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EDITORIAL

This issue comes at a particularly challenging time for Science Diplomacy. After the end of the Cold War, it was hoped that science diplomacy would progress to new heights and international cooperation would enable humanity to tackle global challenges, especially through application and management of Science Technology and Innovation. However, the geopolitical situation has deteriorated sharply since the start of the conflict in Ukraine, along with heightened US-China tensions. Most countries, especially in the global South, have avoided taking sides, hoping for solutions to end the conflict. Meanwhile, there is an urgent need to ensure that damage is minimised to the structure of international cooperation built up so painstakingly over decades. This threatens to disrupt cooperation to tackle many global challenges such as climate change, nuclear arms control, the oceans, space, food security, cyberspace, the Arctic, and human health, etc.

There is a consequent negative impact on science diplomacy, especially large-scale international projects, the so-called mega projects, such as CERN, International Space Station, ITER, LIGO, etc., all of which have generated benefits for all countries. This calls for exchanges, discussions, and maintaining mobility of researchers across borders during this difficult period. The global scientific community must restrain the tendency to link geopolitics with scientific cooperation, while agreeing on guidelines and an ethical framework for behavior of scientists.

This issue presents an article on the silent but massive burden on global health due to pollution of the environment. The effects of pollutants like lead on infant and child development are particularly insidious as they impact health over decades of life. The setting up of an IPCC like body to study and bring out the scientific basis for action on this front will be keenly awaited. There is also another article that examines the history of India-Russia cooperation in health, especially the contribution to vaccine development, which has resulted in India becoming a world major in this field. Another article presents the results of the UN Environment Assembly which met physically in Nairobi. It marked 50 years of UNEP with a high level special session, and adopted some important resolutions. One, on fighting plastic pollution was piloted by India, while another was on setting up a science policy based expert panel for sound management of chemicals and waste.

Our report section covers the recent public lectures on Science, Technology Innovation policy (STIP). A report is presented on InsSciDE's Conference on 'Science Diplomacy, Diversity and the Global South'. Our book review section focuses on the important role of Science Diplomacy in preserving Antarctica science research from the rivalries of the Cold War period. The issue also includes a review of India's recently released Arctic Policy.

We continue to look forward to your comments and reactions and also encourage stakeholders to contribute to the Journal. We are glad to announce a special issue titled 'New Dimensions of Science Diplomacy for the Twenty-First Century' in collaboration between RIS and the Centre for Global Science and Epistemic Justice (GSEJ) at the University of Kent, UK.

ARTICLE

A Science-Policy Panel to Catalyze A Global Response to Chemicals, Waste and Pollution

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The Lancet Commission on Pollution and Health (2017) highlighted that polluted air, water and soil is responsible for 9 million premature deaths annually worldwide (Fuller *et. al.*, 2022) - or one in six deaths. To put that in perspective, that is three times the annual mortality from malaria, tuberculosis and HIV *combined*. New data shows one third of all children are lead (Pb) poisoned – which is up to 800 million children globally (UNICEF & Pure Earth, 2020). A 2019 ranking (based on data from the Institute for Health Metric's (IHME's) 2017 Global Burden of Disease Study) of global premature, pollution-related deaths placed six G20 countries, including Brazil, China, India, Indonesia, and the United States in the top 10, with a combined death toll of over 4.8 million people per year (GAHP, 2019). In early April 2022, the World Health Organization (WHO) stated that 99 per cent of people breathe polluted air – up from 91 per cent just two years ago (IHME, 2019). The enormity of this finding led the WHO to dedicate the theme of 2022 International World Health Day to "Our Planet Our Health" – highlighting the detrimental impact of anthropogenic pollution to human and environmental health.

Another significant metric is the Global Disability-Adjusted Life Years (DALYs). It is estimated that approximately 275 million DALYs are attributable to pollution globally, with air pollution responsible for roughly 147 million DALYS, water pollution (84 million), lead

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(24 million), and occupational pollution (18 million) (Landrigan *et. al.* 2017).

Yet except for ambient air pollution, there is little public awareness of the enormous health consequences of pollution, especially on women, children and marginalised communities. And further, there is little by way of resources being directed towards implementation of efforts to solve pollution at its source, especially in the worst affected countries. A 2016 analysis of Official Development Spending calculated that on average, global investment to mitigate pollution deaths from risk factors associated with industrialization and urbanization, i.e. ambient air and chemical pollution amounts to only $14/death, compared with $1,250/death for malaria, $190/death for tuberculosis, and $165/death for HIV/AIDS (Swinehart, 2019). While the number of deaths from pollution associated with industrialization and urbanization are 9 times higher than those caused by malaria, OECD spending on this issue amounts to only 10 per cent of that allocated to malaria.

Just earlier this year, the UN Environmental Assembly, at its 5th session part 2 (UNEA 5.2) adopted a resolution that "a science policy panel should be established to contribute further to the sound management of chemicals and waste and to prevent pollution". The Resolution, which was sponsored by Burkina Faso, Colombia, Costa Rica, Ghana, Mali, Niger, Nigeria, Norway, Peru, Senegal, Switzerland, Thailand, United Kingdom of Great Britain and Northern Ireland, and Uruguay, was approved by a consensus across all regions of the world, and underscored the importance of sound management of chemicals and waste in order to protect human health and the environment (UNEA, 2022).

The proposed science policy panel (SPP) is urgently needed. Not only is pollution - chemicals and hazardous waste in air, water and soil - a huge, under-recognized global environmental health problem, that costs up to 2 per cent of global GDP (Landrigan *et. al*, 2018) – the number of deaths attributable to pollution is likely a severe undercount. Although there have been great advances in the scientific understanding of pollution and its health impacts, there are still many gaps in our knowledge. These include an absence of information on pollution levels and prevalence of pollution-related disease in many countries, and lack of research into the toxic effects of many chemicals in common use, especially newer classes of chemicals. There is also uncertainty about the dose-response functions (health impact linked to varying dosages of pollutants absorbed) for many commonly used chemicals.

Nevertheless, what we do know at present is extremely alarming - and shows no signs of improvement in the worst affected countries. While high income countries have made significant progress over the last 30-40 years, the 2017 Lancet Commission on Pollution and Health demonstrated that 92 per cent of pollution-related mortality (and most of the associated economic losses) now occurs in low- and middle-income countries (LMICs). These countries are also least equipped to deal with – and address - the health and economic consequences of pollution exposure and implement preventative and mitigative measures.

It is also demonstrated that deaths from modern pollution – i.e. pollution stemming from industrialization and urbanization – is getting worse, while deaths from traditional pollution – that attributable to water and sanitation and indoor cookstoves – are improving (Landrigan *et.al.*, 2018). The latter is in large part to the increased efforts made over the last decades.

Of the total pollution-related mortality, roughly 6.5 million deaths are attributable to air pollution (IHME, 2019). This includes 4 million deaths from ambient particulates, and 2 million from household air (the balance being ambient ozone which accounts for about 400,000). Water pollution is responsible for about 1 million deaths, of which unsafe sources account for the bulk, and unsafe sanitation for a (declining) balance (IHME, 2019). Occupational pollution-related deaths are estimated at close to 1 million and associated with particulates (500,000) and carcinogens (350,000) (IHME, 2019). Another 1 million deaths are due to lead (Pb, 900,000) and other toxic substances, such as mercury, chromium, and pesticides (IHME, 2019). As noted, the mortality from newer chemicals, such as PFAs and endocrine disrupters, remains unknown.

The Science-Policy Panel on Chemicals, Wastes and Prevention of Pollution (SPP) has been suggested as a body to help address the twin problems of (i) improving the science of understanding the full toll that pollution takes on global public health, and (ii) promoting policy initiatives to help reduce polluting activities. The global concern for climate change is largely due to an SPP: the Intergovernmental Panel on Climate Change (IPCC). Similarly, the other environmental crisis facing the planet - biodiversity - loss also has its own SPP: the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) established by States in 2012 as an independent intergovernmental body, which has drawn major attention in its own right. It is hoped that the proposed SPP would similarly galvanize the world community into taking effective action on chemicals, waste and pollution.

It may be obvious to environmental health practitioners and academics that action on pollution is urgently needed, but the argument for such action and priority setting has yet to reach the ears of key decision makers. It is envisaged that, like IPCC and IPBES, the proposed SPP for chemicals, wastes and pollution prevention would be an independent intergovernmental body. The UNEA Resolution calls for the convening in 2022 of an *ad hoc* open-ended working group (OEWG) to prepare proposals for the scope, structure, governance, procedures and administrative arrangements for the SPP. The Resolution stipulates that the OEWG would complete its work by end-2024, after which an intergovernmental meeting is to be convened to consider the establishment of the SPP.

The proposed SPP for chemicals waste and pollution prevention would also have the additional benefit of helping achieve the Sustainable Development Goals (SDGs). As the afore-mentioned Lancet Commission on Pollution and Health noted, the SDGs focus on pollution to an extraordinary extent. SDG 3 on good health and well-being commits the world - in SDG 3.9 - to substantially reduce, by

2030, the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. But there are many other pollution-specific or pollution-related SDGs: SDG 6 (water and sanitation); SDG 2.4 (improving soil quality); SDG 7 (clean energy); SDG 9.4 (clean technologies and industrial processes); SDG 11 (sustainable cities and communities); SDG 12 (responsible consumption and production); SDG 13 (climate action); and SDGs 14-15 (water and land conservation). By making global action on chemicals, waste and pollution more purposive and comprehensive, the proposed SPP could significantly expedite attaining these SDGs.

With the approval of the UNEA Resolution, the focus of diplomacy and negotiation now shifts to the OEWG and finalizing a comprehensive proposal that could be considered by an intergovernmental meeting to establish the SPP. In that context, in addition to governance and financing, there are a few issues that need to be discussed and addressed.

The first relates to the health dimension of chemicals, waste and pollution. The Resolution to establish the SPP reaffirms that the sound management of chemicals and waste is crucial for the protection of human health. It also recognizes that air pollution is the single greatest environmental risk to human health, with disproportionate impacts on women, children and the elderly. Accordingly, the Resolution invites the World Health Organization (WHO) to play a role, as appropriate, in the OEWG. However, this invitation by itself may not be enough to fully engage WHO and the health sector. Achieving such engagement is critical to help mitigate the silo mentality that has resulted in pollution not receiving adequate international political attention. If WHO is to participate actively and effectively in the OEWG, it may be necessary for WHO Member States to propose actions through the WHA governance structure to promote inclusion the impacts of pollution on health on the agenda, as well as champion active involvement in the SPP.

Second, concern for the health dimension goes beyond its relevance for action on chemicals, waste and pollution. Individual chemicals or toxicants are not equal in their impacts on human health, and efforts to establish a burden of disease for many toxicants are still under way. Nevertheless, existing burden of disease data, though an undercount, provide a meaningful way to (i) propose targets for pollution action, (ii) measure progress towards those targets, and (iii) importantly, serve as a priority-setting criterion for policy action on chemicals, waste and pollution to protect the most vulnerable and at risk.

Third, the principal functions of the proposed SPP include (i) horizon scanning to identify issues of relevance, and (ii) undertaking assessments of current issues, in particular those relevant to LMICs. While both these functions are important, with (i) 92 per cent of the burden of disease falling on LMICs, (ii) the present and continuing health consequences, and (iii) the scale of such damage, an especially strong focus is warranted on the issues that concern the most people and the worst affected countries.

Fourth, from GAHP's view the most critical pollution issues that require priorities in accordance to human health impact, especially in LMICs are:

- ambient air pollution
- household air pollution
- lead (Pb) exposures
- other chemicals and waste (mercury, hexavalent chromium, e-waste, etc.,)

To ensure these issues receive focused attention, it would be beneficial if the proposed SPP could have two working groups: one on air pollution, and the other on lead (Pb) and other chemicals and waste.

Further, since pollution does not recognize borders, the transboundary aspects of these types of pollution should also be considered. Examples include crop burning in one country affecting air quality in another, atmospheric emissions of heavy metals (such as lead, mercury and cadmium), and trade in contaminated food (including baby-food) and other products. Hence, the pollution issues of relevance for LMICs are also of concern for developed countries. Reducing and controlling such pollution at source benefits both directly and should be of interest to them. The USA, in particular, is likely to support a focus on air pollution. During UNEA5.2 preparatory meetings, the US Government expressed a strong desire to see how a "SPP that covers pollution more broadly, with an initial focus on air pollution, could have a significant impact on how governments and other stakeholders can work effectively to address this global problem." Indeed the US Environmental Protection Agency (EPA) has also identified both air pollution and transboundary pollution as international priorities[1].

Fifth, as noted earlier, there is still much that is not known about the harmful health effects of toxic chemicals; not just about newer chemicals (PFAs, endocrine disruptors) but also about well-known pollutants, such as lead (Pb). However, like IPCC and IPBES, it is likely that the proposed SPP would not engage in undertaking any primary research. That said, it could play a useful role in (i) taking stock of existing knowledge, (ii) identifying areas of needed research, and (ii) helping resources flow to such research.

Finally, as in the case of fossil fuels, much of the research and knowledge of chemicals and waste is in the hands of industry. The SPP's access to such data may be fraught and care must be taken to avoid potential conflicts of interest. However, with safeguards in place, it should certainly be possible for the industry to be a full partner in this endeavor. Indeed, the SPP is unlikely to be successful without the participation of private sector stakeholders.

It is hoped that negotiations in the OEWG will be purposeful, effective and expeditious, as well as inclusive of all stakeholder perspectives, including civil society and the private sector. Given the models of IPCC and IPBES, there is much experience to draw from in designing the structure and governance of the proposed SPP. This should help focus discussions at the OEWG more on the substantive issues (functions, role of WHO, other UN agencies and other stakeholders, resources, etc.). If the process is in accordance with the mandate, it may even be possible for

the OEWG to complete its work before the deadline of end-2024.

But whether the OEWG completes its task early or not, the important thing is to aim for a well-thought-out proposal, acceptable to all. For that to happen, leading countries – such as members of the G20 – will need to provide a determined push, both individually and collectively. With six of the G20 countries among the top 10 most pollution-affected, the G20 should take particular interest in establishing the proposed SPP. India, as a country directly affected by pollution-related disease, and the next G20 Chair, could play a leadership role in this regard.

The organization we represent – the Global Alliance on Health and Pollution (GAHP)[2] - works to reduce death and illness caused by all forms of toxic pollution. As such, and while we wait for next steps for the OEWG, GAHP stands ready to support and participate in the OEWG. We do so with the knowledge that establishing the proposed SPP on chemicals, waste and pollution prevention would not only serve our core mission, but also ensure a healthier planet and healthier future generations. We look forward to collaborating with other stakeholders to bring the proposed SPP into being as expeditiously as possible, and to participating actively in its work, once it is established.

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Endnotes

1 EPA's International Priorities, United States Environmental Protection Agency, https://www.epa.gov/international-cooperation/epas-international-priorities.

2 Details are available at https://gahp.net/.

ARTICLE

India-Russia Healthcare Cooperation: Progress and Prospects

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Shefali Ramasubramanian

Introduction

The use of 'science and technology' in the field of diplomacy allows countries to collectively find solutions to better human lives and national development. Healthcare co-operation within the domain of science diplomacy is one way to achieve these goals. Technology based healthcare systems aid to improve healthcare services. Although countries have long practiced healthcare cooperation, it has been only to contain the disease outbreak and limited to specific country/countries. For instance, strategies to contain Yellow Fever were restricted mainly in Africa and South and Central America. However, with the spread of diseases such as SARS, AIDS, H1N1 Flu (Swine Flu) and more recently COVID-19, the higher economic costs in handling such health crisis and a threat to the human security have led to countries rethink on including public health in matters of foreign policy (Singh, 2017). The rise of 'health diplomacy' in this context has been, therefore, a way to address health crisis and improve health infrastructure by way of increased collaboration and diplomatic efforts.

'Health diplomacy', a relatively new field of study and practice, lacks a concrete definition; though numerous disciplines and areas such as foreign policy, national interests, trade interests, health security, disaster relief, and human rights contribute to the concept (Chattu, 2017, p. 135). It acts

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as a bridge between the domestic and the global health challenge, as it binds national and bilateral commitments to multilateral partners (Pandit, 2021). Further, it not only allows governments around the world to create a single platform to address healthcare issues but also provides an opportunity for civil society to participate in it; thereby designing a sustainable healthcare model. In addition, vaccine diplomacy and science diplomacy provide an opportunity to rethink global health dynamics in ways that foster development, health security, justice and health equity (AlKhaldi, et al., 2021).

In this context, the paper analyses Russia and India's Health diplomacy. Russia is one of the countries with which India maintains an important relationship. The diplomatic ties have withstood Cold War politics, disintegration of the Soviet Union and Globalisation. The Cold War largely shaped the strategic nature of India-Russia ties focusing on defence (atomic, space and military hardware) and economic (trade and investments) cooperation. Post 1990, the avenues for strengthening the bilateral ties expanded to include scientific and cultural relations. Another area of cooperation on which both countries have reached an agreement is healthcare policy. India had established healthcare cooperation with the former Soviet Union in 1979. Over the years, both countries signed agreements which included the focus on improving public health system. These agreements also reflect the respective governments' acknowledgement of the inclusion of medical aspect within the domain of S&T cooperation. However, healthcare cooperation reached a highpoint during the COVID-19 pandemic. India's efforts in exporting Hydroxychloroquine (HCQ) and paracetamol to combat the disease and Russia's aid to India in the form of providing more than 20 tons of life-saving equipment and medicines, including oxygen concentrators, lung ventilation machines and medical monitors (Chaudhury, 2021) in 2021 during the severe pandemic, has been a significant example of health diplomacy.

India and Russia's efforts to mitigate the consequences of the COVID-19 pandemic were reflected in their domestic policies. Both countries' individual efforts include imposition of national lockdown, social distancing, and restrictions on movement across borders and increasing research and production of vaccines for the same. Nonetheless, the impact of the disease being felt in a similar manner in both countries, India and Russia while rethinking its existing domestic public health policy, have also been reshaping its foreign policy with a special emphasis on health diplomacy.

Objective and Method of Study

The existing literature on India-Russia bilateral relations focuses on political, economic, defence and cultural ties. While healthcare has been rarely used as a tool for enhancing diplomatic ties, this paper argues that India and Russia had established aspects of health diplomacy long before the era of globalisation. The paper also puts forth the argument that although not prioritised, healthcare policy was not a neglected subject in foreign policy matters. Over the years, both countries have attempted to review

and improve the terms of healthcare cooperation, highlighting the growing importance of health diplomacy. The paper makes use of the content analysis method based on primary and secondary sources. A range of journal and news articles, books, the official agreements signed between the governments, government reports and the official ministerial speeches are analysed for the purpose of this paper.

From 1953 to 1971: Towards Establishment of Health Diplomacy

India-Russia (former Soviet Union) diplomatic ties were established in 1947, however, the relations made little progress due to Josef Stalin's view of post-colonial governments as tools of Western imperialism (Mastny, 2010, p. 52). It was only in 1953 with Stalin's death, India and the Soviet Union signed the first trade agreement, which not only established economic ties but also provided an opportunity for improved international cooperation. However, at the time, when the practice of high politics was prevalent, the subject of health in foreign policy was dismissed as low priority.[1] As a result, the scope of health diplomacy remained limited to the trade of medical products and instruments.

Another reason for the non-inclusion of public healthcare in foreign policy issues was the prevailing domestic health policy in the Soviet Union. From 1941 to the mid-1960s, public health science in the former Soviet Union was reduced and officially referred to as 'organisation of healthcare.' This led to a categorization of public health not dependent on social conditions and foreign public health research and practise were largely ignored or criticised as irrelevant to the Soviet system (Demin, 2006). However, it did not prevent the Soviet government from trading medicinal equipment and instruments and providing funds for development of health infrastructure. For example, in 1961, the Indian Drugs and Pharmaceuticals ltd. (IDPL) set up by the government of India signed an agreement with the M/s. Technoexpert company, established by the Soviet Government on the construction of the antibiotics project in Rishikesh, a company producing surgical instruments in Madras, and a medicines factory in Hyderabad (Ministry of Petroleum and Chemicals and Mines and Metals, Government of India, 1969).

The 1971 Friendship Treaty and its Impact on Health Diplomacy

The 1971 Treaty of peace, Friendship and Cooperation between the Governments of India and the USSR was a major turning point that solidified Indo-Soviet ties. It paved way for increased opportunities to explore and forge new agreements in the fields of science, art, literature, education, press, radio, television, cinema, tourism, sports and public health. This renewed tie and the need to address national health concerns led to the signing of the Agreement between the Government of India and the USSR on Cooperation in the field of Medical Sciences and Public Health, on 14th March 1979. This agreement was the first step towards recognizing the need to improve the public health system and to conduct research activities to combat and prevent life-threatening diseases such as, cancer, smallpox and plague outbreaks. In addition, it also helped the Soviet Union to improve its long neglected domestic health

infrastructure. Thereafter, with the signing of the Integrated Long-Term Programme (ILTP) in 1987, the Government of India and the former Soviet Union made strides toward greater scientific collaboration. The ILTP pioneered collaborative scientific research in the areas of Biotechnology, Immunology, Biomedical Sciences and Technology, among other fields of studies. It facilitated technology transfer and research and development in medical sciences, which over the years resulted in over 110 joint workshops/seminars, over 3500 exchange visits, more than 1500 joint publications and 10,000 stable scientific contacts (Consulate General of India, 2013). The ILTP also established a joint centre of excellence i.e., 'polio and other vaccine manufacturing facility'. The establishment of a polio vaccine production facility in 1989, Bharat Immunological and Biologicals Corporation Limited (BIBCOL), at Bulandshahr, Uttar Pradesh, in collaboration with the Soviet Technology Consultancy Corporation (NITI Aayog, Government of India), was a significant achievement of this programme. This plant which initially began with an annual capacity of 100 million doses of polio vaccine has received continuous assistance from Russia. Additionally, while encouraging the need for professional development scientists/engineers of this plant have also received training at the Institute of Poliomyelitis Vaccine, Moscow for periods ranging from 1-3 months (Ministry of Science and Technology).

1990 onwards

The end of the Cold War and reforms in the foreign policy of Russia, created new opportunities for accelerating India-Russia ties. In terms of health policies, the domestic changes in Russia aided in establishing health diplomacy. Beginning with the declassification of 'Health information' in 1993, modern research became possible and international collaboration with other countries began (Demin, 2006). Furthermore, the previously signed ILTP agreement, sustained events following the disintegration of the Soviet Union. As a result, in June 1994 the 'Intergovernmental Agreement of Cooperation on Science and Technology' was signed. This agreement was made with an aim to exchange knowledge and improved collaboration in all fields of science and technology,

Table 1

Centre of Excellence	Area of work
Polio & other Vaccine Manufacturing Facility (Bulandshahr)	Promote research in area of vaccine production manufacturing.
Indo-Russian Centre for Biotechnology (Allahabad)	Exchange and networking of information in biotechnology.
Russian Indian Centre on Ayurvedic Research (Moscow)	Promote research and development of Ayurvedic medicines in Russia.
Indo-Russian Centre for Biomedical Technology (Thiruvananthapuram)	Promote research and production of Biomedical equipments.

Source: Consulate General of India in Vladivostok, Government of India.

including medicine and healthcare. On the lines of the ILTP and the Agreement between the Governments of India and the Russian Federation on Cooperation in Science and Technology (1994), eight Indo-Russia Joint Centres of Excellence were established. Four of these centres focus on the use of advanced technology in medical sciences (table 1). The collaboration of Indian and Russian scientists on development of India's first indigenous oral polio vaccine, benefitting millions of people, is an excellent example of collaborative effort. This prompted several companies to develop oral polio vaccines, which eventually led to the launch of the Pulse Polio Programme in India in 1995 (Varshney & Kumar, 2020).

The following sections look at the joint progress made by India and Russia in different sectors of medical science which has contributed towards enhancing health diplomacy between the two.

Pharmaceutical Sector

India's health diplomacy with Russia has relied heavily on the export of various pharmaceutical sector units such as generic drug production, vaccines, biologics and medical devices. In 2011, the Indian Central Drug Standard Control Organisation (CDSCO) and Russian Federal Service on Surveillance in Healthcare and Social Development signed a Memorandum of Understanding (MoU) to recognise the efficacy and quality of the medicines supplied to the people in both the countries. This agreement between the two regulatory agencies was primarily intended to ensure the quality, safety and efficacy of medicines (Ministry of External Affairs, 2011). Later, the Indian Ministry of Science and Technology and the Russian Ministry of Education and Science signed a MoU in 2012 to address the issue of Intellectual Property Rights to aid drug research, development and transfer of knowledge. Another significant agreement was the signing of a MoU between the ICMR and the Russian Foundation for Basic Research in December 2014 at New Delhi. This collaboration in Health Research included new generation vaccine research and research in HIV/AIDS. Interestingly, because both institutions are funding agencies, it provides an incentive for scholars and scientists from both the countries to conduct additional research in production of drugs for life threatening diseases. In the wake of COVID-19 an increased demand for pharmaceuticals made Russia the fourth largest importer of pharmaceutical products from India (Pharmaceuticals Export Promotion Council of India, 2021, p. 27). Moreover, India's vaccine diplomacy also allowed for the collaboration of Russian Direct Investment Fund and the Indian pharmaceutical companies to manufacture 'Sputnik-Light' vaccine in India and further export it abroad (Ministry of External Affairs, Government of India, 2022).

Traditional Medicine

India has long used and explored the field of traditional medicine, primarily for its domestic production and consumption. For decades, in the area of medical tourism, India has been a popular destination for wellness tourism which includes a wide range of services ranging from health-focused hotels and resorts, spas

to Ayurvedic clinics, yoga centres, and ashrams for the Russians (Katz, 2015). Since 2014, there has been an increase in the export and collaboration with countries for the use of traditional medicines, mainly Ayurveda. On these lines, the Central Council for Research in Ayurvedic Sciences of India and People's University of Russia in 2015 signed an agreement to expand cooperation in the field of traditional medicine, specifically Ayurveda. This agreement focused on research in the field of traditional medicine and outlined the property rights regulations. With research being the focal point of this agreement, it also agreed to advocate the safe use of the Ayurvedic medication in both India and Russia. The need for a blend of Traditional and Modern Medicine to adopt a holistic approach to healthcare and well-being was also reiterated by India and Russia during the Joint Communique of BRICS Member states in 2016. This is crucial, for it recognised the importance of healthcare cooperation at a global level.

On a related note, in 2020, India's Ministry of Health and Family Welfare, so as to promote education of the Indian Traditional medicines abroad, signed MoUs with 23 countries including Russia. The MoU offers scholarships every year to students pursuing undergraduate, postgraduate and PhD programmes in Ayurveda, Yoga, Unani, Siddha and Homeopathy (AYUSH) systems at premier institutes in India. The MoU also allowed for registration of AYUSH products namely Unani and Ayurveda with regulatory authorities of the Russian government (PIB Delhi, 2020).

Medicine and Biotechnology

The extension of the ILTP in 2010, not only included innovation but also expanded the areas of cooperation in the fields of biotechnology and immunology, biomedical sciences and technology and nanotechnology among other areas (Ministry of External Affairs, 2010). At present, certain completed projects under ILTP include medical applications of lasers, such as treatment of drug-resistant Tuberculosis using phototherapy based on UV light, bio-stimulation and tissue modification, use of laser-based fluorescence techniques for cancer diagnostic applications, among others(Varshney & Kumar, 2020). Furthermore, in June 2021, three Indian S&T-led enterprises[2]were selected to undertake joint R&D and technology transfer projects under the India-Russia Joint Technology Assessment and Accelerated Commercialization Program. Of these, two of the companies aim at creating a portable device to detect and cure Rheumatoid Arthritis and the development of prosthetic technologies (Department of Science and Technology, 2021).

India and Russia over the years have been successful in expanding their healthcare cooperation. Nonetheless, with the emerging trends in technology and unprecedented life threatening diseases, there lies a scope for both countries to revisit the existing agreements and incorporate such aspects. The benefit of it is twofold (i) Strengthening of health diplomacy, thereby indirectly improving the domestic standards of health policy; (ii) Contributing to greater cooperation in the global health diplomacy.

Healthcare Cooperation Prospects

Pharmacology Research Collaboration

The impact of changing avenues in medical sciences on public health can only be relevant when there is continued research. The COVID-19 pandemic resulted in increasing demand on the pharmaceutical industry. In this context, increased research activities and collaboration provide great opportunities for the growth of the pharmaceutical sector, which is an emerging field. The most important aspect, however, is the requirement of adequate state funding and exchange of technological knowledge; this is where both countries have greater scope for collaboration. Additionally, there lies potential for a comprehensive and continuous drug testing for production of vaccines and medicines for various non-communicable disease and including intellectual property rights under the scope of knowledge transfer.

Telemedicine

The concept and practice of telemedicine in India and Russia has been prevalent for over 20 years, although it was limited to communication at the expert-level. In the wake of COVID-19, the field of telemedicine has emerged as having high potential in delivering better public healthcare access. Telemedicine offers an affordable health care service to remote areas thereby making it accessible to people from all walks of life. At the most fundamental level, India and Russia's collaboration to improve digital infrastructure should focus on the need to improve telemedicine practise. This will in turn aid in creating a strong 'telehealth[3] network', thereby attracting the experts in the field for the purpose of virtual diagnosis, medication and conferences on knowledge exchange. Such collaboration will help deliver a qualitative and a sustainable healthcare service. The scope of such a telehealth network also has the potential to be enhanced with the inclusion of making use of traditional medicine and further expand the bilateral telehealth network service into a global network.

Educational and Professional Exchange Programmes

According to the Russian head of the education section, Russian Centre of Science and Culture "Russia witnesses the influx of nearly 6,000 Indian students every year, and around 70 per cent of them study medicine" (Kumari, 2019). The government-sponsored scholarships and the existing diplomatic relation have made Russia one of the most preferred countries to pursue a medical degree. Both the government can tap into these two factors and formulate specific bilateral policies on student and educators educational exchange programs in the field of medical science, with internship opportunities. Such exchange programs will provide new perspectives for changes in both countries' existing healthcare infrastructure. Furthermore, translational research for addressing information inadequacy or misinformation provided to the patients arriving from Russia and/or former Soviet countries should also be promoted (Suryanarayan, 2017). Lastly, in the light of Ukraine war, while Russia offers to allow Indian medical students from

Ukraine to continue their studies in the country, Indian government could provide a compulsory internship programme to those students in the country as an alternative to the compulsory exit exam which provides them with the licence to practice in the country.

Public-Private Partnership in Healthcare Research and Development

Post 1990s, the involvement of private institutions has increased the potential for an improved health policy in India. The public private partnership in the pharmaceutical sector for testing and manufacturing generic drugs can help produce cost-effective medications mainly for the NCDs. Secondly, the collaboration of Pharmacopoeia Commissions will pave way for improved skill development programs and research activities to maintain the quality of standard drugs. Further, a public private partnership in the emergent area of Telemedicine can help establish a digital-public health domain. Another opportunity lies in the creation of climate resilient health infrastructure. The adverse impact of climate change calls for investment from private and government institutions which can benefit in designing and establishing a sustainable health care policy.

Collaboration on Multilateral Forums

International organizations widen the scope for information exchange on matters of health, thereby aiding in its implementation at the national level. On these lines, BRICS and SCO provide an ideal platform to expand India-Russia's healthcare cooperation into such multilateral forums. To begin with, both the organisations contribute to the development of trade regulations governing medical products. This can make way into ensuring greater accessibility of products such as medicines, medical instruments, etc. by reducing the import costs and harmonizing regulatory requirements. Secondly, the health-related policies presented at such organisations will help mitigate the large-scale negative impact of global health challenges like HIV/AIDS, SARS, COVID-19 and non-communicable diseases like cancer, diabetes and cardiovascular diseases. Russia regularly holds dialogues on health with India and China and has established trilateral consultations among the three countries to pool expertise on such issues as HIV/AIDS, tuberculosis, Hepatitis B, and malaria (Bliss, 2011, p. 6). Since these have become a global health concern, such forums help to meet the need to find solutions to address the long term implications of global health challenges.

Conclusion

The geographical widespread of SARS-CoV-2 virus in the beginning of the year 2020, proved that national policies of economy, polity and security are all equally connected with national health policy. The pandemic showed that the breakdown of national health infrastructure elicits a domino effect on the country's governance and economic development. The threat posed to humankind due to the COVID-19 global pandemic, an unprecedented crisis, forced governments across the world to re-evaluate their health policies. Moreover, the pandemic also brought governments together to defeat one common enemy in the form of a life-threatening virus. The pandemic has brought health diplomacy

to the centre-stage and demonstrate that it acts as a stimulus for the governments to collaborate in the area of healthcare, thereby bringing about a collective solution to a single threat in a peaceful manner. Over the years, the Indian and the Russian governments have made progress in the area of health care cooperation increasingly. Their co-operation to mitigate the far-reaching impact of the COVID-19 pandemic shows how the two countries have embraced the relevance and the need of health diplomacy.

Endnotes

1 In the study of international relations, the concept of 'high politics' refer to the political and security factors, whereas the economic, cultural and social factors are termed as 'low politics'. 'Health' as a subject in foreign policy has been grouped with the matters of social dignity, and hence viewed as low politics.

2 The three Indian companies are Jayon-Implants (Kerala), PrantaeSolutions (Odisha), and Ananya Technology (Bangalore).

3 WHO defines Telemedicine as the provision of healthcare services like diagnosis and treatment for clients at a distance and Telehealth as a broader term which not only includes providing clinical guidance, but also information on exchange of professional healthcare services and public health administration.

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ARTICLE

UN Environment Assembly: A Perspective

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The resumed fifth session of the UN Environment Assembly (UNEA-5.2), which convened under the theme "Strengthening Actions for Nature to Achieve the Sustainable Development Goals," saw Member States adopting important resolutions to fight the menace of pollution. UNEA-5.2 took place in hybrid format in Nairobi, Kenya, and virtually from 28 February - 2 March 2022. 14 resolutions, one decision, and a Ministerial Declaration were adopted, together with a political declaration commemorating the 50th anniversary of the establishment of the United Nations Environment Programme (UNEP). During the Assembly two important resolutions were adopted. One titled "End Plastic Pollution: Towards an International Legally Binding Instrument." Another, key resolution to establish a science-policy panel to contribute further to the sound management of chemicals and waste and to prevent pollution could have important consequences. The results of the UNEA deliberations (1) are summarized below.

UNEA was established at the UN Conference on Sustainable Development (Rio+20) in 2012, in response to the grave challenges to the environment and rising inequality among a global population estimated to reach 11 billion by the end of the twenty-fist century. The UNEA is the successor to the fifty eight member General Council of UNEP which was established by the 1972 Stockholm Conference on

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the environment. Following Rio+20, the UNGA strengthened UNEP and opened up the General Council to all member states and in 2013, changed its name to the UNEA of the UNEP called by some as "the World's Parliament on the Environment." The Open-Ended Committee of Permanent Representatives (OECPR) meets in advance of each UNEA session to prepare for the session by negotiating resolutions.

UNEA's first online session took place in February 2021, adopting a limited set of three administrative decisions and agreed to convene a resumed, in-person fifth session in 2022. The Assembly also agreed to mark the 50th anniversary of the creation of UNEP in 1972. The President of UNEA, Espen Barth Eide (of Norway) called for diplomacy to reach agreement, and the Executive Secretary of UNEA Inger Andersen called for greater multilateralism to address the triple planetary crisis of climate change, biodiversity loss, and pollution in times of turmoil. However, a discordant note was struck when delegations from the EU and the Russian Federation clashed over the Ukraine conflict.

The Committee of Permanent Representatives (OECPR) presented a draft ministerial declaration that had been endorsed and reported that that agreement had been reached on the sound management of chemicals and wastes, and on the creation of an INC for plastics. 13 draft resolutions were ready as well as the draft political declaration on the Special Session of UNEA to commemorate the 50th anniversary of the establishment of UNEP. The Committee of the Whole (COW) then discussed the draft resolutions and decisions.

On plastic pollution (proposal by India), the final resolution, requests the Executive Director of UNEP to convene an Intergovernmental Negotiating Committee (INC), commencing its work during the second half of 2022, with the ambition of completing its work by the end of 2024. Also, that the INC should develop an international Legally Binding Instrument (LBI) on plastic pollution, including in the marine environment, which could include both binding and voluntary approaches, based on a comprehensive approach that addresses the full lifecycle of plastic, considering among other things, the principles of the Rio Declaration on Environment and Development, as well as national circumstances and capabilities. The LBI should (a) promote sustainable production and consumption of plastics; (b) promote national and international cooperative measures to reduce plastic pollution in the marine environment, including existing plastic pollution; and (c) develop, implement and update national action plans to contribute to the objectives of the instrument. The Executive Director is tasked with convening an ad-hoc open-ended working group to hold one meeting during the first half of 2022 to prepare for the work of the INC.

On biodiversity and health (proposal by the African Group) the final resolution requests the Executive Director UNEP to, inter alia, (a) institute actions to enhance the availability, quality and timeliness of data for monitoring and surveillance, capacity and capability across One Health sectors; (b) foster cooperation in the context of pandemic preparedness, prevention and response; (c) support Member States to assess the environmental

dimensions of health. The resolution also, inter alia, calls on Member States to: (a) mainstream and coordinate the conservation, restoration and sustainable use of biodiversity into sectoral policies and programmes to enhance ecosystem resilience, and halt and reverse biodiversity loss; (b) foster cooperation to reduce the risk of, and manage spillover events and zoonotic disease outbreaks, break the sequence of transmission, and rapidly and transparently respond to prevent epidemics and pandemics; (c) promote the effective participation of developed and developing countries in health-related biotechnological research activities; (d) implement and work towards compliance with access and benefit sharing frameworks, where appropriate, to contribute to the conservation and sustainable use of biodiversity; (e) strengthen links between biodiversity conservation, sustainable use and public health in sectoral policies and in accordance with the One Health approach; and (f) reduce health risks associated with trade in live wildlife captured for the purposes of food, captive breeding, medicines, and the pet trade.

On Nature based Solutions (NbS) for supporting sustainable development (proposal by EU) the final resolution requests UNEP to convene intergovernmental consultations to, inter alia: (a) compile examples of best practices of NbS; (b) assess existing and discuss possible new proposals, criteria, standards, and guidelines to address divergences with a view to reaching a common understanding among Member States for the implementation of NbS; and (c) identify options for supporting sustainable investments in NbS and share relevant information. Member States and UNEP, are urged to follow a country-driven, gender-responsive, participatory, and fully transparent approach, when designing, implementing, and monitoring NbS.

On the animal welfare–environment–sustainable development nexus (proposal by Ghana, Burkina Faso, Democratic Republic of the Congo, Ethiopia, Pakistan, Senegal, and South Sudan) the final resolution (a) acknowledges that animal welfare can contribute to address environmental challenges, promote the One Health approach, and achieve the SDGs; (b) notes that the welfare and health of animals, sustainable development, and the environment are connected to human health and well-being, and acknowledges that there is an increasing need to address these links through the One Health approach, among other holistic approaches. The resolution requests the Executive Director to produce a report which will analyze the nexus between animal welfare, the environment, and sustainable development, and report to UNEA-6 on the findings of the report.

On sustainable lake management (proposal by Indonesia), the final resolution requests Member States and others to undertake and implement: (a)protection, conservation, and restoration as well as sustainable use of lakes through integrated management at all levels; (b)integration of lakes into national and regional development plans; (c) research and scientific guidance; and (d) development of international networking and collaboration, for integrated sustainable and climate resilient lake management. UNEP is asked to take action on: (a)supporting

the advancement of sustainable lake management; (b) facilitating collaboration among Member States and other in research, capacity building, and knowledge sharing; and (c) advancing the mainstreaming of sustainable lake management in the relevant global agenda and awareness raising at the global level.

On a science-policy panel to contribute further to the sound management of chemicals and waste and to prevent pollution (presented by Switzerland), the final resolution, inter alia: (a) decided that a science-policy panel should be established to contribute further to the sound management of chemicals and waste and to prevent pollution; (b) considered that the panel should be an independent intergovernmental body with a programme of work approved by its member governments to deliver policy relevant scientific evidence without being policy prescriptive; (c) decided to convene, an ad hoc open-ended working group that will commence in 2022 with the ambition of completing its work by the end of 2024; (d) decides that the ad hoc open-ended working group will prepare proposals for the science-policy panel to consider the following issues: the institutional design and governance of the panel; the name and scope of the panel; and the principal functions set out in the resolution, while respecting the mandates of relevant multilateral agreements and other international instruments and intergovernmental bodies, avoiding overlap and duplication of work and promoting coordination and cooperation.

On the sound management of chemicals and waste (proposal by Switzerland, Peru, and Thailand) the final resolution, inter alia, (a) expresses great concern with the unsound management of chemicals and waste and its negative impacts on human health and the environment; (b) recognizes the need to take further action to reduce or eliminate the risks associated with the chemicals and waste issues of concern; (c) expresses concern that increasing levels of illegal transboundary movements of hazardous wastes and other waste pose disproportionate negative impacts, and invite the parties of the Basel Convention to consider this issue further; (d) welcomes the significant role played by the GEF and invites it, and encourages donors to the GEF trust fund, to continue and enhance their support for the sound management of chemicals and waste; The resolution also requests the Executive Director to, inter alia, (a) in cooperation with the WHO, update the report on the state of the science of endocrine disrupting chemicals by UNEA-6; (b) in cooperation with the WHO, present a full range of options to address asbestos contaminants in products and the environment for consideration by UNEA-6.

On sustainable nitrogen management (proposal bySri Lanka) the final resolution encourages Member States to accelerate actions to significantly reduce nitrogen waste globally by 2030 and beyond through the improvement of sustainable nitrogen management, and to share information on national action plans. The resolution requests UNEP to: (a) support Member States in the development of national action plans for sustainable nitrogen management, subject to the availability of resources; (b) identify possible modalities for improved coordination

of policies across the global nitrogen cycle at the national, regional, and global levels, including an intergovernmental coordination mechanism for nitrogen policies.

In the final resolution on sustainable and resilient infrastructure (proposal by Mongolia), the final resolution encourages Member States and other stakeholders to, inter alia: (a) consider integrating and operationalizing the ten "International Good Practice Principles for Sustainable Infrastructure" into national policies; (b) implement existing tools and co-develop further knowledge products; (c) cooperate internationally to strengthen frameworks, and (d) consider the role of digital infrastructure. The resolution also encourages Member States to: (a) conduct strategic and environmental impact assessments for decision making; (b) promote investment in natural infrastructure, nature-based solutions, and environmentally, socially and economically sustainable health infrastructure; and (c) provide opportunities for the engagement of relevant stakeholders, including local communities, vulnerable people, and Indigenous Peoples. The resolution requests the UNEP to: (a) promote the implementation of existing tools; (b) support sharing of experiences, and technical assistance, capacity building on sustainable infrastructure; (c) facilitate private sector engagement in planning and developing and mobilizing finance and to report to UNEA-6.

On environmental aspects of minerals and metals management (proposal by Switzerland, South Africa, Algeria, Chile) the final resolution (a) underlines the specific environmental challenges related to artisanal and small-scale mining, and their related health risks; (b) stresses the need for enhancing action to support the environmentally sustainable management of minerals and metals and recognize the regulatory and administrative capacity challenges faced by countries; (c) acknowledges that clean technologies, highly dependent on metals and minerals, are important for combatting climate change and stresses the important contribution that the sustainable management of metals and minerals makes to achieving the 2030 Agenda; (d) encourages Member States and invites relevant stakeholders active along the full lifecycle of minerals and metals, to align mining practices and investments with the 2030 Agenda; and (e) requests the UNEP to convene intergovernmental regional consultations to feed into a global meeting with the aim of developing non-prescriptive proposals to enhance the environmental sustainability of metals and minerals along the full lifecycle. The consultations will: (a) take stock of existing activities and actions from the public and private sector and other relevant stakeholders, and identify, inter alia, technical tools, best practices, standards, guidelines, environmentally sustainable technologies, use of renewable energy in mining, and responsible business practices; (b) identify opportunities for enhanced international cooperation, including with a view to fostering capacity building, technological, technical and scientific cooperation in the mining sector, in particular with developing countries; and (c) identify possible ways forward for consideration at UNEA-6, as appropriate.

The Executive Director UNEP is also requested to report to UNEA-6 on the progress achieved in the implementation of the resolution, including a summary reporting on the consultations.

On the environmental dimension of a sustainable, resilient and inclusive post COVID-19 recovery (proposal by the African Group) the final resolution, inter alia: (a) notes with concern that the COVID-19 pandemic has slowed down the progress in achieving the 2030 Agenda and the SDGs; (b) reiterates that the COVID-19 pandemic has not changed the urgency of addressing the environmental dimensions of sustainable development but on the contrary has accelerated the need to take urgent action to address the environmental crises and to strengthen the long-term sustainable, resilient and inclusive recovery from COVID-19; (c) encourages Member States to strengthen measures to achieve a sustainable, resilient, and inclusive global recovery, including, but not limited to, continuing to enhance actions to combat climate change, biodiversity loss, and pollution, and implementing the 2030 Agenda, taking into account national circumstances; (d) calls upon Member States to share knowledge and build capacity, especially in developing countries, in the areas of research and development, technological innovation to help improve information sharing, and technical support for an inclusive, resilient, and sustainable recovery; (e) requests the Executive Director UNEP to support countries on information, knowledge and capacity development and technical support, for a sustainable, inclusive, and resilient recovery.

On enhancing circular economy as a contribution to achieving sustainable consumption and production (proposal by the African Group) the final resolution invites Member States to: (a) integrate circular economy approaches in relevant national and regional strategies and action plans; (b) take measures, in cooperation with the private sector, to enhance the design of products to favor product lifetime extension, repair, reuse, and easier recycling in the context of circular economy; (c) cooperate with relevant organizations and networks on sharing and discussing best practices on relevant product information along value chains; (d) promote and enhance circular economy approaches as well as business models, innovations and investments to contribute to, inter alia, sustainable management, use, and consumption of natural resources and materials; and (e) improve the predictability of and enhance access to support, such as sustainable finance, environmentally sound technologies for the uptake of circular economy and other approaches to Sustainable Consumption and Production (SCP). The resolution recognizes the importance of inclusive multilateral and multi-stakeholder dialogues on SCP, resource efficiency, and circular economy to promote sustainable development. The resolution requests UNEP Executive Secretary to: (a) continue collecting information and conducting further analysis on the issue of used vehicles and clean fuels and to reduce related negative environmental and health related impacts; (b) facilitate the collaboration among Member States and members of UN Specialized Agencies in research, capacity building, knowledge management, and

sharing of best practices for the promotion of innovative pathways for SCP, including circular economy; and (c) report to UNEA-6 on the implementation of this resolution

On the future of the Global Environment Outlook (GEO) (proposal by Secretariat of UNEP) the final resolution reaffirms the GEO objective and aim. It requests UNEP to establish an ad hoc intergovernmental and multi-stakeholder advisory group and prepare GEO-7 to be submitted at a future UNEA session no sooner than 2025. UNEA decides that the GEO process should identify intergovernmental-defined needs and terms to support capacity building, knowledge generation, and policy making. UNEA further requests UNEP, with guidance from the intergovernmental and multi-stakeholder advisory group, to: (a) convene an intergovernmental, multi-stakeholder, and expert meeting to create a set of procedures that reflects the objectives and core function of GEO; (b) conduct a nomination and selection process for external experts, who will contribute to GEO; (c) ensure GEO draws from the best available evidence; (d) establish a multidisciplinary expert scientific advisory group responsible for overseeing the scientific integrity of the GEO process; (e) develop a flexible multi-year work plan and time bound budget, setting out a programme of activities, such as assessments and support services; (f) strengthen the science-policy interface by developing for each assessment a scoping document and a summary for policymakers and approve the undertaking of intergovernmental and expert led assessments approved by UNEA; and (g) continue the GEO fellows programme for youth. UNEP is requested to administer the GEO process and periodically consult with the CPR on important elements.

UNEA President Eide presented the draft Ministerial Declaration entitled, "Strengthening Actions for Nature to Achieve the SDGs." This draft had been negotiated in the OECPR and with some minor changes the Assembly adopted the Declaration. In the Ministerial Declaration the Ministers of Environment recognize the need for transformative and systemic changes, and for policies that address several environmental, economic and social challenges simultaneously. The Ministers commit to: (a) building on the strength of innovation, science and knowledge, capacity building, and investment in green and sustainable technologies; (b) promoting an inclusive and sustainable recovery, and a green and just transition, with the goal of revitalizing our economies and livelihoods and ending poverty; (c) undertaking work across sectors and levels of government, and among governments, to halt loss, degradation and fragmentation of ecosystems; (d) promoting comprehensive land and water use planning with robust national enforcement as an important tool for sustainable development; (e) promoting the conservation and sustainable use and management of natural resources and to advance SCP patterns; (f) safeguarding life under water and restoring a clean, healthy, resilient and productive ocean capable of providing food, sustainable livelihoods, and storing carbon; (g) pursuing and joining new and innovative partnerships across sectors, and engaging all relevant stakeholders, working with youth, women, Indigenous Peoples and local communities, and with the business,

finance, education and science sectors; (h) relying on the knowledge gained from the recent scientific assessment of IPBES, IPCC, the International Resource Panel, and UNEP, and encouraging enhanced collaboration among scientific panels; and (i) undertaking to cooperate across sectors and levels of government, in partnership with other governments and local actors and the private sector, to transition to sustainable food systems.

On the final decision on the date and venue for UNEA-6, the Assembly decided that UNEA-6 will take place from 26 February – 1 March 2024 and OECPR-6 from 19-23 February 2024 at UNEP headquarters in Nairobi, Kenya. The Assembly further elected by acclamation Leyla Benali, Minister of Energy, Transition, and Sustainable Development, Morocco, as UNEA-6 President. On 3 March, UNEA-6 President Leila Benali (Morocco) opened the Special Session UNEP@50, and introduced the overall theme, "Strengthening UNEP for the Implementation of the Environmental Dimension of the 2030 Agenda for Sustainable Development." The draft Political Declaration of the Special Session of UNEA to commemorate the 50th anniversary of the establishment of UNEP had been negotiated in the OECPR. The Assembly adopted the declaration.

In the Political Declaration of the Special Session of UNEA, Heads of State and Government, ministers and high-level representatives commemorated the 50th anniversary of the establishment of UNEP and acknowledged with appreciation its contribution in supporting a worldwide effort to overcome the planet's biggest environmental challenges. They also, inter alia: (a) recognize that a clean, healthy and sustainable environment is important for the enjoyment of human rights; (b) recognize the urgent need and common objective to reinforce and advance conservation, restoration and sustainable use for present and future generations; (c) reaffirm that eradicating poverty, changing unsustainable patterns of consumption and production and promoting sustainable ones, are the overarching objectives of, and essential requirements for, sustainable development; (d) recognize the importance of fostering environmental rule of law and effective international environmental governance through multilateral processes, as well as the crucial importance of effective domestic legal frameworks and governance structures for promoting compliance with obligations under international environmental law; (e) call for renewed efforts at all levels to enhance implementation of existing obligations and commitments under international environmental law; (f) renew their support for strengthening collaboration and cooperation between multilateral environmental agreements and UNEP, while respecting their independence and respective mandates; (g) support the key role of UNEP in promoting and strengthening the science-policy interface in order to support intergovernmental debate, negotiations, deliberations, and policy decisions relating to international environmental law and governance; (h) recognize the importance of access to information, access to public participation in decision-making processes, and access to justice in environmental matters; and (i) call upon Member States and members

of specialized agencies to enhance the provision and mobilization of all types and sources of means of implementation, including capacity building, technology and financial support.

On several occasions the proceedings were marred by clashes between the EU and its supporters and Russia and its supporters. In the closing plenary also, the EU, condemned attacks by the Russian Federation on nuclear plants in Zaporizhzhia and Chernobyl, stressing that safety and security risks could result in long-term severe consequences for humanity and the environment. In right of reply and urging not to politicize the debate, Russia responded that, in terms of nuclear security, the threat comes from neo-Nazi groups attacking the nuclear plants, noting that the nuclear stations are safe due to the responsible actions of the Russian military.

However, the UNEA5 could be termed a major success in terms of the number of actions it approved, including the ones on plastics pollution, and on sound management of chemicals and wastes.

Reference

UNEA-5.2, OECPR-5.2 and UNEP@50, IISD. 4 March 2022. Retrieved from https://enb.iisd.org/unea5-oecpr5-unep50-summary.

EVENT REPORT

Science Technology and Innovation Policy (STIP) Forum Lecture Series

Amit Kumar*

Amit Kumar

The Science Technology and Innovation Policy (STIP) Forum was set up with the objective of promoting debate on various aspects of Science, Technology and Innovation Policy. The Forum goes beyond the disciplinary boundaries by taking into account the intersectionality of S&T and I. It aims to bridge the gap between the science and society for dissemination of scientific achievements as well as for generalising debate of societal aspirations and promoting responsible research and innovations. The monthly series of public lectures has been launched (since September 2017) to sensitise the public discourse on science, technology and innovation policy. Research and Information System for Developing Countries (RIS), The Energy Resources Institute (TERI), Indo-French Centre for the Promotion of Advanced Research (CEFIPRA), Vigyan Prasar and India Habitat Centre (IHC) are the collaborating partner institutions. This event report provides a snapshot of the STIP lectures organised in March and April 2022.

Dr K Sridhar, Honorary Secretary, Neurological Society of India, delivered the 42nd STIP Forum Lecture on 28 March 2022 via online platform.[1] The topic of this public lecture was "*Rewiring the Brain*". The programme was moderated by Dr Kinkini Dasgupta Misra, Scientist F, Vigyan Prasar. Dr Sridhar began his address by providing an overview of the critical role the brain plays in our existence as a living being. He elaborated on the various processes in terms of neural networks and reactions that happen inside the brain to

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help us speak, act, smell, think and so on.

Dr Sridhar went on to explain how the 'rewiring' of the brain can help solve many neurological disorders such as epilepsy, brain stroke, Parkinson's disease and dementia through the technique called Neuro Plasticity. This new technique allows re-establishing the lost connections, enabling new connections and removing bad connections. There are two types of neuro or brain plasticity i.e. structural plasticity and functional plasticity. He also gave a detailed account on how reprogramming of the brain through deep brain stimulation can help address conditions like Parkinsonism, dystonia, OCD and epilepsy. In this process, electrodes are placed in the deep nuclei of the brain and the stimulation makes the brain work better. Dr. Sridhar also discussed about neuro rehabilitation and its significance in treatments.

At the end, Dr Sridhar reiterated that rewiring the brain and the nervous system is possible today owing to the technological advances in the medical sciences and an effort has to be made to aggressively use these advance techniques at an early stage to successfully treat any such existing or potential neurological disorder(s).

The 43rd STIP Forum Lecture was delivered by Mr Senapathy Gopalakrishnan (Kris), Co-Founder and Former Vice-Chairman, Infosys, Chairman, Axilor Ventures and Chairman, CII AI Forum and CII Start-up Council, on 28 April 2022 via online platform.[2] The topic of this public lecture was "*Why Invest in Research on Brain Sciences?*". The event was chaired by Professor K Vijay Raghavan, Former Principal Scientific Adviser to the Government of India. Welcome remarks were delivered by Professor Sachin Chaturvedi, Director General, RIS, followed by brief remarks by Mr. Sunit Tandon, Director, India Habitat Centre.

In his very insightful address, Mr Gopalakrishnan provided an overview of the significance of undertaking research in the domain of brain sciences. He articulated that the huge amount of data that would emerge in such research on brain sciences would help us understand how the brain develops, what changes take place during aging or at the time when disease strikes. Such an understanding can play a key role in helping clinicians and medical professionals address many neurological disorders. The study of the functioning of neural networks inside the brain would also provide great thrust to the research on emulating brain for digital computing.

Mr Gopalakrishnan also highlighted the serious concern of the rising number of patients with brain-related diseases in India as well as in the world. In India, more than 4 million people have some form of dementia, wherein Alzheimer's disease is the most common cause, accounting for an estimated 60 to 80 per cent of cases. Worldwide, at least 44 million people are living with dementia, making the disease a global health crisis that must be addressed. Given this alarming situation, he stressed the need to promote research on the cutting-edge domain of brain sciences in India. Being a nascent area of inquiry, India can take a lead on this and provide technological solutions to the world. Mr Gopalakrishnan lauded

the indigenous capabilities in developing COVID-19 vaccines in India in record time and stated that India can make products which are accessible and affordable to majority of the population of the world. Drawing upon this, he called for strong support and impetus to research on brain sciences in India.

He elaborated upon his efforts in promoting brain research in India through setting-up of Sudha Gopalakrishnan Brain Centre recently at IIT-Madras to power an ambitious Global Project to map the human brain at the cellular and connectivity levels, with a focus on high-resolution brain imaging. At the end, he stressed the need to promote Start-Up ecosystem in India with adequate and long-term funding. His own venture fund, Axilor Ventures, has supported more than 200 Start-Ups so far in diverse sectors. He highlighted the key role of such an ecosystem in helping the country achieve its goal of being a 5 Trillion economy.

Endnotes

1 The 42nd RIS-STIP Lecture 'Rewiring the Brain - Is it possible?' by Dr K Sridhar is available at https://www.youtube.com/watch?v=HLj0ythEoE4.

2 43rd STIP Forum Lecture by Mr. Senapathy Gopalakrishnan (Kris) is available at https://youtu.be/hF7Lp2KQnv4.

EVENT REPORT

InsSciDE Open Conference on 'Science Diplomacy, Diversity and Global South'

Sneha Sinha*

Sneha Sinha

European Union's Horizon 2020 programme funded project on science diplomacy, *Inventing a shared Science Diplomacy for Europe* (InsSciDE) held its Third Open Conference during 22-24 March 2022 at the Lisbon Academy of Sciences and Nova Rectorate at the NOVA University, Lisbon.[1] The project aims to develop a shared science diplomacy for Europe through research, historical case studies on science diplomacy, dialogue, capacity building activities as well as stakeholder-supported strategy and policy recommendations.[2]

Recognising the need for bridging the Global North and Global South divide and finding common solutions through a new vision and practice of science diplomacy, the organizers themed the conference on *Science Diplomacy, Diversity and Global South*. Most sessions were conducted in hybrid mode, with most participants in Lisbon and a few online. The last day of the conference was an in-person session with interactive discussion on InsSciDE case studies to derive cross-cutting themes and their practical applications in the present context. InsSciDE collaborated with several institutions in Lisbon like the Nova School of Science and Technology, Interuniversity Center for the History of Science and Technology (CIUHCT), Foundation for Science and Technology (FCT), and the Ministry of Science, Technology and Higher Education, Republic of Portugal.

On the first day of the conference, InsSciDE organized the Academies' Day. The session focused on International

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Action of Academies: Between Cooperation, Networking and Science Diplomacy (18th-21st Centuries). The idea of the role of science academies in science diplomacy can be traced by to InsSciDE's First Open Conference on 18th-19th January 2019 in Krakow, Poland, where among the six Discovery Round Tables on Science Diplomacy, one specifically dealt with the roles played by science academies and diplomats.[3] Through an open call, InsSciDE invited guest lectures, presentations by scholars and professionals on the role played by the academies of science from the eighteenth century in international action, together with cooperation, networking and science diplomacy. The welcome address was given by the President of Lisbon Academy of Sciences, José Luís Cardoso followed by the InsSciDE coordinator, Pascal Griset and Maria Paula Diogo, who set the context for the sessions.

The Academies' Day comprised of four sessions with sixteen presentations on international engagement of academies of sciences, projects, science diplomats, etc. Out of the sixteen presentations, fourteen focused on European projects, academies and science diplomats. These included discussion on role played by institutions like Berlin Academy of Sciences, Royal Academy of Sciences of Lisbon, Vienna Academy of Sciences, French Academy of Sciences, All European Academies, European Academies' Science Advisory Council, etc. and individuals like the Naturalist Abbé Correia da Serra.

Two presentations were on institutions in the Global South. These included discussion on the Indian Science Congress Association and International Relations of Science, 1938-1964 and The Role of the Network of African Science Academies (NASAC), its origin, creation and development. Among the twenty-seven speakers during the Academies' Day, eight were female. During the closing session Leonard Laborie and Ana Simões presented an overview of all the presentations made during the day.

Most of the panellists during the second day of the conference were from European institutions, with only about five panellists belonged to the Global South. It was held at the NOVA University of Lisbon. The opening session began with the address first by Pascal Griset, InsSciDE Coordinator; followed by remarks from Virgílio Machado, Dean of the NOVA School of Science and Technology; Isabel Rocha, representative of the Rector of the NOVA University of Lisbon; Ana Rodrigues, Coordinator of the Interuniversity Center for the History of Science and Technology (CIUHCT); and Maria Paula Diogo, Lead organizer of the conference.

The Day Two of the Open Conference primarily focused on Science Diplomacy, Diversity and the Global South. The round tables dealt with four important topics like Open Science, Anthropocene, Technoscience and Innovation Diplomacy as well as New definitions and actors of Science Diplomacy. Each session included a keynote address on the theme followed by a moderated round table discussion with revolving around questions related to the theme of the session.

In the context of the UNESCO's recommendations on the Open Science in November 2021, the first session organised

in collaboration with UNESCO aimed to bridge the knowledge gap between the North and the South through open science and science diplomacy. The keynote speaker was António Sampaio da Nóvoa, who is a Professor at the University of Lisbon. He had played a critical role to ensure that the recommendations were adopted by the member states and was the Portugal Ambassador to UNESCO during 2018-2021. He began his talk by highlighting the limitations and failure of science diplomacy in context of the Ukraine crisis.

He provided a personal account of efforts in the movement towards open access, and emphasised on the significance of the UNESCO Open Science Recommendations, which received strong support from the Global South. He noted that there is a need for greater attention on open science from diplomacy and science diplomacy perspective. The keynote address by followed by individual presentations from representatives from the institutions in Portugal, Italy, Austria, Colombia, etc. and All European Academies (ALLEA), followed by a panel discussion on the global asymmetries in access to knowledge and information in different context both within and beyond Europe.

Through its second session concerning The Anthropocene, the organisers sought to explore the role of science diplomacy in initiating a dialogue between the North and the South on issues like climate change, environment, sustainability, etc. The keynote address was given by Sanjay Seth, Professor of Politics, Goldsmiths, University of London. His address focused on dynamics of the circulation of knowledge and its transformation as a result of encounters in India. The panel saw participation of three speakers from the Global South, which provided a scope for discussion on issues and challenges from the Global South perspective.

The Third session revolved around the issues and challenges of Technoscience and Innovation Diplomacy. John Krige, Professor at the School of History, technology and Society, Georgia Institute of Technology, Atlanta gave keynote address, followed by short presentations by individuals and a panels discussion on issues, challenges and need for greater collaboration between different stakeholders in technosciences and innovation diplomacy. Recognizing the need for a diverse and pragmatic understanding of science diplomacy beyond the present definition which largely remains Global-North centric, the last session very aptly explored New Actors and Definitions of Science Diplomacy. The keynote speaker Peter McGrath emphasised on the role of different actors especially academies. Following which the panellists identified several stakeholders and actors. Their discussions stressed on the need for more informal actors of science diplomacy, beyond those formal actors which already exist.

Two additional contributions were made by Gabriela Ferreira of the Sao Paulo University. Her talk focused on the Innovation and Science Diplomacy São Paulo School (InnSciD SP). Following her talk, the Association of Polar Early Career Scientists presented a statement regarding the Ukraine crisis and the role of Polar

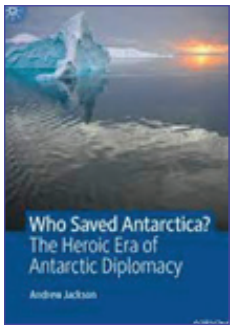
Science Diplomacy taking note of the challenges faced both in collaboration and conflicts. **The closing remarks were made by Umberto Vattani, Former Secretary of the Ministry of Foreign Affairs of Italy who summarised and reflected on the proceedings of the day from a diplomat's perspective. He discussed the challenges and the future prospects of science diplomacy in tackling global challenges, and also stressed on greater collaboration between scientists, researchers and diplomats.**

InsSciDE's flagship Science Diplomacy Schools called the *Warsaw Science Diplomacy Schools* brings together researchers, experts, practitioners, scientists from across the world including the Global South. However, given its objectives, it largely remains centered on Europe. This Open Conference organised by the InsSciDE project can be viewed as one of the crucial initiatives towards bringing greater diversity in discussions on newer definitions of science diplomacy and identifying new actors, especially from the standpoint of the Global South.

Although, the participation and representation of the Global South remained limited during the conference, it certainly recognised the gaps in access of information and knowledge between the Global North and the Global South, and the role science diplomacy could play in tackling issues and challenges vis-à-vis open science, Anthropocene, technosciences and innovation diplomacy. It called for newer actors and definitions of science diplomacy. This could in future bring forth a more inclusive understanding and application of science diplomacy taking into account the Global South perspective and its diverse socio-economic-political and cultural contexts, together with its specific challenges. Thus, enabling a more inclusive and pragmatic science diplomacy, which could be leveraged in finding solutions to present global and transnational challenges like climate change, environmental degradation, disease outbreaks, biodiversity loss, etc., including the Sustainable Development Goals**.**

Endnotes

1. Details and Full Programme can be accessed on https://insscide-lisbon2022.ciuhct.org/program-overview/. Also, read Prof. Maria Diogo's Report on the event available at https://www.insscide.eu/news-media/news-and-events/article/report-on-our-conference-in-lisbon-2022.
2. More information available at the project's website at https://www.insscide.eu/.
3. See details of the Discovery Roundtables during the First Open Conference at https://www.insscide.eu/results/first-open-conference/article/discovery-round-tables-and-fishbowls.



Who Saved Antarctica? The Heroic Era of Antarctic Diplomacy

Andrew Jackson (2022)
Palgrave Macmillan, pp- i-424.

Arundhati Sharma*


Arundhati Sharma

As climate change is unleashing challenges across the world, deliberations on melting of ice in the polar regions- Arctic and Antarctic – have come to draw the attention of both scholars and policy-makers. Consternation pertaining to what the unravelling of the Polar regions would entail in the coming future behoves the international community to seek and generate assurances for alternatives, particularly to avert international discord among nations. The manifestation of the search for alternatives has already culminated in the 'The New Great Game' among nations to explore and exploit the abundant rich resources in these two regions.

The book '*Who Saved Antarctica? The Heroic Era of Antarctic Diplomacy*' by Andrew Jackson, raises certain questions of contemporary relevance based on historical facts: Has diplomatic engagement been able to save the future of Antarctic or unleashed friction between and among nations to assert their sovereignty? What are the available instruments and conditions to determine assertion of such sovereignty and avert possible international

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discord that might ensue on account of 'mining' (mineral and marine resources) and environmental challenges? In doing so, the book focuses on the Antarctic Treaty in conjunction with its related agreements, treaties, instruments and institutions (conventions and protocols), together referred as the Antarctic Treaty System (ATS). Also, the book delves into the political and diplomatic history, involving single or multi-stakeholders, in arriving at a 'consensus' on issues related to mining and environment.

Tracing the historical background [Chapter 1-5], Andrew Jackson illustrates the role of different actors (majorly Australia and France) in the early phase of negotiations of the Antarctic Treaty. He provides a detailed account of the complex interaction of the two-level domestic-international paradigm and the process of consensus in negotiating the regulatory framework for Antarctic governance. The author contends that as one of the important regimes of International Law, the Antarctic Treaty System can be seen as ahead of its time. For instance, Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) was adopted in 1988 despite noviable trace of economic potential of strategic and commercial value at that time. Jackson writes, "*Many previous environmental issues needed attention, but the impetus to 'save' Antarctica arose only in the context of mining, even though there were no known economic minerals*" (p. 365).

Yet, he also highlights how the apprehension of future economic prospects induced contested claims among different players, thereby making the process of consensus elusive. Highlighting the difficulty in generating a political consensus among parties concerned, the author states,

> "*In May 1989, less than a year after Australia had agreed to the text of the Convention, the Antarctic Treaty Parties were shocked when Hawke announced his Cabinet's decision not to sign it. Australia, a strong defender of the Treaty, had broken the precious norm of consensus. Rather than trying to make CRAMRA more palatable, the government proposed banning mining and establishing an Antarctic wilderness park. Instead of being praised for its bold initiative, Australia was blamed for destabilising the Treaty*" (p. 2)

Jackson also argues that as international regime on environmental politics gathered steam in the 1990s, a complex web of players, greater struggles and stakes in the region emerged that eventually became instrumental in building a consensus on Antarctic governance [Chapter 6-9]. Later, the 1991 Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol), which replaced CRAMRA, resulted in the prohibition of mining and establishment of environmental rules much before any known environmental challenges. But, not without any political rigmarole.

What makes the content of the book more interesting is the meaningful insights into the intertwined realm of politics, international diplomacy, international law and environmental politics. As the author writes,

> "*It tells the story of a turning point in development of Antarctic governance, particularly the question of mining and*

environment protection. It does this through the lens of the political arguments and diplomatic negotiations, rather than the legal substance of the issues being discussed. It adds to Antarctic history more generally, but also diplomatic history, international environmental history and understanding of environmental politics on a continental scale". (p. 8)

The final chapter addresses the question of "*Who Saved Antarctica?*" wherein Jackson narrows down the 'competing claims' of multiple stakeholders (ministers, presidents and others concerned from the international community) and concludes that '*The Heroic Era of Antarctic Diplomacy*' was more than the culmination of a single player, process or phenomena.

With climate change revving the debate on 'catastrophic ramifications' on the Polar regions, the book under review is a value addition to the sparsely available literature on political and diplomatic history of the Antarctic. The book is one of its kind as Andrew Jackson writes a historical account by drawing on the archival documents of Australia on Antarctic Governance. In the process, the author has successfully brought the less explored and known region into mainstream repository of knowledge.

By analysing the available provisions and conditions of the Antarctic Treaty regarding territorial sovereignty and exercise of rights of states with regard to high seas (Article IV and VI) as well as domestic-international linkages building the diplomatic history of the Antarctic Treaty System (ATS), Andrew Jackson responds to the many questions on sovereignty, environmental politics, international diplomacy and international law of Antarctic region – a burning subject of contemporary relevance.

It also throws light as to how political dissensions on account of discovery of valuable minerals in the Antarctic region translated into political cooperation and also triggered environmental discussion. As Jackson aptly describes,

> *"It discusses how the imagined prospect of valuable resources amplifed existing friction over the Antarctic territorial claims and how the states involved developed environmental measures, overcame their reluctance to discuss resources and put in place a temporary mining moratorium while protecting their own national interests. Early ideas of environment protection are revealed."* (p. 9)

The book, thus, offers lessons on the real struggles and high stakes which intersected making cooperation and consensus possible among parties concerned. As such, the book can act as a window in addressing contemporary struggles and stakes of actors in the region, paving way for future research in the region.

The book, however, primarily focuses and relies on archival documents of Australia to build the entire mining and environmental narrative on the region. But, given the constraints to access government records as "much of the record is not public" (p. 5), the book can be a step forward for conducting extensive analytical research, encompassing different perspectives of the Parties concerned, based on a comparative assessment of archival reports and related documents of other concerned parties to the treaty. This will enrich and enhance the historical and diplomatic narrative on

how the two-level policymaking processes resulted in a political compromise between and among treaty parties for effective implementation of the treaty.

Notwithstanding, the book offers valuable lessons that can be applied to comprehend the present-day 'The New Great Game' in the Polar region which has become a theatre of geo-strategic and geo-economic calculations for scientific, military and diplomatic manoeuvres. Another novelty of the book that compels a reader is the application of theoretical frameworks, such as characterisation offered by Robert Mark on the circumstances shaping historical events categorised into contingency, conjuncture and accident and Oran Young's categorisation of leadership styles divided as intellectual, entrepreneurial and structural, to fill in gaps or substantiate the archival data. Such mixed analytical methods definitely add to the richer understanding of the circumstances leading to Antarctic regime.

For anyone (students, scholars, faculty members as well as policy makers) who is interested in comprehending the politics and diplomatic efforts to protect the Polar regions from the adverse 'consequences' of mining and climate change as well as the future 'Great Game' among nations, the book is a useful read. The book offers as much to the discourse on international diplomacy, primarily politics of consensus-based negotiations involving multiple stakeholders, as to international environmental law seeking to find agreeable solutions to the question of territorial jurisdiction, mining and climate change.

India's Arctic Policy: What Lies North of the North Pole?

Chaitanya Giri*

Sneha Sinha*

Chaitanya Giri

Sneha Sinha

While studying the concept of theoretical singularity, Stephen Hawking, modern-day's most celebrated theoretical physicist, asked an interesting question during a talk show: "What lies North of the North Pole?" The questions, although pertaining to geophysics, has got the international scientific community, across disciplines, to arrive on and around the North Pole more than ever before. The comity of nations, deciding policies, has warmed to the once frigid and neglected Arctic region. Apart from the numerous national Arctic policies of the nation's littoral to the Arctic Ocean, the intergovernmental Arctic Council has identified multiple co-operational domains, keeping aside their conventional territorial issues. These range from the conservation of flora and fauna, monitoring and mitigating pollutants and contaminants, promoting sustainable economic activities, assisting indigenous populations, and developing emergency response systems and processes in case of accidents and disasters.

Almost all international treaties applying to human activities in the warmer Indian, Pacific, and Atlantic Oceans have come out of international consensus; the same is valid with the Arctic. Scientific studies have shown that the integrity of the Arctic environs is as much the responsibility of non-littoral nations as it is of the littoral countries. In that respect, India's Arctic Policy has come

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up at an appropriate time and, since its release in March 2022 (MoES, 2022) has received positive reviews worldwide. But the question remains, what lies ahead of the North Pole for India and how did we reach where we are today?

The Arctic Policy has come forty years after the first polar expedition, as part of India's Antarctic Programme in 1981, and the subsequent signing of the Antarctic Treaty in 1983 (PIB, 2021). Since then, our south-polar research has led to the construction of three scientific research stations - Dakshin Gangotri (1983-1990), Maitri (1989-present), and Bharati (2012-present) - and undertaken about forty expeditions to date (PIB, 2021). These R&D and expeditionary scientific activities took place under the norms set by the Antarctic Treaty System. A similar treaty has never existed for the northern polar region, mainly because political geography plays a role in the more crowded Arctic region than the Antarctic, which is isolated on the ground of physical geography and therefore easier to consensually deem as a 'global common'.

India's involvement in the Arctic dates to more than a century-old 'Svalbard Treaty' ratified by the United Kingdom in 1923 (MEA, 2013). India's renowned physicist, S.K. Mitra, a protege of Nobel-laureate CV Raman and Charles Fabry, and through his collaborations with Camille Guitton in France, the famed radio physicist, became the first Indian scientist to participate in the International Polar Year (1932-33) (Kochhar, 2008). Later, post-independence, stalwart Indian geophysicists, astrophysicists, radio physicists K.R. Ramanathan, Vikram Sarabhai, and T.V. Ramamurthy actively represented modern India's scientific zeal to collaborate with global peers during the International Geophysical Year (1957-58) on polar research (Kochhar, 2008).

It was not until 2007 that India launched its first scientific expedition in the Arctic to study the impact of climate change and global warming on sea ice, sea level change, and flora-fauna and to understand the connections between Arctic climate and Indian monsoons (PIB, 2011; MEA, 2013a). By 2008, India inaugurated the 'Himadri' research station at Ny-Alesund, Svalbard, Norway, for undertaking research in atmospheric sciences, glaciology, and biological sciences. The International Arctic Science Committee (IASC) Council elected India in 2012 (MEA, 2013a).

In the same year, India's application for Observer Status received widespread support from member countries due to India's contribution to Arctic studies. During the Arctic Council's Eighth Biennial Ministerial meeting in Kiruna, Norway, India was granted observer status to the Arctic Council on May 1, 2013[1] (MEA, 2013b). During this meeting, the Arctic Council gave observer status to four other Asian countries (China, Japan, Singapore, and South Korea). India has been working closely with the Arctic Council members. After being elected, India sought to focus on scientific work, engage with the indigenous population, and work closely on environmental issues. It was noted that science and policy and India's expertise in polar research due to its long association in the Antarctic could help develop effective partnerships for a 'safe, stable and secure Arctic' (PIB, 2021b).

Before India's election in 2007, India had undertaken about thirteen scientific expeditions to the Arctic and twenty-three scientific projects. Several Indian scientists have, over the years, participated in polar research. India and Norway have worked towards science exchange and cooperation in related fields. In 2014, the Norwegian Research Council and MoES signed an MoU, which resulted in a joint call for proposals and five Indo-Norwegian Polar Research projects (Norwegian Embassy). Indian and Norwegian institutions continue to partner in polar research, sponsor research projects, and student exchange programs.

India's Arctic Policy has come at a propitious time when the number of international Arctic research societies, committees, and expert bodies has been growing considerably. Indian institutions and scientists are active members of the Asian Forum for Polar Sciences.[2] The Indian Polar Research Network, a professional network of Indian early-career polar scientists from various disciplines of polar, alpine and cryosphere sciences, participates in the international Association for Early Career Polar Scientists (APECS) based out of Norway.[3] India is also one of the few members of the International Arctic Science Committee.[4] India's Arctic Policy only strengthens India's contributions to these groupings. With the clear delineation of missions and pillars, Indian researchers and policy analysts will join hands with their international partners in bodies they have been missing until now. This will only enhance India's track-2 and track-1.5 diplomatic status in the community of Arctic researchers working across various committees, bodies, and expert groups. These efforts are not devoid of measures carried out at track-1 diplomatic echelons.

Particularly after its election, India has been actively participating in meetings of senior Arctic officials and contributing to the six working groups of the Arctic Council. It has continued engagements with the Arctic Science Ministerial Meeting and the Task Forces. The Arctic Council renewed India's membership in 2019 for the next five years.[5] In May 2021, India participated in the Third Arctic Science Ministerial Meeting. It shared with the Council India's long-term plans and vision for research, capacity building, cooperation with stakeholders, and sustainable development in the Arctic through international cooperation (PIB, 2021b).

Regarding the Arctic as the 'common heritage of mankind,' India drafted its Arctic Policy eight years after being granted observer status. The policy resulted from wide-scale consultations with various stakeholders, including experts from several government ministries, academia, and think tanks. The Indian government placed the draft policy[6] in the public domain for review. After incorporating the feedback received on the draft and reviewing the policy, India's Arctic Policy was formally released by the Minister of Earth Sciences Dr. Jitendra Singh in New Delhi on March 17, 2022 (MEA, 2022).

India's Arctic Policy has been formulated in times of great need for international cooperation in sustainable development, mitigating climate change, and reducing the detrimental impact of economic activities on a planet whose poles, as the North and South, are highly

vulnerable. India realises that only through a constructive international partnership can a consensual geoeconomic presence in the Arctic, which minimally disturbs the frigid region's fragile integrity, can be maintained. India's this understanding reflects in its five Arctic missions enlisted in the policy.

Of the five, three missions (viz. "to enhance India's cooperation with the Arctic region," "to contribute to efforts to enhance humankind's understanding of the Arctic region," and "to strengthen international efforts on combating climate change and protection of the environment") are contributory to the ongoing international cooperation connected with the Arctic region. While two of these missions (viz. "to harmonise polar research with the third pole - the Himalayas" and "to advance the study and the understanding of the Arctic within India") are linked with India's inherent interests. Closer scrutiny of the five missions reveals the centrality of 'science diplomacy' in India's Arctic Policy.

The document furthermore also exhibits six pillars of the Arctic Policy, which include,

Pillar 1 - science and research,

Pillar 2 - climate and environmental protection,

Pillar 3 - economic and human development,

Pillar 4 - transportation and connectivity,

Pillar 5 - governance and international cooperation, and

Pillar 6 - national capacity building.

Although pillar 1 focuses entirely on scientific research and pillar 5 on diplomacy, the significance of 'science diplomacy' across all pillars is quite evident.

For instance, in the description of pillar 2, the policy document specifies the intent to collaborate with international partners of the Arctic Council's Short-Lived Climate Pollutants Expert Group. The group is known to study the management of black carbon, hydrofluorocarbons, methane, and tropospheric ozone. India's various scientific institutions, the Department of Science and Technology, the Department of Space, and the Ministry of Earth Sciences, has for long studied the impact of black carbon aerosols in escalating radiative forcing in the Himalayas. International collaboration was evident in such scientific projects[7].

Likewise, in pillar 3, India aims to explore collaborative opportunities for clean energy in the Arctic region. This pillar, again, has the backing of India's numerous bilateral and multilateral technological and economical collaborations in clean energy. These include the India-Sweden cooperation on Smart (energy) Grids[8], the US-India Strategic Clean Energy Partnership[9], the ongoing advanced discussions between India's Department of Science and Technology and Research Council of Norway on renewable energy[10], the India-Russia STI Cooperation in clean energy[11] or the India-Denmark Green Partnership[12]. This bilateral cooperation agreements can be extrapolated for joint research on clean energy deployment in the challenging Arctic region.

The sixth pillar of national capacity building has tremendous scope for 'science diplomacy. The scientific research

about the Arctic is multi-disciplinary, engaging meteorologists, geologists, geophysicists, naval technologists, energy technology researchers, marine botanists, chemists, zoologists, microbiologists, and geochemists, among others. With more excellent capacity building, Indian scientists will engage in numerous domain-specific scientific societies and working groups and carry out joint expeditions. Once a critical mass of scientists is surpassed, the Indian government will begin to fund large-scale and international scientific megaprojects. It is here essential to fathom that a robust Indian economy will open funding purses for Arctic research more decisively and consistently than ever before.

Unlike the policies of some non-Arctic nations, the document does not forcibly place India as a 'near-Arctic' nation. However, it focuses on a realistic 'climatic teleconnection' between the Arctic region and the Indian subcontinent and that our planet's Third Pole extends across the Himalayas.

India may be an observer in the Arctic Council, but it has not restrained itself from committing and delivering the cause of constructive science diplomacy. India's Ministry of Environment, Forests and Climate Change (MOEFCC) has contributed to the Arctic Migratory Birds Initiative (AMBI) of the Arctic Council's Conservation of Arctic Flora and Fauna Working Group.[13] The MOEFCC has facilitated research and conservation of migratory birds flying to India during northern winters.

India's efforts in the AMBI eventually resulted in the path-breaking Gandhinagar Declaration in February 2020, India's single-largest science diplomacy success since its observer status of the Arctic Council.[14] The Gandhinagar Declaration is an outcome of India's hosting of the Convention of Migratory Species under the 13th United Nations Environmental Programme Conference of the Parties (UNEP-COP-13) in Gandhinagar. The Declaration states effective action plans to prevent the taking, killing, and trade of migratory birds flying on the Asian, African, Eurasian, and American flyways. It also formulates ecological conservation measures applicable to the United Nations Environment Programme member countries.[15] The Gandhinagar Declaration is a testimony of India's prowess in extending scientific diplomacy from the Arctic Council to the United Nations and garnering more trustees to the cause of upkeeping the globally vital Arctic region's environmental integrity.

India's Arctic Policy is a pole star document that will guide in developing globally relevant policies at a time when economic progress and ecological integrity cannot be separated from each other. In the foreseeable future, the document will help India progress with its net-zero by 2070 commitments and its socio-economic goals at present and in the future. Yet, India's Arctic Policy is not, as Stephen Hawking would call, a 'coordinate singularity'. With more sophisticated knowledge about the Arctic and Antarctic regions gathered in the coming years, the policies for the polar regions will eventually evolve. With increasing interest in the Arctic, divergences among major Arctic Council members as well as demands for accommodating the interests of non-Arctic council states such as China may grow.

This evolution will demand revisions in the policy; therefore, even India, like any other country, does not know what lies north of the north pole. But India's Arctic Policy, as drafted, demonstrates it is ready to go together with the comity of nations.

Endnotes

1 See https://www. arctic- counci l.org/about/observers/republic-of-india/.

2 Details about the Asian Forum for Polar Sciences are available at https://afops.org/home/about.

3 More information available at https://www.apecs.is/who-we-are/national-committees.html.

4 See details at https://iasc.info/about/organisation/council.

5 Read https://timesofindia.indiatimes.com/india/india-re-elected-as-observer-to-arctic-council-research-to-get-big-boost-in-strategic-region/articleshow/69222186.cms.

6 See https://www.thehindu.com/news/national/india-to-expand-research-tourism-in-arctic/article33636563.ece.

7 See https://pib.gov.in PressRelease Iframe Page.aspx?PRID=1725060; https://www.sciencedirect.com/science/article/abs/pii/S0013935121013128.

8 For more information see https://dst.gov.in/sites/default/files/India-Sweden%2 Collaborative % 20Industrial % 20Research%20%26%20Development%20 Programme%202020%20on%20Smart%20 Grid%20.pdf.

9 See https://pib.gov.in/PressReleasePage.aspx?PRID=1753699.

10 Read https://www.businessworldin / article / India-Norway-Set-To-Discuss- Projects-On-Green-Energy/24-08-2022-443547/.

11 Details available at https://indianembassy-moscow.gov.in/gaining-momentum.php/.

12 Information at https://mea.gov.in/bilateral-documents.htm?dtl/35261/IndiaDenmark_Joint_Statement_during_the_Visit_of_Prime_Minister_to_Denmark#:~:text=The%20Green%20Strategic%20Partnership%2C%20established,cooperation%20between%20India%20and%20Denmark.

13 Details available at https://www.indiaperspectives.gov.in/en_US/india-at-the-arctic/.

14 More information available at https://www.indiaperspectives.gov.in/en_US/india-at-the-arctic/.

15 Details available at https://www.unep.org/news-and-stories/story/gandhinagar-declaration-welcoming-migratory-species-new-global-biodiversity.

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G20: Call for Papers

G20 is gaining importance as a global platform for articulation of economic, social and development issues, opportunities, concerns and challenges that the world is confronting now. Over the years, G20 has witnessed a significant broadening of its agenda into several facets of development. India is going to assume G20 presidency in 2022 which would be important not only for the country but also for other developing countries for meeting the Sustainable Development Goals and achieving an inclusive society. India can leverage this opportunity to help identify G20 the suitable priority areas of development and contribute to its rise as an effective global platform.

In that spirit, Research and Information System for Developing Countries (RIS), a leading policy research institution based in New Delhi, has launched a publication called G20 Digest to generate informed debate and promote research and dissemination on G20 and related issues. This bi-monthly publication covers short articles of 3000 to 4000 words covering policy perspectives, reflections on past and current commitments and proposals on various topics and sectors of interest to G20 countries and its possible ramifications on world economy along with interviews of important personalities and news commentaries.

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2. In-text referencing should be embedded in the anthropological style, for example '(Hirschman 1961)' or '(Lakshman 1989:125)' (Note: Page numbers in the text are necessary only if the cited portion is a direct quote). Footnotes are required, as per the discussions in the paper/article.

3. Use's' in '-ise' '-isation' words; e.g., 'civilise', 'organisation'. Use British spellings rather than American spellings. Thus, 'labour' not 'labor'. Use figures (rather than word) for quantities and exact measurements including per centages (2 per cent, 3 km, 36 years old, etc.). In general descriptions, numbers below 10 should be spelt out in words. Use fuller forms for numbers and dates— for example 1980-88, pp. 200-202 and pp. 178-84. Specific dates should be cited in the form June 2, 2004. Decades and centuries may be spelt out, for example 'the eighties', 'the twentieth century', etc.

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As part of its ongoing research studies on Science &Technology and Innovation (STI), RIS together with the National Institute of Advanced Studies (NIAS), Bengaluru is implementing a major project on Science Diplomacy, supported by the Department of Science and Technology. The programme was launched on 7 May 2018 at New Delhi. The Forum for Indian Science Diplomacy (FISD), under the RIS–NIAS Science Diplomacy Programme, envisages harnessing science diplomacy in areas of critical importance for national development and S&T cooperation.

The key objective of the FISD is to realise the potential of Science Diplomacy by various means, including Capacity building in science diplomacy, developing networks and Science diplomacy for strategic thinking. It aims to leverage the strengths and expertise of Indian Diaspora working in the field of S&T to help the nation meet its agenda in some select S&T sectors.

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