P. 2.

26 Brodt L. Asian activism in the Arctic and Russian-Indian cooperation in the region // RIAC. – 27.03.2023. – URL: https://russiancouncil.ru/analytics-and-comments/columns/arcticpolicy/aktivizatsiya-aziatskikh-stran-v-arktike-i-rossiysko-indiys-koe-sotrudnichestvo-v-regione/ (accessed: 2.05.2023)

27 Ibid. P. 13.

28 Ibid. P. 16.

food security is an important issue. This aspect is directly related to SDG 2 – Zero Hunger.

India is also planning cooperation in maritime regulation, which is motivated by the desire to expand the International North–South Transport Corridor[29] under SDG 9 – Industry, Innovation and Infrastructure. To contribute to a better understanding of the present and future climate in the Arctic, India plans to build capacity for interdisciplinary scientific research. India's National Centre for Polar and Ocean Research (NCPOR) is a key body that conducts research activities and scientific expeditions to the geographical polar regions and the Himalayas[30].

Brazil's Arctic Policy

Brazil's interest in the Arctic represents an extension of Brazil's overall polar policy, which stems from the country's strong scientific background in the South Pole. Despite its geographical remoteness, the Arctic is part of Brazil's interest, especially in the context of studying the effects of climate change and water management issues.

Currently, Brazil is an advisory party to the Antarctic Treaty[31] and has its permanent research station Comandante Ferraz. Research activities of Brazilian scientists in the South Pole are carried out within the PROANTAR program, established in 1982[32]. The presence of a permanent research station in Antarctica allows Brazilian scientists to conduct expeditions, the largest of which took place in 2022. In addition, scientists have the opportunity to conduct laboratory research to monitor and assess climate change in the region, as well as to share research experiences with colleagues from other countries.

It is the exchange of research experiences and international scientific cooperation that are the key opportunities that Brazil seeks to seize in the Arctic. Despite the fact that Brazil's activities in the North Pole do not currently have an institutional framework, the discussion about the prospects for the country's participation in the Arctic governance institutions has been open since 2010. However, it did not become part of Brazil's official agenda until 2022[33], following the recommendations of the Inter-ministerial Commission on Marine Resources to apply to join the AC as an observer and to sign the Spitsbergen Treaty.

In the research community, Brazil's presence in the Arctic is seen as an important step towards broadening the horizons of national scientific activities[34], mainly in the areas of climate change and

29 Bhardwaj N. India's Export Opportunities Along the International North South Transport Corridor // Silk Road Briefing. – 02.03.2022. – URL: https://www.silkroadbriefing.com/news/2022/03/02/indias-export-opportunities-along-the-international-north-south-transport-corridor/ (accessed: 2.05.2023)

30 Polar precipitation // NCPOR. – 2023. – URL: https://ncpor.res.in/pages/researchview/14 (accessed: 25.04.2023)

31 Report of the Fifth Special Antarctic Treaty Consultive Meeting, 1983.

32 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.

33 The Arctic Institute. Brazil in the Arctic Council: Not as Crazy as it Sounds // The Arctic Institute. 07.02.2023. – URL: https://www.thearcticinstitute.org/brazil-arctic-council-not-crazy-sounds/ (accessed: 11.04.2023)

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

water management. Most importantly, research on these issues is in line with the country's strategy for implementing the SDGs, namely SDG 13 – Climate Action, and SDG 14 – Life Below Water.

One of the incentives for Brazil to expand its presence in the Arctic is the possibility of exploring gas and oil in the Arctic shelf, given Brazil's experience both in oil production and in cooperation with Arctic countries. For example, the Brazilian mining company Vale owns seaports in the Canadian Arctic territories[35].

Thus, despite the fact that Brazil is not institutionally present in the Arctic region, the realization of research potential in the Antarctic allows the country to get involved in the Arctic. Brazil's experience in implementing the Sustainable Development Goals in the field of energy at the national level provides a basis for Brazil's involvement in economic projects in the Arctic as well.

South Africa's Arctic Policy

South Africa is the most geographically distant from the North Pole of all the BRICS countries, so it has no national Arctic policy and is not institutionally present in the Arctic region. However, the country is active in the South Pole: South Africa's Antarctic policy is enshrined in the National Antarctic Program[36]. South Africa has experience in polar research in the Antarctic. Thus, back in 1959 the first South African station SANAE IV began operations in Antarctica. Now South Africa also has its own icebreaking polar vessel S.A. Agulhas II[37] at the South Pole. Among the main areas of South Africa's Antarctic strategy are ocean and marine ecosystem research under climate change, terrestrial ecosystem observation, biodiversity research, innovation and development, and entrepreneurship.

Thus, given Russia's key role in the Arctic, the active presence of China and India in the region through research, bilateral and multilateral projects in various areas, and the strong record of polar research in South Africa and Brazil, combining BRICS expertise could provide a basis for sustainable development projects, including technological innovation, infrastructure development, improving health and education, as well as the conservation of marine and terrestrial ecosystems, responsible use of natural resources, combating climate change and improving the well-being of the population.

Multilateral and bilateral cooperation of the BRICS countries in the field of sustainable development

2.1. Multilateral cooperation of the BRICS countries in the field of sustainable development

One of the basic principles of BRICS multilateral cooperation is "a commitment to support

35 Lagutina M., Leksyutina Y. BRICS countries' strategies in the Arctic and the prospects for consolidated BRICS agenda in the Arctic// The polar Journal. 2019. Vol. 9. № 2. P. 1–19.

36 SANAP // South African National Antarctic Programme. 2023. – URL: https://www.sanap.ac.za (accessed: 03.05.2023)

37 Research // South African National Antarctic Programme. 2023. – URL: https://www.sanap.ac.za/explore#research (accessed: 03.05.2023)

sustainable development and balanced and inclusive growth"[38]. Within the framework of sustainable development policies, the BRICS countries pay special attention to cooperation in such areas as science, technology, Arctic research, water and environmental protection, and climate change mitigation. The countries recognize that the promotion of sustainable development is one of the priorities of the international community, so the BRICS members implement joint initiatives and integrated programs to achieve the SDGs, especially SDG 6 – Clean Water and Sanitation, SDG 7 – Affordable and Clean Energy and SDG 13 – Climate Action.

The prerequisites for cooperation among the BRICS countries are that each of these countries has its own advantages, such as developed technologies and natural resources, which can increase the level and scope of jointly implemented projects. Today BRICS has already made significant progress in cooperation in such areas as environmental protection, climate change, science and technology development and polar research. With their joint technological, industrial and resource potential, the BRICS countries have opportunities to further promote cooperation on sustainable development, including in the Arctic.

Environmental protection

Since 2015, the BRICS Ministers of Environment have been organizing meetings to discuss common goals, areas of cooperation, principles and initiatives in the field of sustainable development. On April 22, 2015, the first meeting of the BRICS Environment Ministers took place in Moscow, launching a new format of cooperation in the environmental sphere. The ministers supported the creation of a special BRICS Environmentally Sound Technology Platform (BEST) for the exchange of environmentally sound technologies as a new international public-private partnership mechanism, which should contribute to solving environmental problems[39].

One of the documents representing BRICS interests regarding environmental protection is the Memorandum of Understanding on Environmental Cooperation signed by the BRICS Ministers of Environment on July 26, 2018, at the 10th BRICS Summit in Johannesburg. The memorandum strengthens close cooperation among the BRICS countries and promotes joint efforts on issues related to air and water quality, biodiversity, climate change and waste management[40].

As part of the BEST platform, Russia has proposed an umbrella program Clean Rivers of BRICS. The initiative aims to develop a structured approach to cooperation between the BRICS countries on clean water environment and cleaning water bodies from plastic garbage.

In August 2019, at the 5th BRICS Ministers of Environment Meeting the idea of creating

38 Strategy for BRICS Economic Partnership 2025 // BRICS Russia 2020. – 2020. – URL: https://eng.brics-russia2020.ru/images/114/81/1148155.pdf (accessed: 08.04.2023)

39 VII BRICS Summit Ufa Declaration // BRICS Russia 2015. – 9.07.2015. – P. 40.

40 BRICS Environment Ministers sign memorandum of understanding (MOU) // Department of Forestry, Fisheries and the Environment. Republic of South Africa. – 26.07.2018. – URL: https://www.dffe.gov.za/mediarelease/brics2015_environmentministers_sign_mou (accessed: 14.04.2023)

the BEST platform[41] was confirmed and the need to develop the Clean Rivers of BRICS initiative was once again emphasized. At the meeting, the head of the Ministry of Natural Resources and Environment of Russia noted that "each of the BRICS countries has its own waterways, the condition of which causes concern"[42]. Therefore, initiatives to support and protect water resources will be relevant among BRICS.

BRICS cooperation in the field of environmental protection also applies to the work of the New Development Bank of BRICS: financing "green" projects is one of the areas of support of the bank[43], and compliance with the principles of sustainable development is a criterion for the selection of infrastructure and energy projects to be financed[44].

Science and technology development

On 26 October 2015, the international conference "BRICS Approaches to Settling Common Spaces: Areas and Potential for Cooperation" was held, initiated by the National Committee for BRICS Research of Russia. The conference resulted in the Moscow Declaration, which, among other things, established the BRICS Research and Innovation Networking Platform[45] in five areas of scientific and technological cooperation, with each country responsible for one area[46]. Brazil is responsible for disaster prevention and mitigation, India – for geospatial technologies and applications, China – for renewable energy and energy efficiency, South Africa – for astronomy and Russia – for water resources and water pollution control. Russia's Minister of Natural Resources and Environment at the 7th BRICS Ministers of Environment Meeting stressed that the BRICS first priority is to "prevent plastic trash from being carried away by rivers"[47].

Among the documents aimed at promoting scientific and technological research is the Memorandum of Understanding on Science and Technology Cooperation[48] adopted by BRICS in 2015. The main goal of the memorandum is to form a strategic system for cooperation on science, technology and innovation between the countries. According to the document, the BRICS countries are planning to conduct research activities on a wide range of issues, including climate change and mitigation of natural disasters, water resource management and pollution neutralization, clean

41 The BRICS countries will create a platform for public-private partnership in the environmental sphere // TASS. – 2019. – URL: https://tass.ru/obschestvo/6768522 (accessed: 08.04.2023)

42 Ibid.

43 Morozkina A.K. New Development Bank in the Global Financial and Economic Architecture // Bulletin of International Organisations: Education, Science, New Economy. 2015. V. 10. No 2.

44 BRICS Development Strategy and Priorities for Russia [Text]: Paper C83 to the XXI April International Scientific Conference on Economic and Social Development, Moscow, 2020 / M.L. Batalina, T.V. Bordachev, M.S. Bochkova et al. Ed. by T.A. Meshkova; National Research University Higher School of Economics, Moscow: Higher School of Economics Publishing House, 2020. – 194 pp.

45 Moscow Declaration // BRICS Russia 2015. – 2015. – P. 1.

46 Ibid. P. 2.

47 The primary task is to prevent rivers from carrying plastic debris into the world's oceans // Ministry of Natural Resources and Environment of the Russian Federation. – 2021. – URL: https://www.mnr.gov.ru/press/news/aleksandr_kozlov_pervoocherednaya_zadacha_predotvratit_vynos_rekami_plastikovogo_musora_v_mirovoy_ok/ (accessed: 08.04.2023).

48 Memorandum of Understanding on Cooperation in Science, Technology and Innovation. – 2015.

coal technologies, polar and ocean research[49]. The Memorandum strengthened the joint scientific, technological and innovation activities of the BRICS countries and also provided a guarantee for the legislative regulation of research and development currently funded by the BRICS.

In 2015, the BRICS Network University[50] was established, representing a network of higher education institutions from the BRICS countries that implement student exchange, master and doctoral programmes and joint research in six priority areas: energy, informatics and information security, BRICS research, environmental protection and climate change, water resources and pollution abatement, and economics.

In 2015, the BRICS STI Framework Programme (BRICS STI FP) was endorsed to support research in priority areas to be developed through a multi-stakeholder approach[51]. The initiative was designed to stimulate collaborative research among the BRICS countries. Since 2016, the STI programme has invited BRICS researchers to participate in competitions for financial support for multilateral basic, applied and innovative projects.

Since the BRICS STI programme was initiated, five tenders have been held. In particular, as a result of the last competition in 2021, 33 projects received financial support for research implementation within the framework of interstate cooperation[52], some of which are related to the development and implementation of technologies that can neutralize water pollution and improve the quality of water resources. It includes such projects as "New strategy for plasma water treatment using renewable energy" and "Hybrid wastewater treatment system for reuse".

The BRICS research priorities also include energy security and energy transition, and already in 2018, the declaration of the BRICS Ministers of Energy following the meeting in Johannesburg affirmed the need to launch joint research to identify the potential for cooperation in various segments of the energy industry[53]. At the second meeting of the BRICS Ministers of Energy in 2019, it was decided to establish the BRICS Energy Research Cooperation Platform, which is a platform for information exchange, forecasting and joint basic research in the energy transition[54].

Polar research

Arctic research plays a key role in BRICS agenda. It is important to note the activities of the BRICS Ocean and Polar Science and Technology Working Group, which held its first meeting in 2018.

49 Ibid. P. 3.

50 Memorandum of Understanding on Establishment of the BRICS Network University. – 2015.

51 About BRICS STI Framework Programme // BRICS STI Framework Programme. – URL: http://brics-sti.org/index.php?p=about (accessed: 11.04.2023)

52 BRICS STI FP: 5th BRICS Call 2021 – RESULTS // BRICS STI Framework Programme. – 2023. – URL: http://brics-sti.org/?p=new/33 (accessed: 11.04.2023)

53 Johannesburg Declaration of the Tenth BRICS Summit // Official website of the President of Russia. – 26.07.2018. – URL: http://special.kremlin.ru/supplement/5323 (accessed: 03.05.2023)

54 BRICS Development Strategy and Priorities for Russia [Text]: Paper C83 to the XXI April International Scientific Conference on Economic and Social Development, Moscow, 2020 / M.L. Batalina, T.V. Bordachev, M.S. Bochkova et al. Ed. by T.A. Meshkova; National Research University Higher School of Economics, Moscow: Higher School of Economics Publishing House, 2020. – 194 pp.

During the discussions, country representatives highlighted that the five BRICS countries cover all of the world's oceans and are interested in actively pursuing ocean and polar science[55]. In a joint statement adopted at its fourth meeting on 27-28 July 2021, the working group planned to develop a roadmap for the BRICS STI programme and formulate flagship strategic programmes and support mechanisms to complement the BRICS STI Framework Programme.

In addition, modern technologies for observing and predicting ocean and climate change, marine ecosystem viability and polar research, including remote sensing of the Antarctic surface topography and space observation from polar regions were assigned as priority research areas[56]. The need for joint studies of the East Antarctic ice sheet has also been identified, which include observation of ice movements of the East Antarctic Ice Sheet and studies of sub-glacial lakes to identify the dynamic characteristics of rapid ice movement[57].

BRICS participation in the UN Environment Programme

In addition to developing and implementing its own programmes and projects, the BRICS also cooperates with the United Nations Environment Programme (UNEP) on the transition to a green economy and the promotion of green technologies. In particular, on 29 April 2022, the BRICS held a seminar on green technology, which included UNEP representatives[58].

In addition, the BRICS countries participate in the UNEP Finance Initiative, covering areas such as sustainable insurance and finance. Major banks in Brazil (e.g. Itaú Unibanco Holding S.A., Bradesco Seguros etc.), Russia (Sberbank, Gazprombank etc.), India (YES BANK Limited), China (Industrial and Commercial Bank of China Limited, Agricultural Bank Of China Limited etc.) and South Africa (ABSA Group Limited, FirstRand Group Limited etc.) are members of the initiative. The UNEP Finance Initiative helps financial institutions develop approaches to meet targets in areas such as greenhouse gas emission reductions, sustainable consumption and production. Membership of the BRICS countries in such an initiative demonstrates that the participating countries adhere to the principles of sustainable development and responsible project financing.

So far, the BRICS countries have been actively promoting scientific and technological research in the areas of climate change, water protection, polar science and green technologies. In particular, initiatives such as the BEST platform and the BRICS Research and Innovation Networking Platform facilitate joint efforts in joint technological development. Many research projects are implemented not only due to the ideological and programmatic support of the BRICS countries, but also due to the funding that the winning projects receive through BRICS STI programme competitions. Recently, the priorities of BRICS collaborative research have been shifting towards the protection of water

55 Joint Statement on the 1st Meeting of the BRICS Working Group on Ocean and Polar Science and Technology // BRICS Working Group on Ocean and Polar Science and Technology. – 2018. – URL: https://brics.land-ocean.ru/information/download (accessed: 13.04.2023)

56 Ibid. P. 2.

57 Ibid. P. 5.

58 BRICS Workshop on Green Technology Successfully Held // BRICS China 2022. – 05.05.2022. – URL: http://brics2022.mfa.gov.cn/eng/zdhzlyhjz/others/202205/t20220531_10696461.html (accessed: 14.04.2023)

resources and the study of polar regions. The development of polar science is not so active at the moment, and specific plans and strategies are still being formulated. In the future, this area may develop more dynamically within the framework of multilateral cooperation between the BRICS countries.

2.2. Bilateral cooperation of the BRICS countries on sustainable development in the Arctic

The BRICS countries are also active in taking joint actions for the sustainable development of the Arctic in bilateral cooperation formats. Most bilateral partnerships are between Russia and China, as well as between Russia and India. Brazil and South Africa are currently less involved in bilateral Arctic projects.

Russian-Chinese cooperation

In 2017, the Permanent Working Group on Arctic Cooperation between Russia and China was established, where the parties discuss prospects for joint work in various areas of Arctic development. The fourth meeting of the Working Group is currently planned[59]. Bilateral cooperation between Russia and China also involves joint projects in the oil and gas sector, infrastructure construction, scientific cooperation, and tourism.

Gas industry

Russia and China are partners in liquefied natural gas (LNG) projects. Two key Russian LNG projects in the Arctic, Yamal LNG and Arctic LNG-2, are carried out with the active participation of the Chinese side. The Chinese state oil company CNPC has a 20% stake in Yamal LNG, and another 9.9% is owned by the Chinese Silk Road Fund[60]. China's CNPC and CNOOC have a 20 % share in the Arctic LNG-2 project[61]. China is one of the largest consumers of liquefied natural gas, while Russia needs China's advanced technology and financing to develop the natural resource. Both sides also have an interest in ensuring that the projects are carried out in accordance with the principles of sustainable development. For example, the Arctic LNG-2 project is being implemented in an innovative construction concept using gravity-based foundations (GBS). The lack of on-site LNG plant construction minimizes the environmental impact[62]. Also, due to the northern conditions and

59 Igor Morgulov: there are no limits and forbidden zones in cooperation between Russia and China // RIA Novosti. 02/10/2023. – URL: https://ria.ru/20230210/morgulov-1850992384.html (accessed: 03.05.2023)

60 The Chinese have become the largest foreign investors in the NOVATEK plant // RBC. 04/25/2019. – URL: https://www.rbc.ru/business/25/04/2019/5cc19b4b9a794744f3d7b676 (accessed: 03.05.2023)

61 NOVATEK agreed to sell 20% of Arctic LNG 2 to Chinese companies // RBC. 04/25/2019. – URL: https://www.rbc.ru/business/25/04/2019/5cc176b99a79473082e419f9 (accessed: 03.05.2023)

62 The concept of building LNG production at CDP involves building a plant not at the production site, but in areas with more suitable conditions (TsSKMS in the Murmansk region) and further transportation of production lines on large gravity platforms (CGP) to the gas field. As a result, in the territories of the Far North, where the field is located, no work is being done on the construction of technological lines. Due to the location of the GBS with the plant and reservoirs in the water, the load on the Arctic tundra is reduced. See Factory of factories // Kommersant. 06/17/2022. – URL: https://www.kommersant.ru/doc/5413306 (accessed: 03.05.2023)

the use of state-of-the-art energy efficiency technologies, greenhouse gas emissions per tonne of LNG produced will be more than 30 per cent below the industry average[63].

China's importance as a strategic partner and consumer of Russian gas continues to grow. In 2022, Gazprom signed a long-term contract with CNPC to export 10 bcm per year[64] along the "far eastern" route (through the Sakhalin-Khabarovsk-Vladivostok pipeline). The company's total supply will increase to 48 bcm once the project is completed[65]. China also remains a key LNG customer, with LNG shipments from Russia to China increasing 43.9% to 6.5 MMT in 2022[66]. The growth in LNG supplies will increase with the commissioning of the Arctic LNG 2 project. In 2022, the Russian company Novatek and its Chinese partners signed two long-term contracts to supply LNG from the project. Under the first contract, with Zhejiang Energy, Russian LNG will be supplied for 15 years in a volume of up to 1 mln t. The second, with ENN Natural Gas, will ship 0.6 mln t of LNG over 11 years[67].

Oil industry

Oil production in the Arctic territories also retains its strategic importance in relations between Russia and China. Western sanctions have also touched off restrictions on imports of technology for offshore oil development, making China a contender for the main technological partner in this area. Active cooperation between the countries has been ongoing for several years. For example, back in 2015, Russian companies such as Magadanmorneftegaz, Lysyanskmorneftegaz, joint ventures between Rosneft and Statoil ASA signed an agreement with China Oilfield Services Limited (COSL) to drill two exploration wells in the Okhotsk Sea at the Magadan-1 and Lysyanskiy areas[68]. In 2017, the Chinese vessel Hai Yang Shi You 278 delivered the semi-submersible drilling platform Nanhai VIII for exploration work in the Kara Sea (at the Leningradsky GKM, Rusanovsky and Nyarmaisky subsoil areas), which is still in use today[69].

Chinese companies may also be involved in the major Vostok Oil project of the Russian

63 About the project // Arctic LNG 2. 2023. – URL: https://arcticspg.ru/ (accessed: 03.05.2023)

64 Decree of the Government of the Russian Federation dated January 28, 2023 No. 171-r "On the signing of the Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on cooperation in the field of natural gas supplies from the Russian Federation to the People's Republic of China along the "Far Eastern" route" // Official Internet legal information portal. 44956. – URL: http://publication.pravo.gov.ru/Document/View/0001202301300033?index=1&rangeSize=1 (accessed: 03.05.2023)

65 Russia and China signed an agreement on gas supplies through the Far East // Prime. 02/09/2023. – URL: https://1prime.ru/gas/20230209/839744282.html (accessed: 03.05.2023)

66 LNG supplies to China from Russia grew by 43.9% in 2022 // TASS. 01/20/2023. – URL: https://tass.ru/ekonomika/16843835 (accessed: 03.05.2023)

67 China signed two long-term contracts for the purchase of Russian LNG // Alta Soft. 01/11/2022. – URL: https://www.alta.ru/external_news/86209/ (accessed: 03.05.2023)

68 China Oilfield Services Limited will carry out drilling within the framework of the Rosneft and Statoil project in the Sea of Okhotsk // Oil and Capital. 2.09.2015. – URL: https://oilcapital.ru/news/upstream/02-09-2015/china-oilfield-services-vypolnit-burenie-v-ramkah-proekta-rosneft-i-statoil-v-ohotskom-more (accessed: 03.05.2023)

69 On the way to the Kara Sea. Drilling platforms Arkticheskaya and Nanhai VIII left the port of Murmansk // Neftegaz.ru – URL: https://neftegaz.ru/news/Geological-exploration/199847-na-puti-k-karskomu-moryu-burovye-platformy-arkticheskaya-i-nanhai-viii-vyshli-iz-porta-murmansk/ (accessed: 03.05.2023)

company Rosneft in the north of the Krasnoyarsk region. The project involves the use of renewable energy to meet production needs. Vostok Oil and a number of Chinese companies signed cooperation agreements within the framework of the 3rd Russian-Chinese Energy Business Forum to study the wind energy potential of the Vostok Oil project[70].

The oil and gas chemistry sector also offers a broad field for cooperation. The China State Petrochemical Engineering Corporation has not only offered the Nenets Autonomous District its technologies for building infrastructure in the petrochemical, gas and energy sector but also facilities engineering, materials and equipment supply, and installation and commissioning. Russia, for its part, offers tax incentives to Chinese business in the case of registration and employment of locals with relevant qualifications[71].

Since 2022, cooperation between Russia and China on oil supplies has strengthened due to the reorientation of hydrocarbon exports towards eastern markets. Following Xi Jinping's visit to Russia in March 2023, the countries said they intend to pursue a close energy partnership, supporting companies in energy projects, including in the oil and gas sector. They also agreed to increase energy trade[72]. Already in 2022 Russia became the second largest (after Saudi Arabia) oil supplier to China. In 2022, Russia supplied 86.25 mln t of oil to China, an increase of 8% over 2021[73]. In 2022, Rosneft and CNPC signed an agreement to supply additionally 100 mln t of oil to northwest Chinese refineries via Kazakhstan over the next 10 years[74]. Part of the growth in oil exported to China also comes from Arctic grades, which were previously supplied to European markets. In January 2023, it became known that China was buying three Arctic grades of oil from Russia - Arco, Varandey and Novy Port - which are shipped from Murmansk.

Transport and logistics

The development of transport routes and logistics networks remains one of the priority areas for cooperation between Russia and China in the Arctic. On China's side, the Northern Sea Route could become part of the One Belt, One Road project[75] - the so-called "Ice Silk Road". In 2015 China signed a "Concept of Action Plan to Promote the Joint Construction of the Silk Road Economic Belt and the 21st Century Maritime Silk Road", which became the basis for joint projects

70 Rosneft agreed with companies from China to study the wind energy potential of the Vostok Oil project // Rosneft. 11/29/2021. – URL: https://www.rosneft.ru/press/releases/item/208571/ (accessed: 03.05.2023)

71 Chinese Chemical Engineering Corporation plans to participate in projects in the Nenets Autonomous Okrug // TASS. 03/21/2023. – URL: https://tass.ru/ekonomika/17334231?utm_source=yandex.ru&utm_medium=organic&utm_campaign=yandex.ru&utm_referrer=yandex.ru (accessed: 03.05.2023)

72 Experts commented on – URL: May 10, 2023, from https://1prime.ru/oil/20230324/840182458.html (accessed: 03.05.2023)

73 Russia became the second largest supplier of oil to China in 2022 // Kommersant. 01/20/2023. – URL: https://www.kommersant.ru/doc/5775121 (accessed: 03.05.2023)

74 Rosneft signed a long-term contract with China for $80 billion // Vedomosti. 02/04/2022. – URL: https://www.vedomosti.ru/business/articles/2022/02/04/907957-gazprom-rosneft-kontrakti-kitaem (accessed: 03.05.2023)

75 Pryakhin V. Russia and China in the Arctic. An example of constructive cooperation // RIAC. 03/31/2023. – URL: https://russiancouncil.ru/blogs/vpryahin/rossiya-i-knr-v-arktike-primer-konstruktivnogo-sotrudnichestva/?sphrase_id=97515150 (accessed: 03.05.2023)

with Russia to engage in the development of northern routes[76]. In the same year, the Russian Ministry for the Development of the Far East and the Arctic and the State Development and Reform Committee of the PRC signed a cooperation agreement on the Northern Sea Route[77]. In 2017 The State Oceanographic Administration and the National Development and Reform Committee of China adopted the "One Belt, One Road Maritime Cooperation Concept", which considers the Northern Sea Route as an alternative to traditional China-Europe routes[78]. In February 2020. Russia and China signed a statement on international relations, one of the provisions of which was cooperation between the parties in the development of Arctic routes[79].

China is actively involved both in building its own icebreaker fleet and in promoting the development of transport equipment in joint projects. In autumn 2018, the first icebreaker made in China itself - Xuelong-2 - was launched[80]. In 2019, an agreement was signed between NOVATEK, China COSCO SHIPPING Corporation Limited, Sovcomflot and the Silk Road Fund to establish a Maritime Arctic Transport enterprise to build ice-class tankers and ensure safe year-round transportation of LNG[81].

Sino-Russian cooperation in developing the transport system in the Arctic takes into account the principles of sustainable development. In particular, it is possible to identify three main directions in this area[82]:

- Arctic research to build expertise in navigation and understanding of the peculiarities of these seas;
- China's participation in the management of Arctic shipping (e.g. through the International Maritime Organization);
- striving for a balance between the economic and climatic components of navigation, including by taking into account the risks of extreme accidents and increasing stresses on the Arctic seas ecosystem.

Russia and China's cooperation on the development of the Arctic transport system itself contributes to the achievement of SDG 9 – Industry, Innovation and Infrastructure.

76 Kolzina A. L. Mindubaeva A. A. "Polar Silk Road" as a sphere of strategic partnership between the Russian Federation and China // Bulletin of the Udmurt University. 2020. V. 4. No. 2. S. 186-195.

77 Ibid.

78 Ibid.

79 Prospects for Russian-Chinese cooperation were discussed as part of the Think Arctic project // TASS. 05/30/2022. – URL: https://tass.ru/novosti-partnerov/14770897 (accessed: 03.05.2023)

80 Beijing took up the Arctic. What threatens Russia with China's admission to the development of the Northern Sea Route // NakanuneRU. 03/24/2023. – URL: https://www.nakanune.ru/articles/120527/ (accessed: 03.05.2023)

81 NOVATEK, COSCO SHIPPING, Sovcomflot and the Silk Road Fund signed an agreement with respect to Marine Arctic Transport LLC // Novatek. 07/07/2019. – URL: https://www.novatek.ru/ru/press/releases/index.php?id_4=3243 (accessed: 03.05.2023)

82 Pryakhin V. Russia and China in the Arctic. An example of constructive cooperation // RIAC. 03/31/2023. – URL: https://russiancouncil.ru/blogs/vpryahin/rossiya-i-knr-v-arktike-primer-konstruktivnogo-sotrudnichestva/?sphrase_id=97509476 (accessed: 03.05.2023)

Science and education

A sustainable future for the Arctic is difficult to achieve without systematic basic research aimed at studying the region's ecosystem. The legal framework in this area is outlined in concluded Russian-Chinese documents, such as the 2018 Memorandum of Understanding on Trade in Services Cooperation, which deals with joint tourism, science and education[83]. In 2023, a Protocol on Strengthening Cooperation in Basic Scientific Research between the Russian Ministry of Education and Science, the Ministry of Science and Technology of the People's Republic of China, the Joint Institute for Nuclear Research (JINR in Dubna) and the Chinese Academy of Sciences was signed to support deeper cooperation between the parties[84]. Cooperation in science and education in the field of sustainable development of the Arctic takes place in several directions: establishment of research centers and research stations, scientific expeditions, scientific events and forums, and cooperation at the university level.

Bilateral cooperation between Chinese and Russian research centers is coordinated and supported by the China-Russian Arctic Research Centre established in 2019. Of particular importance in the Centre's activities is strengthening cooperation between the Shirshov Institute of Oceanology of the Russian Academy of Sciences. Shirshov Institute of Oceanology of the Russian Academy of Sciences and the Qingdao National Laboratory for Marine Science and Technology. The Centre's research focuses on the effects of climate change on the Arctic: field studies investigate ice quality and changes in Arctic ecosystems[85], contributing to SDG 13 – Climate Action, SDG 14 – Life Below Water.

The Russian-Chinese Scientific Centre on the Development and Implementation of the Ice Silk Road Concept is dealing with issues of Arctic shipping, the development of monitoring systems in the Arctic and the preparation of transport corridor projects[86]. The Centre's activities are related, among other things, to minimizing environmental risks arising from the expansion of transport networks in the Arctic. Since 2016, the Russian-Chinese Polar Engineering and Research Centre has also been operating in cooperation with Far Eastern Federal University (FEFU) and Harbin Polytechnic University (HPCU), where projects for the industrial development of the Arctic, including projects to develop structures for ice-resistant platforms for the Russian Arctic zone and the Yellow Sea shelf, are being carried out, as well as studies of concrete durability in the polar zone, reliability of engineering structures and ice loadings on ships[87]. Thus, the activities of the research centers

83 Russia and China signed a Memorandum of Understanding on cooperation in the field of trade in services // Ministry of Economic Development of the Russian Federation. 11/07/2018. – URL: https://www.economy.gov.ru/material/news/rossiya_i_kitay_podpisali_memorandum_o_vzaimoponimanii_po_voprosam_sotrudnichestva_v_oblasti_torgovli_uslugami.html (accessed: 03.05.2023)

84 Russia and China are reaching a new level of scientific cooperation // Ministry of Education and Science of Russia. 03/21/2023. – URL: https://minobrnauki.gov.ru/press-center/news/novosti-ministerstva/65597/ (accessed: 03.05.2023)

85 Russia and China will start joint research in the Arctic // Institute of Oceanology. P.P. Shirshov of the Russian Academy of Sciences. – URL: https://ocean.ru/index.php/novosti-left/novosti-instituta/item/1311-rossiya-i-kitaj-v-arktike (accessed: 03.05.2023)

86 Institute of Oceanology. P.P. Shirshov RAS. Russia and China will start joint research in the Arctic. 2019. – URL: https://ocean.ru/index.php/ novosti-left/novosti-instituta/item/1311-rossiya-i-kitaj-v-arktike (accessed: 03.05.2023)

87 Russia and China established a research center for the industrial development of the Arctic // Interfax. 06/29/2016. – URL: https://www.interfax.ru/russia/530393 (accessed: 03.05.2023)

are in line with the principles of SDG 9 - Industry, Innovation and Infrastructure, SDG 13 – Climate Action, and SDG 14 – Life Below Water. Funding for research in this area is provided by the Russian-Chinese Silk Road Development Fund[88].

A year-round Arctic Snowflake station is currently in the design phase. The station will be an autonomous complex powered by renewable energy sources. The Chinese side expressed its willingness to participate in the construction of the station during negotiations with representatives of the Moscow Institute of Physics and Technology[89]. Test operation is expected to start in 2024[90].

Scientific expeditions with the participation of Russian and Chinese researchers manage to obtain new knowledge about the unique flora and fauna of the Arctic, the peculiarities of geological processes in its territory, which are necessary to implement measures to preserve Arctic ecosystems and prevent climate change. In 2016, a major expedition led by the Chinese Arctic and Antarctic Administration was conducted with the support of the State Oceanic Administration of the PRC and the Russian Academy of Sciences[91]. One of the unique tools for studying the Arctic zone 10 years ago was the expeditions of the research vessel Professor Molchanov in the format of the Arctic Floating University, in which Chinese scientists also took part[92]. In February 2023, Siberian and Chinese scientists agreed to conduct joint research on climate change in Tibet[93].

The results of scientific activities and prospects for further cooperation are actively discussed at joint forums and scientific conferences. These include the roundtable "Russian-Chinese Cooperation in the Arctic: Opportunities and Limitations", held in March 2022 and led by the Russian Council for International Affairs (RIAC) and the Chinese Academy of Social Sciences (CASS)[94]. Joint activities of scientists within the framework of these projects thus contribute to SDG 13 – Climate Action, SDG 14 – Life Below Water, SDG 15 – Life on Land, and SDG 17 – Partnerships for the Goals.

Cooperation between Russian and Chinese universities in the form of joint projects, student and teacher exchange programmes plays an important role. For example, Minin University cooperates with Anhui State Pedagogical University. In addition, there are unique inter-university projects: the Bauman Moscow State Technical University and Harbin Polytechnic University in China serve as

88 Mitko V. B., Minina M. V. Russian-Chinese cooperation in the Arctic and the safety of maritime activities // EURASIAN INTEGRATION: economics, law, politics. 2019. V. 2. S. 69-78.

89 Artyukhov: China and India may be involved in the creation of the Snezhinka station on Yamal // TASS. 07.09.2022. – URL: https://tass.ru/obschestvo/15675935 (accessed: 03.05.2023)

90 Ibid.

91 Pilot National Laboratory for Marine Science and Technology (Qingdao) // Pilot National Laboratory for Marine Science and Technology. – URL: http://www.qnlm.ac/en/page?a=1&b=2&c=224&d=2&e=1&p=detail (accessed: 03.05.2023)

92 Large-scale Russian-Chinese scientific research will begin in the Arctic // Metro. 07/25/2022. – URL: https://www.metronews.ru/partners/novosti-partnerov-242/reviews/v-arktike-nachnutsya-masshtabnye-rossiysko-kitayskie-nauchnye-issledovaniya-1953593/ (accessed: 03.05.2023)

93 Siberian and Chinese scientists will conduct joint research in the Arctic // Interfax. 02/27/2023. – URL: https://www.interfax-russia.ru/siberia/news/sovmestnye-issledovaniya-v-arktike-budut-vesti-sibirskie-i-kitayskie-uchenye (accessed: 03.05.2023)

94 Russian and Chinese experts discussed the development of bilateral cooperation in the Arctic // Russian International Affairs Council. 03/21/2021. – URL: https://russiancouncil.ru/news/rossiyskie-i-kitayskie-eksperty-obsudili-razvitie-dvustoronnego-sotrudnichestva-v-arktike/ (accessed: 03.05.2023)

the basis for a joint Chinese-Russian institute[95], while the Beijing Polytechnic Institute in Shenzhen serves as the basis for the joint MSU-PPI University in Shenzhen[96]. The Northern Arctic Federal University (NArFU) also works closely with Chinese partners. According to its representatives, in the near future there may be a large-scale joint project on the study of the Arctic, which will be implemented by NAFU together with universities and scientific organizations of the People's Republic of China[97].

Tourism

Since 6 February 2023, China has resumed group inbound tourism to 20 countries, including Russia, so the tourist flow from China to the Russian Arctic is expected to resume. Today, it is important for Russia to offer a wider range of tourism services in the Arctic region, taking into account the specifics of the target audience. To this end, events are being held to attract Chinese tourists. In April 2023, the Norilsk Development Agency held a master class entitled "China. Effective Cross-Cultural Communication", where participants were able to learn about the mentality of Chinese tourists and their travel needs, as well as trends and features of Chinese outbound tourism, how to create a commercial offer in view of Asian specifics, and how to promote tourist products in the digital space of China[98]. New tourist routes are also being prepared in Russian regions: a new Arctic route to Cape Paks is planned to be launched in 2023 for Russian and Chinese tourists[99] (SDG 8 – Decent Work and Economic Growth, SDG 9 – Industry, Innovation and Infrastructure).

Russian-Indian cooperation

Russian-Indian cooperation on sustainable development in the Arctic also spans several dimensions: joint projects are carried out in the energy, transport and scientific and educational spheres.

Oil industry

India, as a major consumer of Russian energy resources, also acts as an investor in the development of Arctic fields. Cooperation in the oil and gas sector takes place at the level of major Russian and Indian oil and gas companies. This is evidenced by the 2014 memorandum signed by the Russian state-owned company Rosneft and the Indian company OVL[100], and the 2017 memorandum

95 In Harbin, on the basis of the HPU, the Sino-Russian Institute named after A. Bauman // RIA Novosti. 02/27/2019. – URL: https://ria.ru/20190227/1551403197.html (accessed: 03.05.2023)

96 MSU-FPI University in Shenzhen // MSU Faculty of Materials Sciences. – URL: http://www.fnm.msu.ru/international/mgu-ppi/ (accessed: 03.05.2023)

97 Large-scale Russian-Chinese scientific research will begin in the Arctic // Metro. 07/25/2022. – URL: https://www.metronews.ru/partners/novosti-partnerov-242/reviews/v-arktike-nachnutsya-masshtabnye-rossiysko-kitayskie-nauchnye-issledovaniya-1953593/ (accessed: 03.05.2023)

98 PORA expert: "We see Chinese interest in traveling to the Arctic" // GoArctic. 04/13/2023. – URL: https://goarctic.ru/news/ekspert-pora-my-vidim-interes-k-puteshestviyam-v-arktiku-so-storony-kitaytsev/ (accessed: 03.05.2023)

99 A new Arctic route will be launched in Yakutia for tourists from China in 2023 // Yakutia24. 03/21/2022. – URL: https://yk24.ru/main/novyj-arkticheskij-marshrut-zapustyat-v-yakutii-dlya-turistov-iz-kitaya-v-2023-godu/ (accessed: 03.05.2023)

100 Today, the issue of OVL participation in the development of hydrocarbons in the Arctic is being actively worked out. In May of this year, during the St. Petersburg International Economic Forum, Rosneft signed a memorandum of understanding with this company on cooperation on the Russian Arctic shelf. – URL: https://ria.ru/20141209/1037415731.html (accessed: 03.05.2023)

between the Russian company Gazprom Neft and several Indian companies[101]. In 2020 India has declared its readiness to participate in the Vostok Oil project[102]. The project has already seen some success from Russian and Indian companies working together[103]. Indian companies are actively involved in the development of the Vankor field in the Arctic. After ONGC Videsh Limited of India acquired a 26% stake in Vankorneft, the Indian state-owned companies have a 49.9% share in the project[104]. Partnerships in joint projects include sharing of best practices to reduce the negative environmental impact of exploration and production of gas and oil.

India's interest in developing the oil and gas sector in the Arctic is growing along with the demand for Russian energy resources. According to Deputy Prime Minister Alexander Novak, Russian oil shipments to India increased 22 times in 2022[105]. The increase in supplies has been accompanied by diversification of Russian oil exports to India, including by redirecting Arctic oil to eastern markets. In November 2022, 6.67 mln barrels of Arctic Arco and Arco/Novy Port were shipped to India, followed by 4.1 mln barrels in December. In December, India also received its first shipment of Arctic Varandey crude, which was loaded at Murmansk Port at the end of November[106]. In 2023, Rosneft and Indian Oil Company signed an agreement to substantially increase oil supplies to India and diversify its grades. The parties also discussed the expansion of comprehensive cooperation in the energy sector between Rosneft and Indian companies along the entire technological chain, as well as the possibility of mutual settlements in national currencies[107].

Gas industry

India is currently a participant in the Sakhalin-1 project but is not yet involved in Arctic LNG projects. However, cooperation between Russia and India in the Arctic LNG-2 project is seen as mutually beneficial, as stated by Denis Manturov, head of the Russian Ministry of Industry and Trade[108]. India is also a consumer of Russian liquefied natural gas. The Yamal LNG project has supplied 33 LNG shipments, more than 2 mln t, to the Indian market over its history[109]. In 2022,

101 Gazprom Neft invites partners to the Arctic // Vedomosti. 03/29/2017. – URL: https://www.vedomosti.ru/business/articles/2017/03/29/683288-gazprom-neft (accessed: 03.05.2023)
102 Definitely. India has decided to participate in the Vostok Oil project // Neftegaz.RU. 01/15/2020 – URL: https://neftegaz.ru/news/partnership/518221-indiya-prinyala-reshenie-ob-uchastie-v-proekte-vostok-oyl/ (accessed: 03.05.2023)
103 The Ambassador spoke about cooperation between Russia and India in the Arctic // RIA Novosti. 02/05/2023. – URL: https://ria.ru/20230205/arktika-1849826207.html (accessed: 03.05.2023)
104 Rosneft successfully closed the deal to sell 11% of JSC Vankorneft to ONGC Videsh Limited // Rosneft. 10/28/2016. – URL: https://www.rosneft.ru/press/releases/item/184363/ (accessed: 03.05.2023)
105 Oil will increase in volume // Kommersant. 03/29/2023. – URL: https://www.kommersant.ru/doc/5902105 (accessed: 03.05.2023)
106 Media: India began to receive more oil from the Arctic region of Russia // TASS. 01/05/2023. – URL: https://tass.ru/ekonomika/16743787 (accessed: 03.05.2023)
107 Igor Sechin made a working trip to India // Rosneft. 03/29/2023. – URL: https://www.rosneft.ru/press/releases/item/214119/ (accessed: 03.05.2023)
108 Participation of companies from India in "Arctic LNG 2" can be beneficial for both parties - Manturov // Finam. 04/18/2023. – URL: https://www.finam.ru/publications/item/uchastie-kompaniy-iz-indii-v-arktik-spg-2-mozhet-byt-vygodno-obeim-storonam-manturov-20230418-0953/ (accessed: 03.05.2023)
109 The expert assessed the competitiveness of Russian LNG in the Indian market // RIA Novosti. 02/10/2023. – URL: https://ria.ru/20230210/spg-1851001053.html (accessed: 03.05.2023)

Russian LNG supplies to India amounted to 0.3 bcm[110]. In 2023, at the inauguration of the Indian Energy Centre in Moscow, it was announced that a task force on Russian gas would be set up jointly with India, whose task would be to bring together major Indian and Russian companies. Also today, the Russian company Novatek and India are considering a long-term contract for natural gas supplies. These will be carried out as part of the Arctic LNG-2 project, which is scheduled to be launched in 2023[111].

Transport and logistics

As for China, the development of the Northern Sea Route is of particular strategic value to India as a potential way of diversifying transport routes. New transport routes will ensure uninterrupted supply of oil, gas and coal from the Arctic territories to India. One area of cooperation in this area is the development of the North-South international transport corridor, which is a multimodal route between Russia and India via Iran, enabling significant reductions in the time and cost of transporting goods. The North-South International Transport Corridor Agreement was signed by Russia, India and Iran back in 2000, later joined by Armenia, Azerbaijan, Belarus, Bulgaria, Kazakhstan, Oman, Tajikistan, Syria, Kyrgyzstan and Turkey[112]. Today, the project is gaining in importance because of the reorientation of trade to the East and the need to rebuild the logistics system. The first transit of cargo from Russia to India took place in June 2022 through the port of Bandar Abbas[113]. The prospect of getting a commitment from Russia to transport Arctic resources to India via an extended version of the North-South international transport corridor creates incentives for India to participate in the process of sustainable development of the Arctic.

Another strategically important project is the Vladivostok-Chennai maritime transport corridor, which also aims to reduce the cost and time of cargo transit. In 2019, an agreement was announced at the Eastern Economic Forum to establish a transport link between Vladivostok and Chennai[114]. For India, this route is interesting because it opens up the possibility of accelerated transportation of hydrocarbons produced in the Russian Arctic. Thus, there are prospects for integrating the maritime transport corridor linking India and the Far East into the NSR development project[115]. The development of the transport route network contributes to the achievement of SDG 9 – Industry, Innovation and Infrastructure and SDG 17 – Partnerships for the Goals.

110 The expert assessed the prospects for increasing the supply of Russian LNG to India // Prime. 02/12/2023. – URL: https://1prime.ru/gas/20230212/839779994.html (accessed: 03.05.2023)

111 Novatek is considering signing a long-term contract for the supply of LNG to India // Rambler. 03/07/2023. – URL: https://finance.rambler.ru/business/45956923-novatek-rassmatrivaet-zaklyuchenie-dolgosrochnogo-kontrakta-na-postavku-spg-v-indiyu/ (accessed: 03.05.2023)

112 The club "North - South" spoke about the expectations from the opening of a representative office in India // TASS. 04/19/2023. – URL: https://tass.ru/ekonomika/17556047 (accessed: 03.05.2023)

113 Logistics of the 21st century and the new economic order: prospects for the North-South transport corridor // Valdai International Discussion Club. 02/28/2023. – URL: https://ru.valdaiclub.com/a/highlights/logistika-xxi-veka-i-novyy-ekonomicheskiy-poryadok/ (accessed: 03.05.2023)

114 India and Russia will build a sea route between Vladivostok and Chennai // Regnum. 09/05/2019. – URL: https://regnum.ru/news/2708960.html (accessed: 03.05.2023)

115 All paths lead to Vladivostok, or How India can help with the loading of the NSR // ArkhangelskINFO. 11/11/2022. – URL: https://arh-info.ru/news/44921078-vse-puti-vedut-vo-vladivostok-ili-kak-indija-mozhet-pomoch-s-zagruzkoj-smp.html (accessed: 03.05.2023)

Science and education

In the coming years, scientific cooperation between India and Russia will intensify, given the number of joint agreements in this area. In December 2021, the following documents were signed at the 21st Russia-India Summit "Russia-India: Partnership for Peace, Progress and Prosperity":

Roadmap for Cooperation in Science, Technology and Innovation between the Ministry of Science and Higher Education of the Russian Federation and the Ministry of Science and Technology of the Government of the Republic of India;

Cultural Exchange Programme between the Ministry of Culture of the Russian Federation and the Ministry of Culture of the Government of the Republic of India for 2021-2024;

Cooperation Agreement between the Federal State Autonomous Educational Institution of Higher Education I.M. Sechenov First Moscow State Medical University of the Ministry of Health of the Russian Federation (Sechenov University) and the University of Delhi, India;

Agreement of Intent between the Skolkovo Institute of Science and Technology, an autonomous non-profit educational institution of higher education, and the University of Delhi[116] (SDG 17 – Partnerships for the Goals).

3. Prospects for BRICS cooperation on sustainable development in the Arctic region

In the context of political turbulence and Russia's de facto isolation from traditional cooperation formats in the Arctic (AC, CBER), there is a critical need to develop and promote a sustainable development agenda within alternative platforms and to build long-term cooperation formats that will function in times of crisis. Given the growing economic presence of China and India in the Arctic, the scientific interest of Brazil and South Africa, as well as the political weight of the BRICS on the international stage and the existing track record within the BRICS on sustainable development, this format can be one of the leading ones towards implementing sustainable development policies in the Arctic region. As Nikolai Korchunov, Ambassador-at-Large for the Ministry of Foreign Affairs of the Russian Federation, noted, in the context of increasing geopolitical confrontation in the Arctic, building new formats for cooperation with partners that share Russia's approach to sustainable development, including BRICS countries, is of particular importance to Russia[117].

Promising areas for BRICS cooperation on sustainable development in the Arctic region could include:

- science and education;

116 Russian-Indian documents signed for the meeting of the President of the Russian Federation Vladimir Putin with the Prime Minister of the Republic of India N. Modi // Official Network Resources of the President of the Russian Federation. – URL: http://kremlin.ru/supplement/5746 (accessed: 03.05.2023)

117 BRICS and SCO are interested in cooperation with Russia in the Arctic, the Foreign Ministry said // RIA. 12/08/2022. – URL: https://ria.ru/20221208/arktika-1837163747.html (accessed: 03.05.2023)

- environmental protection and combating climate change;
- development of Arctic resources;
- green energy;
- supporting indigenous peoples;
- transport and logistics;
- sustainable tourism.

Science and education

Scientific and technological cooperation has become the main motive for the development of a joint polar agenda of the BRICS countries and, in general, represents a window to the Arctic for many non-Arctic states. For example, for Brazil and South Africa, participation in scientific cooperation in the Arctic can become a launching pad for involvement in the region. Priority areas for joint research activities of the BRICS countries in the Arctic may be deep-sea research, oceanography, climate change, its impact on sea ice, ocean acidification and biodiversity (SDG 13 – Climate Action; SDG 14 – Life Below Water; SDG 15 – Life on Land). In addition, to realize the transport potential of the region, it is necessary to train personnel – oceanologists and ocean technicians who can work in the conditions of the Far North and will be familiar with new technical means of extracting resources in the Arctic.

One of the areas of research activity of the BRICS countries is the organization of joint expeditions to the Arctic, within which the exchange of experience with Brazilian and South African specialists conducting research activities at the South Pole can be especially valuable. Pollution of the oceans with microplastics remains an acute environmental problem characteristic of the Arctic Ocean, and therefore it is possible to organize a joint expedition within the framework of the BRICS to subsequently develop recommendations to combat this problem in the polar latitudes as a continuation of the BRICS Clean Rivers initiative.

Promising research sites may be the Russian scientific station Snowflake, which will be put into operation in the coming years, as well as the Russian drifting station North Pole-1, which went sailing in 2022. Strengthening scientific ties between research centers will play a special role and universities of the BRICS countries, including through the BRICS Network University, the BRICS Research and Innovation Network Platform, the Russian-Chinese Arctic Science Center, as well as through bilateral student and researcher exchange programs with the participation of Russian, Indian, Chinese, Brazilian and South African centers and universities.

Environmental protection and combating climate change

The problem of climate change is particularly acute in the Arctic, so the implementation of joint projects involving major emitters of greenhouse gases is a prerequisite for curbing the rise

in global temperatures in accordance with the goals of the Paris Agreement. Given the urgency of the problem of permafrost degradation, which is fraught with additional methane emissions, the spread of viruses and damage to residential and transport infrastructure, it is important to develop observation technologies and establish a joint monitoring system in the Arctic. In this context, China's experience in studying glacier melting in Tibet and India in the Himalayas (SDG 13 – Climate Action, SDG 14 – Life Below Water) is seen as valuable. In addition, the development of ice structure assessment models and the exchange of monitoring data between the BRICS countries could be an important area of cooperation. Within BRICS there is already a groundwork for the use of space monitoring technologies (with the participation of the Aerospace Monitoring Research Institute "Aerospace" and the Geophysical Center of the Russian Academy of Sciences, the Aerospace Information Research Institute of the Chinese Academy of Sciences, the Centre for Satellite Remote Sensing Applications of the Indian Ministry of Natural Resources (LASAC)[118]) (SDG 13 – Climate action, SDG 14 – Life Below Water). Setting up Arctic monitoring systems would also improve navigation along the Northern Sea Route and increase the safety of shipping along it.

In the field of environmental protection, of particular importance are biodiversity conservation projects, of which Russia, China and India have experience as part of the Arctic Flora and Fauna Conservation Working Group of the Arctic Council, as well as ensuring biosecurity threatened by rapid melting of permafrost (SDG 14 – Life Below Water, SDG 15 – Life on Land).

Development of Arctic resources

The resource potential of the Arctic opens a window of opportunity for cooperation among the BRICS countries. In the field of exploration, Chinese, Indian, Brazilian, and South African companies may be involved in the Vostok Oil project, as well as further expansion of the investment portfolio in the Arctic LNG-2 and Yamal LNG, given the withdrawal of some foreign partners from these projects. In this regard, it is necessary to work out the regulatory framework to ensure investment and technological cooperation between Russian, Chinese, Indian, Brazilian and South African companies (SDG 7 – Affordable and Clean Energy). In the implementation of new oil and gas projects, great attention should be paid to the environmental side to minimize environmental risks. To this end, countries should use innovative upstream technologies (SDG 14 – Life Below Water).

In addition to significant hydrocarbon reserves, the Arctic is rich in rare and rare-earth metals that are used in the production of RES equipment, in particular nickel, cobalt, lithium, which increases the investment attractiveness of Arctic resource development projects by Russian and foreign companies in the context of global energy transition.

118 Scientists of Russia, India and China are improving the methods of space monitoring of the environment // Ministry of Science and Higher Education of the Russian Federation. 05/27/2022. – URL: https://minobrnauki.gov.ru/press-center/news/mezhdunarodnoe-sotrudnichestvo/51915/ (accessed: 03.05.2023)

Green energy

In the context of the energy transition, joint low-carbon projects should be one of the vectors of international cooperation for decades to come. As part of the BRICS agenda for sustainable development in the Arctic, joint projects using hydrogen technologies are possible, given the adoption of hydrogen strategies in the BRICS member states and increased investments in this industry in each country. In addition, to provide clean and low-cost energy to the Arctic territories and reduce the negative impact on the environment and climate, projects for the construction of wind power plants and the use of tidal energy are possible, given the presence of several deep-water ports on the Arctic coast of the Russian Federation. The experience of Brazil, South Africa, China, and India in the production of solar panels and the development of solar energy storage technologies could be relevant in the Arctic conditions, which in the future will make it possible to replace some of the diesel power plants in the Russian polar latitudes (SDG 7 – Affordable and Clean Energy).

Transport and logistics

The Northern Sea Route is a key transport artery in the Arctic and has the potential to become an alternative to the traditional routes from Europe to Asia – the Suez and Panama canals. China's support for the creation of an "Ice Silk Road" as part of the Belt and Road Initiative is likely to have a major impact on the existing logistics system in the world. The development of the NSR, with the participation of the BRICS partners, would diversify energy transportation and reduce countries' logistics costs, making it a promising area for financing by the New Development Bank of the BRICS.

As the Northern Sea Route develops, the role of partnerships in shipbuilding and the expansion of the icebreaker fleet increases. In this regard, the Zvezda shipbuilding complex, which produces tankers, gas carriers, drilling platforms and ice-class vessels, could be a possible project for investment by Russia's BRICS partners. To improve sustainability of shipping as required by the International Maritime Organization, measures must be taken to reduce emissions of pollutants and greenhouse gases through the use of alternative fuels. Increasing the sustainability of navigation in the Arctic requires ensuring maritime safety, so joint rescue missions should be organized along the Northern Sea Route, and the use of joint satellite technology will significantly improve navigation along the NSR.

The development of the Vladivostok-Chennai international transport corridor, including the construction of an additional transshipment port in Vladivostok with the prospect of using it to ship Arctic cargo, and the North-South route, whose use would reduce the cost of freight traffic between India and Russia by a third, will contribute to realizing the region's transport potential.

Supporting indigenous peoples of the North

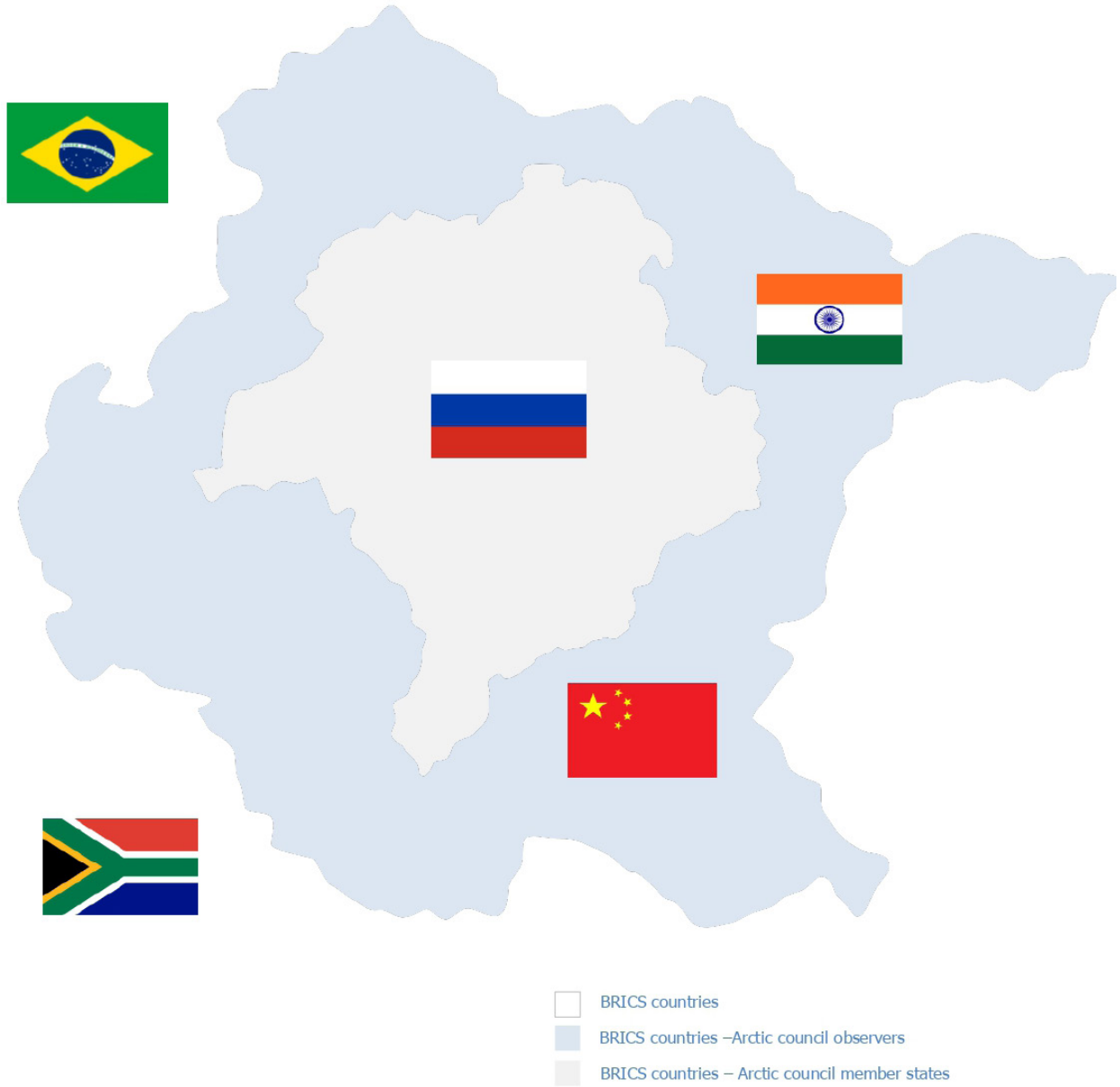
Ensuring sustainable development of the Arctic region is not possible without social and institutional support for indigenous peoples. One of the elements of population support in the

Arctic should be food security, which requires, among other things, the accumulation of knowledge about potentially hazardous areas in the region based on traditional indigenous knowledge, as well as the introduction of sustainable agricultural practices, which China and Brazil have experience of developing. In addition, activities and forums on indigenous culture in the Arctic region can be organized to support IPs, which is part of Russia's agenda under its chairmanship of the Arctic Council and is also included in China's and India's strategies for the Arctic (SDG 17 – Partnerships for the Goals).

Sustainable tourism

Arctic tourism can be a way to raise awareness of Arctic issues that affect both climate change and socio-economic issues in the region. Activation of Arctic tourism will also serve to create new jobs in the Arctic zone of the Russian Federation and promote investment in the region (SDG 8 – Decent Work and Economic Growth). In order to realize the touristic (recreational) potential of the region, an information portal about the Arctic should be created, which would also present tourist routes in the national languages of the BRICS countries. Also, in view of external sanctions and the suspension of the Visa and Mastercard payment systems in Russia, the issue of developing a single BRICS payment system based on a basket of national currencies becomes relevant.

BRICS countries



Arctic resources

Mineral production (US dollars/km²)

1974 Alaska	**776** Arctic Canada	**11,2** Arctic Finland
2026 Arctic Norway	**20,02** Arctic Sweden	**0** Greenland
1642 Arctic Russia, Asia	**0** Iceland	**795** Arctic Russia, Europe
	1829 Svalbard	

Indigenous peoples

9 %

of the total population of the Arctic make indigenous peoples up

40

different ethnic groups live in the Region

~75%

The indigenous population is the majority in Greenland and the Northwest Territories of Canada

Environment and climate

from 2 °C to 9°C

By 2100, the average annual temperature will rise

~4,7%

reduction of ice cover
over a decade
in the XXI century

40%

The black carbon deposited in the Arctic
was caused by the burning of associated
gas at oil production facilities in 2013

Promising areas of Arctic cooperation under BRICS

Extraction of minerals, including fossil fuels and rare earth metals

Northern Sea Transport routes

Indigenous peoples

Ecology and climate in the three poles (Northern pole, Southern poles and the third pole – Himalayas)