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Research Article

# India's Science Diplomacy in South Asia: Opportunities and Challenges

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## Abstract

In all global challenges such as climate change, pandemic, nuclear proliferation etc, scientific and technological cooperation is playing a vital role in addressing these multilateral problems. Recent years have witnessed the formidable presence of science, technology and innovation in international relations. In pursuant to this, Science Diplomacy is gaining remarkable attention in international relations and solving global problems. The EIR Of orum in European Union, e-ASIA JRP in South East Asia, African Scientific Institute in Africa and the Arctic Council in the Arctic region have promoted science diplomacy among the member countries while addressing the emerging global challenges. However, these efforts of scientific diplomacy and a comprehensive multilateral mechanism is a distant reality in South Asia. Despite the incongruities, India has taken up several steps - from launching the SAARC satellite to facilitating COVID Vaccine - to promote its science diplomacy in recent years. With the increasing GDP, India's R&D budget took a parallel upsurge from mere Rs. 5000 crore in 1995-96 to Rs. 1, 23,847.71 crore in 2018–19. However, its engagement in south asia raises more scepticism and denouncement. In this context, the present paper intended to analyse the evolution, nature and extent of science diplomacy in South Asia. Further, the paper aims to highlight India's science diplomacy programme in South Asia given its unique political settings and geostrategic implication in shaping South Asian cooperation.

***Keywords:*** India, Science Diplomacy, COVID19, South Asia, Research and Development, Science and Technology

## Introduction

Global concerns and challenges are increasing across the borders and posing a threat to both humans and the planet's ecosystem. These global issues and difficulties are linked to the globalisation of human activity on the one hand, and the human effect on the environment on the other. The international system faces severe governance issues as a result of both globalisation and anthropogenic concerns. The first issue is that state-driven governance leaves plenty of

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opportunity for global government. While global problems necessitate global solutions by definition, policymaking power remains primarily in the hands of nations. The second difficulty is that dealing with global concerns necessitates a thorough grasp of the topics at hand. However, because nations attempt to maintain as much control as possible over policy-making processes, the link between scientific knowledge and policy-making is not clear. Both of the aforementioned issues might be connected to the present multilateral system's structure. However, there is a growing trend toward a new Multilateralism Mode 2.0, in which governments allow more and more non-state entities to participate in global policymaking (Luk Van Langenhove, 2016). This provides S&T with additional possibilities to participate in the process of addressing contemporary global issues. Despite this, the science-policy connection has to be reinforced on a worldwide scale. One approach to achieve this is to establish a new type of science diplomacy that is led by the scientific community as well as the multilateral system, rather than by governments.

The countries of South Asia have a wide range of bilateral, regional and multilateral scientific cooperation to strengthen and improve national as well as regional research capacities, but science still plays a secondary role in policy formulation of any South Asian nation and foreign policy in particular. Despite all the multilateral initiatives, the region has been unable to take advantage of the benefits and opportunities that science and technology offers to facilitate common actions in the face of geopolitical or transnational challenges, effective international relations, and achieving shared development goals. This paper focuses on the past and present status of Science Diplomacy in South Asia. Before that it focuses on the conceptual framework of Science Diplomacy as it is still used as an umbrella term. It highlights existing science and technology agreements of India, its response to mitigate the menace of Covid 19, and geopolitical challenges. Paper then intends to identify areas that need improvement for the advancement of Science Diplomacy in South Asia as a part of the conclusion.

## Conceptualising Science Diplomacy

The term "science diplomacy" gained prominence in the early decade of the 21st century. It has characterised a number of activities that connect science, technology, and international relations. Science Diplomacy is a collection of instruments accessible to nation-states to use in their diplomatic operations to confront serious challenges to the international order and science-intensive nature. However, it concentrates on global concerns including climate change, environmental difficulties, and human health, the latter of which is represented by the COVID-19 pandemic. Science Diplomacy has the two-fold rationale of managing tensions between national interests and common interests on the one side; it is state-centric and global governance oriented on the other. The Royal Society in partnership with the American Association for the Advancement of Science (AAAS) released its report on Science Diplomacy in 2009. There are mainly three dimensions of Science Diplomacy (Society 2010):

- Science in diplomacy initiative aimed that informing foreign policy objectives with scientific advice ;
- Diplomacy for science initiative aimed at facilitating international science cooperation;
- Science for Diplomacy initiative aimed at using science cooperation to improve international relations between countries.

### *Science in Diplomacy*

The global world is increasingly facing issues like, health and food security, climate, pandemic infectious diseases which transcends national boundaries and are becoming a threat to

the whole of humanity as well as the planetary biosphere. These multilateral issues need scientific solutions and collaborative efforts from several countries. At many stages of development management, science played a part in diplomacy. From the Paris Climate Agreement to the ratification of the Sustainable Development Goals (SDGs), research has been instrumental in achieving far-fetched goals across countries. A tight interaction between scientists and policymakers is required for effective utilisation of scientific advice in diplomacy. It requires scientists to communicate their work in a wider policy context in an accessible and intelligible way.

***Diplomacy for Science***

Its goal is to make critical and strategic international collaboration between nations easier to cope with high-cost, high-complexity programmes and projects. It might be in the form of top-down strategic research goals or bottom-up collaboration between individual scientists and researchers. International collaboration is evident in initiatives such as the Large Hadron Collider (LHC) and the International Thermonuclear Experimental Reactor (ITER). Cooperation in Science and diplomacy was seen in many bilateral, regional and multilateral cooperation programmes.

***Science for Diplomacy***

Science for Diplomacy is the third dimension of Science Diplomacy. Harvard University Professor, Joseph Nye famously distinguished between hard power and soft power. Hard power is the use of military and economic means to influence other nations. During world wars, science was used in terms of hard power. Power when built on common interest, persuasion and influence is 'soft power' (Nye, 2004). Science for diplomacy is the concept of soft power.

## Science Diplomacy in South Asia: Bilateral, Regional and Multilateral

In the 21st century, the role of science, technology, and innovation (STI) has become a principal apparatus to balance the social, economic, technological and financial resources of any nation. From the perspective of South Asia, it is a diverse region of eight countries with different geography, population size, economic output and development process. Despite these differences, South Asia shares a long history for Science Diplomacy back to 1801 A.D. when the Peace and Friendship Treaty between Nepal and the East India Company allowed Scottis explorer Francis Buchanan- Hamiltion to collect 2500 plant and animal species from Nepal, out of which 1,100 were new to western science. Based on this collection, Proromus Florae Nepalensis' book was published by David Don in 1825 (Don et al., 1976). This was the first systematic scientific work in Nepal to be supported by a treaty, a pillar of Science Diplomacy.

Unfortunately, today, the context of science diplomacy in South Asia has been overwhelmed by geopolitical tensions, along with varied social and cultural complexities. Perhaps, a missing link and a lack of incentive mechanisms have created underutilized means of science diplomacy at the national, institutional, and individual levels particularly in South Asia. The present situation of science diplomacy in South Asia is not very pleasing, despite considering its long history. Both scientists and policy makers are not aware and active in improving science diplomacy in South Asia. They have neither learnt from their history nor from the success of Science Diplomacy in other countries.

Many regional organisations began to formulate after World War II to address socio, economic and political issues of the countries.. For instance, the Hague Congress in 1948 led to the establishment of European Union in the West, while Asian Relations Conference in 1947 led to the formation of SAARC. Comparing these two organisations on the research budget, the EU has announced a budget of 1.8 trillion euros for the next ten years, whereas SAARC has no

mechanism for research funding (Abbott &Schiermeier, 2019). SAARC on the other hand has failed to achieve its potential(Gurjar, 2017).

In South Asian countries there is hardly any mention of Science Diplomacy on their governmental websites of science and technology ministries, national science academies or foreign ministries. Only India has a forum of Science Diplomacy in South Asia (FISD, 2018). As of late, Pakistan started the Science Diplomacy Division in the Ministry of Foreign Affairs in collaboration with the Pakistan Academy of Sciences (Pakistan's Science Diplomacy Initiative). In Nepal, the significance of science discretion has been recognized all the more as of late, and the National Academy of Science and Technology and the Ministry of Education, Science, and Technology have started programs (AIDIA, 2017). Bilateral collaborations mostly focus on training S&T personnel, exchange of scientists, and joint research and development projects. Within the region, there are some bilateral Science, Technology, and Innovation (STI) cooperation agreements, including Nepal-India (1950), Sri Lanka-India (1975), Bangladesh-India (1982), and Pakistan-India (1983) (Ahmed et al., 2021).

India has committed to share its experience with the neighbouring states in the field of STI. It is doing this through capacity building programs and sharing its technologies with its neighbours to address the socio-economic needs. Furthermore, Science and technology will be essential in setting up economic and trade goals. In that Science Diplomacy will be an indispensable part of all multilateral and bilateral agreements.

## India's Space Diplomacy in South Asia

South Asia is one of the underdeveloped regions in satellite technology. Amongst 3372 artificial satellites launched worldwide, South Asian countries together have only contributed 110 satellites, that includes 101 satellites of India alone. Barring India, other South Asian countries have launched 9 satellites only (UCS Satellite Database, 2021). Moreover, the only satellites launched by Nepal, Bhutan and Srilanka were part of the UN's BIRDS project that helped the countries to launch their first satellite with the technical assistance from the Kyushu Institute of Technology. Most of the satellites were micro in size, symbolic in nature and have very small lifespan (Rajagopalan, 2010). In realising the needs, Indian Prime Minister asked the scientists of ISRO to develop a dedicated satellite for all South Asian neighbours to strengthen their communication and disaster management (Janardhanan& Ram, 2014). All the SAARC members, except Pakistan, welcomed India's initiative and offered full cooperation for the mission. Though Pakistan was keen to participate in this mission in the beginning, it opted out from the project due to ownership and security issues(Chaudhury, 2015). With the withdrawal of Islamabad from the project, the Satellite was renamed from SAARC to South Asian Satellite. After the approval of other SAARC members, ISRO built the 2,230-kg communications and meteorology satellite within three years of hard work at a cost of Rs 235 crore (450 crore). The satellite was launched on 5 May 2017 from the Satish Dhawan Space Centre in Sriharikota by its trusted and heaviest rocket, the Geo-Synchronous Satellite Launch Vehicle (GSLV). The satellite is providing telecommunication links among India, Nepal, Bhutan, Bangladesh, Maldives, Sri Lanka and Afghanistan and assisting the states to the areas of telecommunication and television broadcasting, tele-education, tele-medicine, disaster management and terrain and natural resources mapping. During its mission life of 12 years, the satellite will harness the benefit of Rs. 10,000 crore (USD 1.5 Billion) for the neighbours. Besties gifted satellite; India also nurtured the human resources of the neighbouring countries in space technology. India has signed multiple bilateral agreements with Bangladesh, Nepal, Bhutan, and Afghanistan to train its engineers in

space technology. Additionally, New Delhi also assisted Bhutan to launch its own satellite next year and their scientists in India (Khan, 2020).

As a gift to the neighbours, the mission itself is unique and unparalleled, which otherwise would have cost the participating nations almost $1,500m (£1,158m). Nowhere in the history, there is a reference of gifting of satellites by a regional technological powerhouse that has gifted a communications satellite to its neighbours. There are other consortia that jointly operate satellites, but those are all commercial, for-profit enterprises (Bagla, 2017). Being the only south asian power with orbital launch capability, India upholded its age old ethos of 'vasudhaivakutumbakam' (the world is a family) and promises to "share the fruits of technological advancement" with needy countries. India has been sharing meteorological data with 30 African States and assisting them in their disaster management efforts. The Prime Minister of India while dedicating the satellites further repeated that, "India's space programme is driven by service and not by desire of power" and India's space programme is an "important instrument of human progress" (PTI, 2016).

The unprecedented move by India to improve the communication of its South Asian neighbour draws much appreciation from the beneficial countries and worldwide. Applauding India's assistance, Sri Lankan president Maithripala Sirisena has expressed his hope that the satellite will help to uplift the economic and social standard of the people (Daily Mirror, 2017). Afghan Prime Minister Ashraf Ghani while thanking the Indian effort for improving satellite connectivity in the region stated, "If cooperation through land is not possible, we can be connected through space" (D.S., 2015). Similarly, Bangladesh, Nepal and Bhutan also thanked India for sharing its satellite services and training its human resources in space technology (Pandey, 2020). Maldivian President Yameen while complimenting India's 'Neighbourhood first' policy showed his gratitude to PM Modi and the people of India "for the very special gift to the South Asian region". Similarly, the Bhutanese Prime Minister Tobgay, calling it an "impressive milestone in regional cooperation" stated that, "The launch of the South Asia satellite is historic for the world as this is the first time a country has launched a satellite for the free use of its neighbours" (Haidar, 2017). Overall, the reaction of the South Asian countries was overwhelming and contributed to India's preexisting soft power in South Asia. It is also a right step to contain the growing chinese footprints in the region. While Bangladesh approached the European agency to launch its first satellite Bangabandhu-1 to balance Chinese and Indian influence, Pakistan and Sri Lanka have recently launched their satellites with chinese assistance. It also has reported that the other small neighbours Afghanistan, the Maldives and Nepal have discussed with Chinese space agency to launch their satellite (Hindu Editorial, 2017). In this regard, India's timely initiative was a game changer in regional geo-politics and upholded India's space diplomacy in South Asia.

| | **Name of the Country** | **Name of Space Agency** | **No. of Satellites** |
|---|---|---|---|
| | **Worldwide** | **UNOOSA** | **3372** |

| | | | |
|---|---|---|---|
| **Major Powers in Space Technology** | **Unite States(Haidar, 2017)** | **NASA** | **1897** |
| | **China** | **CNSA** | **451** |
| | **Japan** | **NASDA** | **196** |
| | **United Kingdom** | **UKSA** | **191** |
| | **Russia** | **ROSCOSMOS** | **176** |
| **South Asian Countries** | **Afghanistan** | | **0** |
| | **Bangladesh** | **SPARRSO** | **1** |
| | **Bhutan** | | **0** |
| | **India** | **ISRO** | **101** |
| | **Maldives** | | **0** |
| | **Nepal** | **NESARC**<br>**NAST** | **1** |
| | **Pakistan** | **SUPARCO** | **6** |
| | **Sri Lanka** | **SLASA** | **1** |

## India's Science Diplomacy in Disaster Management

Science Diplomacy in disaster management includes international cooperation in disaster response and mitigation. Often, experts consider disaster diplomacy as a part of science diplomacy. Since 1970, the number of natural disasters in this region has increased five-fold, amounting to more than 900 events with estimated losses of USD 80 Billion. People of this region have been victimised by periodical disasters including cyclones, droughts, earthquakes,

floods, landslides, and tsunamis. The menace of natural disaster affected more than 750 million between 1990 and 2008 resulting in almost 230,000 deaths. Flood, which counted for half of the total number of hazards, caused severe economic damages to the region, while droughts accounted for 2 per cent but that affected more than 50 per cent of the total number of affected victims. Due to the vulnerable geographical landscape, comprising the high Himalayas at the north and surrounded by seas at south, the region makes it susceptible to natural disasters. All the countries of South Asia are marked as the high disaster-prone states and continue to occupy high ranks in the World Risk index. In the recently published 2020 World Risk Report for instance, Bangladesh ranked as the thirteenth most risk-prone country of the world, while Afghanistan, Sri Lanka, Pakistan and India ranked 57, 74, 87, and 89 respectively. Irrespective of the vulnerability ranking, South Asia as a whole has been at the forefront of nature's fury and these rankings (World Risk Report, 2020) should not be misinterpreted to undermine the risk faced by these countries—particularly the poor—in the face of natural disaster .

India, being the major power of the region, has been responding first and offered necessary technical and relief assistance to mitigate the menace of climate change and disaster management. With the increasing materialistic, technical and military capacity, India always stood in each and every disaster affected state and sent man and machinery across the border in disaster management. As per the report published by Global Public Policy Institute, more than two-third of India's USD 1.32 billion humanitarian assistance goes to its South Asian neighbours.

In 2015, when a devastating earthquake of 7.9 magnitude shook Nepal killing at least 7,365 people and injuring about 14,355 citizens, India launched the biggest ever relief operation, 'Operation Maitri' and extended both financial and technical assistance at the time of the great human suffering.Besides pledging USD 1 billion financial aid, India mounted a mammoth rescue and relief effort by deploying its specialised men and machinery on ground. Subsequently, 16 teams of NDRF personnel, 18 teams of army engineering personnel and two full-fledged army field hospitals with 18 medical teams were dispatched to carry out the rescue operation (NDRF, 2005). Similarly, 32 air force flights delivered 520 tonnes of relief materials such as tents, blankets, medicines, cooking material, food, water, heavy engineering equipment, ambulances, RO plant, oxygen generators. Eight Mi-17 and five ALH helicopters of the Indian Army ferried more than 207 tonnes of relief materials, evacuated over 900 injured and transported over 1,700 stranded people of various nationalities (DESD, Annual Report, 2014).

Similarly, New Delhi extended unprecedented assistance towards its neighbours during the Indian Ocean tsunami on 26 December 2004. Most of the countries of the subcontinent were affected by the tsunami killing at least 225 thousand and wounding another 125,000 besides displacing approximately 1.74 million people. Being the victim of the disaster, India aggressively launched the humanitarian assistance programme in most of its affected neighbours. In Sri Lanka, India has deployed 14 ships, nearly 1000 military personnel and several dozen helicopters and airplanes in the relief and rescue operation in the island nation within weeks of the killer tsunami. Indian navy medical team arrived in Colombo within hours of the tsunami and set up several medical camps for the disaster victims. In addition New Delhi also pledged USD206 million as disaster relief aid for post-tsunami reconstruction projects in Sri Lanka (Lancaster, 2005). In Maldives, India deployed Naval Ships and helicopters within hours of the tsunami. Indian Navy ships INS Mysore, INS Udaygiri and INS Aditya arrived at Male with full

of relief materials. Since most of the ship had integral helicopter capability, it provided air support and medical evacuation for the affected people that saved several lives. Navy helicopters took more than 44 sorties and evacuated dozens of the people from outlying islands (Bhaskar, 2020).

While the impact of the tsunami is minimal in Bangladesh, India offered all possible help in relief and rescue operations. India also extended its cooperation in the relief and rescue operation in Bangladesh during the 1991 cyclone 2007 and 2007 cyclone 'Sidr'. During the 1991 cyclone, New Delhi sent relief materials such as medicine, foods, tents, and blankets worth USD 1 million to Bangladesh and provided 10 tons of rice to Bangladesh. It also deployed 6 Indian Air Force helicopters for relief and rescue operation in the cyclone-affected areas and sent a team of railway officials for the restoration of rail services (MEW, 2014).Following the cyclone 'Sidr', India sent necessary relief materials including 40,000 metric tons of rice, 1,000 metric tons of skimmed milk powder, medicines, tents, blankets, ready-to-eat meals, and portable water-purifiers to Bangladesh. Four Ships of Indian Navy, INS Gharial, INS Mahish, INS Cheetah and INS Kumbhir put in service to transport the relief materials to Chittagong port of Bangladesh. In addition, New Delhi also committed financial aid worth more than BDT 2.5 billion (USD 37 million) to carry out the reconstruction programme in the cyclone affected areas. Indian External Affairs Minister Shri Pranab Mukherjee, stated in MEA (2020) visited the cyclone-hit areas in December 2007 and expressed India's sympathy to the affected people of Bangladesh in their hour of need. India also engaged directly for the rehabilitation of ten worst cyclone-affected villages and constructed more than 2,800 core shelters in the affected villages in Bagerhat district in southern Bangladesh. Similarly, 2800 solar lamps have also been handed over to the beneficiaries of these core shelter houses.

India’s disaster assistance also extended to its arch rival Pakistan. New Delhi also pledged US$25 million to support Pakistani relief efforts (BBC, 2005). Similar gestures were shown during the 2010 flood and India extended financial aid of 25 million to assist the relief assistance in Pakistan (PTI/ Aug 31, 2010). India kept several medical teams and other relief workers on stand-by and nearly 400 Indian medical staff have been waiting for the Pakistan government's visa approval to help flood victims. During the 2014 Kashmir flood India also offered to send disaster response force and relief workers to assist the victims across the border. In addition to assisting in natural disasters, India also proposed to help Pakistan in eradicating polio, as it has done on their side of the border (Hindu, 2014, 2014). As per the experts, these gestures will ease the tensions and boost the level of cooperation between the two neighbours. Though the chance of lasting cooperation between India and Pakistan is apparently slim, India humanitarian assistance efforts towards its historic rivalry shows that, when it comes to humanitarian aid, it does not think twice before reaching out to the neighbours.

The time tested relationship between India and Maldives once again reached up to its potential during the recent water crisis in the island nation, and India went a step ahead to prove its loyalty to the friendly neighbour at the time of crisis. Following the fire incident in the only distillation plants of Maldives on December 4, 2014, India reached out to the Maldivian people and dispatched an Indian Air Force transport aircraft and naval vessels carrying a large consignment of water within hours of Maldivian request. Prime Minister Narendra Modi and External Affairs Minister Sushma Swaraj called the Maldivian President Abdulla Yameen and promised full assistance to the people and leadership of Maldives (TOI, 2014,

2014).Subsequently two more aircrafts IL-76 and C-17 arrived in Male on the same day with 110 tonnes of drinking water to meet the needs of the residents. In addition, Indian Navy's patrol vessel INS Sukanya carrying 35 tonnes of fresh water and two on board Reverse Osmosis (RO) plants producing 20 tonnes of fresh water per day arrived in Male and were put on operational round the clock to meet the water crisis. Apart from this, a large tanker vessel INS Deepak has also set sail from Mumbai with 1,000 tonnes of water. In addition to the carried contingent water, it was also capable of producing 100 tonnes of drinking water every day, which might add strength to the ongoing water drinking production. These ships will stay at Male harbour until the desalination treatment plant in Male has been repaired. India's quick and overwhelming response to Maldivian water crisis was well appreciated by the Male administration and helped to uphold the spirit of 'the close and time-tested ties', between India and Maldives.

Along with assisting disaster response across the border, India also provided technical help and enriched the disaster response preparation by training the manpower of the neighbouring states at bilateral and regional level. India, which has a sound satellite based early warning system has been providing the meteorological information and releases advisory to neighbouring countries (MEA India, 2017). India also offered to set up a dedicated SAARC Disaster Management Centre (SDMC) in new delhi and started functioning in the Gujarat Institute of Disaster Management Campus on a temporary basis. The multilateral body increased the intergovernmental coordinations and created a common forum in disaster cooperation. India also works towards capacity building measures, by training the disaster response forces and technicians through the SDMC to mitigate the menus of natural disasters. Similarly, India actively participates in the South Asian Annual Disaster Management Exercise (SAADMEx) periodically and shares its knowledge with other South Asian countries to manage natural disasters. India is also one the party to the 2011 SAARC Agreement on Rapid Response to Natural Disasters (SARRND) that sought to create a dedicated SAARC disaster management rapid action force (SDMRAF) force among others that failed to materialise even till date (SAARC, 2016).

Besides multilateral initiatives, India also engaged in bilateral cooperation in disaster management between most of the SAARC members. India and Bangladesh signed the bilateral agreement Disaster Management agreed to cooperate with each other in disaster preparedness and relief operations.

## Indian initiatives in Capacity building in Information Technology

### *ITEC Programme*

The government of India launched the Indian Technical and Economic Cooperation Programme (ITEC) as a bilateral assistance programme in 1964. It is the flagship initiative of the Indian government's technical cooperation effort, through which partner nations get support in manpower development in a variety of sectors. In 158 countries throughout the world, including Africa, the training programme is helping to build capacity and develop human resources. India's involvement and contribution to South-South Cooperation are shown through the ITEC initiative. The Indian government completely finances ITEC courses, as well as providing return flights and a small living allowance for the duration of the course. Under the Indian Technical and Economic Cooperation [ITEC] Scheme of the Government of India, the Republic of Maldives has been granted 25 seats for training of Maldivian civilians in 2013-14. At least three months

before the start of the relevant courses, duly filled application forms (in duplicate) should reach the High Commission via the Ministry of Foreign Affairs.

***TCS- Technical Cooperation Scheme***

Technical Cooperation Scheme (TCS) of Colombo Plan- The Government of India provides a comprehensive and integrated training to participants from 18 Colombo Plan member-countries with the goal of assisting them in improving their administrative and technical capabilities through human resource development through the Technical Cooperation Scheme (TCS) of Colombo Plan. Every year, over 410 trainees participate in over 200 courses at 42 different universities. The government of India pays for the trainees' travel, tuition, housing, and living expenses. Under the Technical Cooperation Scheme of the Colombo Plan for the year 2013-14, the Republic of Maldives has been allocated 5 slots for training of Maldivian citizens. At least three months before the start of the relevant courses, duly filled application forms (in duplicate) should reach the High Commission via the Ministry of Foreign Affairs.

**India's Educational and Scholastic Collaboration in South Asia**

South Asia as a region has an extremely low investment in research and development activities. Topographical vicinity and cultural bonds give a characteristic of close commonality between the South Asian Nations. Through different programmes and scholarships, India has fostered educational and cultural connections with SAARC members from the dawn of time. India and Srilanka have a long history of educational and cultural cooperation. People of India Origin (PIOS) who have lived in Srilanka helped the two countries to sign Cultural Cooperation Agreement for Cultural Exchange Program in 1977 in order to blend the culture and custom. The Government of India has provided a $15 million grant to help promote Buddist connection between the two countries. Another important area of partnership is education. Every year, India grants a number of scholarships to Srilankan students. Since 2017-18, Sri Lankan students have been allowed to take the National Eligibility cum Entrance Test (NEET) for dental and medical school admissions. IIT JEE (Advanced) entrance examinations have been held in Sri Lanka since 2017. India has suggested short and medium-term solutions through the Indian Technical and Economic Cooperation (ITEC) Scheme and the Colombo Plan. In a wide range of professional and technical fields, India has suggested short and medium-term education programmes.

The India-Bhutan Foundation strives to improve people-to-people cooperation in areas such as scientific and technological research, scientific and technological research, education, and culture. The Nehru-Wangchuck Cultural Centre, which is part of the Indian Council of Cultural Relations (ICCR), has also been instrumental in preserving cultural ties between Bhutan and India. The Ngultrum "complete solution" initiative in Bhutan, funded by India, aimed to assist the development of a knowledge-based Bhutanese society. A large number of Bhutanese students are enrolled in various courses in India. For many years, scholarships like the Nehru-WangchuckScholarships, Ambassador's Scholarship, Aid-to-Bhutan ICCR Scholarship, and ITEC Training Programme Scheme have aided in establishing bilateral educational connections.

The India-Afghanistan Foundation promotes cultural and people-to-people relationships. Through the ICCR and ITEC scholarships, as well as multilaterally funded programmes, India has increased educational and training possibilities. India announced one of the world's largest and longest-running capacity-building, education, and other programmes in Afghanistan, which will run for another five years from 2017 to 2022. India will have to look for new ways to grow its scholarship programmes in engineering, medicine, and management. Due to India's

restructuring programme for Afghanistan, it has made a concerted effort to take on plans and projects that would help the country rebuild.

India provided numerous scholarships every year to Nepali students in diverse courses and subjects. Many India-Nepal Friendship associations work to support India-Nepal mutual ties.

The relationship between India- Pakistan has long been strained. Education and cultural empowerment should be used to strive for a successful reconciliation between the two countries. Pakistan should seriously consider collaborating culturally and educationally with the SAARC organisation. From colonial times to the present, education and culture have been utilised to divide the people of the subcontinent. If soft power components can change the globe, they may also bring India and Pakistan closer together.

The Government of India inked a US$5.30 million deal with the Government of Maldives for a Technology Adoption Programme in the Education Sector, which has trained over 5000 Maldivian teachers and youth across the islands in IT skills. In terms of education and medical care, the Maldives continue to favour India. Maldivian students can also apply for SAARC Chair Fellowships, Medical Scholarships, ICCR Scholarships, and many more opportunities. Historical mosques in the Maldives, such as Fenfushi Mosque, Friday Mosque, and Dharumavantha Rasgefaanu Mosque, were rebuilt by Indian specialists.

Low literacy standards, inadequate school facilities, and poor educational quality, as well as a lack of excellence and access, high dropout rates, and limited financing, are all issues that the region faces. South Asia, the world's most densely populated geographical region, is home to one-fourth of the world's population. However, there is a significant educational disparity, as well as substantial unemployment. Education is a crucial foundation for the region's cultural, social, and economic development. The idea of collaboration in the education sector was first proposed at the SAARC summit, but little progress has been made in the previous few decades. The speed of progress has been slowed by fragmented policies and the dispersion of education objectives among numerous committees and sub-committees. Although there is a need to harness the area of open distance education, the most significant issue affecting the educational industry is the lack of execution. Proper education and training skills are required in this era of technology, artificial intelligence, a growing middle class, and a big young population. For the rising worldwide need in education, it is past time for SAARC countries to open up shared educational debates and collaborative methods. Education and culture, as soft power aspects, may lead to greater knowledge, wisdom, peace, and prosperity for nations. The region's kids, who are the region's future, should keep a positive attitude and seek to share their common interests. More educational and cultural partnership programmes are needed in order to strengthen diplomatic connections between countries. Cooperation in education aims to portray the parameters of education in such a way that knowledge is not limited to India's borders. The founding of the South Asian University in New Delhi represents a watershed moment in the SAARC region's cooperation. Similarly, the South Asian Foundation annually awards two scholarships to students from each SAARC member country to pursue further study at any of the UNESCO Madanjeet Institutions of Excellence.

For students from the SAARC area, India has always been a place of opportunity. However, starting 2017-18, India has experienced a decrease in entering students as more students flock to China to take advantage of the latter's soft power strategy of giving a huge number of scholarships. Taking this into account, the Government of India should increase the number of scholarships available, subsidise student fees, provide more appealing benefits, and strengthen

national knowledge network partnerships by holding regular discussions through the ICCR, the Ministry of Human Resource Development (HRD), and the Ministry of External Affairs (MEA). The potential of improved educational and cultural cooperation will be contingent on India's willingness to build a shared road vision for the SAARC area by promoting India's desire to become a regional power and limiting China's influence in the region. China, which is already facing blowback as a result of COVID, has been badly damaged in its soft power, with many overseas students fleeing the country. India should seek for stronger cultural and educational connections in the SAARC area at this time.

**India Science and Research Fellowship (ISRF)**

The purpose of the India Science and Research Fellowship is to give scientists and researchers from neighbouring countries such as Afghanistan, Bangladesh, Bhutan, Maldives, Myanmar, Nepal, Sri Lanka, and Thailand the opportunity to work in cutting-edge research areas across all major disciplines of science and technology, including engineering and medical sciences, at world-class research laboratories and academic institutions.

**India's Assistance in COVID Mitigation: From Rhetoric to Action**

The covid pandemic has placed a huge weight on the fledgling health infrastructure in South Asia. The South Asian countries are least prepared to face the challenges of the pandemic. According to the Global Health Security Index, South Asian nations except India (average score 46.5) and Bhutan (average score 40.2) all other countries in the region are below the average score of 40.2 (Global Health Index, 2019). Ensuring social distancing and isolation in the densely populated countries was really challenging. Its impact on the existing health system and economy was clearly felt. All the South Asian countries except Pakistan went for a total lockdown to contain the spread of COVID 19. Noteworthy, India's Science Diplomacy significantly contributed to the management of the COVID 19 crisis. India which prides itself as the 'Drug store of the world' was outfitted to give compassionate help by providing fundamental medications, ventilators and giving rapid action groups consisting of medical. It likewise provided vaccines to the quick neighborhood once they were prepared experts to help its neighbors as a first responder. Indian Prime Minister Narendra Modi accentuated India's developing international role in giving HADR has been a speciality of a country, and he said;

"We've always taken pleasure in being the first response in our community—a friend in need. Whether it's earthquakes, cyclones, or any other natural or man-made disaster, India has reacted quickly and with unity. We have provided medical and other support to over 150 nations in our united battle against COVID (MEA India, 2020)."

The Indian government stressed the relation between SAARC countries by proposing the creation of a COVID-19 Emergency Fund. The fund can be used by any of the partner countries to meet the cost of immediate actions and fight together the unprecedented challenge of the novel Coronavirus. There has been some assumption that India being the biggest economy in the South Asian region will revive the association. India offered ($10 million), Bangladesh ($1.5 million), Nepal ($1 million), Afghanistan ($1 million), Sri Lanka ($5 million), the Maldives ($200 thousand), and Bhutan ($100 thousand) donated to a voluntary Emergency Fund to be utilised by SAARC countries in the event of a shortage of basics (EconomicTimes, 2020). Pakistan has announced a $3 million donation to the COVID-19 Emergency Fund. Notwithstanding, Pakistan supports that all party commitments ought to be appended to the institutional techniques of SAARC, overseen by the Secretariat of the Institution, situated in Kathmandu, yet which has not yet settled the overall

guidelines for the utilization of the asset. India, then again, protects the utilization of the assets as a "self-sufficient crisis stage", staying outside of the schedule of exercises endorsed by SAARC (New Delhi fears that Pakistan may utilize the institutional component to limitation drives proposed by the country), which created differences between these two nations indeed. Essential medicines, antibiotics, medical consumables, COVID protection and testing kits, and other laboratory and hospital equipment are among India's humanitarian aid in the region. With the help of MEA, MoHFW, and our Missions, the SAARC Disaster Management Centre (Interim Unit) in Gandhinagar has created a dedicated website on Covid-19 (http://www.covid19-sdmc.org/) for SAARC nations to utilise. Subsequent to setting a prohibition on the export of basic medication, India before long needed to lift restrictions forced on 14 drugs, including paracetamol and HCQ in April 2020. In an explanation, representative of the Ministry of External Affairs, Mr Anurag Srivastava said, remembering the 'humanitarian aspect of the pandemic, it has been concluded that India would permit paracetamol and HCQ in suitable amounts to all our adjoining nations who are subject to our abilities'(MEA, 2020). India multiplied the creation of HCQ, the anti-malarial medication being used against COVID-19. India has provided medicines, on a grant and commercial basis, to 133 nations (446 million HCQ tablets and 1.54 billion paracetamol tablets) around the world. Numerous organizations went into the permitting consent to fabricate medications to satisfy the mounting need. On 12 November 2020, 18 organizations from South Africa, China, Bangladesh and 7 organizations from India consented to speed up the creation of vaccines for the lower-and middle income nations under the umbrella of the non-benefit Medicines Patent Pool (MPP)(Prasad, 2020).

Indian pharma sector is a significant supporter of India's wellbeing and furthermore, acquiring significant trade and contributing 1.5 per cent to the GDP. A considerable lot of them are sending out medication, gearing them to meet this remarkable challenge turned into a significant assignment. This required expanding their creation limit, putting together a virus chain to ship the COVID-19 antibody given their timeframe of realistic usability and explicit stockpiling prerequisite to store them turned into an impressive challenge at first. While the organizations stayed aware of the expanding request moving them at the short notice, the lockdown in a few nations expanded the transport cost. Along these lines, it was not surprising that the expense of medication was less than the expense of transport. India was in the forefront to provide essential medical supplies to the nations in need, particularly in the neighbourhood countries through the 'neighbourhood first' and the 'first responder to a crises'. India before Covid emerged as a major destination.

Before the flare-up of COVID-19, India arose as a significant objective for the well-being of health tourism, particularly individuals from adjoining nations, including Pakistan, for medical treatment. This mirrored the developing impression of the wellbeing area in drawing in sightseers and the top notch medical care offices, despite the fact that it was generally private, at a reasonable cost. Out of complete travelers showing up in India in 2019, 6.4% came for clinical treatment in India (GOI, 2020).

India has developed a 'SAARC COVID19 Information Exchange Platform (COINEX)' platform for use by all SAARC countries to facilitate exchange of specialized information and tools on COVID-19 among designated health professionals. Under the ITEC programme, India is providing e-training to healthcare personnel of the South Asian Countries. It has been conducted in collaboration with All India Institute of Medical Science (AIIMS) and Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh. Additionally, AIIMS New Delhi has independently held a progression of 3 video-conferencing meetings in May 2020 on COVID-19 for practicing medical experts in SAARC nations. AIIMS, Bhubaneswar also conducted training

programmes in Bengali in order to attract participants from Bangladesh. In the third phase of the vaccine trial, India also collaborated with the neighboring countries to conduct phase 2 and phase 3 vaccine trials. The primary phase of the 6-8 weeks training programme was to strengthen clinical trial research capacity. It was done by building various technical capacities of medical professionals and health care workers in the neighbouring countries. Investigators, epidemiologists, physicians, and representatives from Nepal, Maldives, Bangladesh, Mauritius, Sri Lanka, Bhutan, and Afghanistan took part in this training session (PIB, 2010).

India also intends to convene a conference of SAARC trade and industry ministers to discuss ways to mitigate the economic effects of the impending crisis. New Delhi also plans to revisit trade discussions with SAARC, since several nations are experiencing medical supply shortages and difficulty selling items to the world market as a result of importing countries' blocking tactics. Many countries, however, manufacture the same export items, making them worldwide rivals rather than forming a complementary value chain, making it difficult to revise trade agreements or encourage intra-SAARC commerce. The China factor is another roadblock to India's regional ambitions, as Beijing is a major trading partner for South Asian countries (contributing to the region's economic and commercial dynamism) and a supplier of hospital equipment, which could lead to an Indian regional leadership role in the shadow of China's presence. South Asia's connectivity issues continue to be a key roadblock to regional trade growth, preventing the SAARC Preferred Trade Agreement (SAPTA) and the South Asian Free Trade Area (SAFTA) from moving forward.

Following the epidemic, India has campaigned for the global availability of medicines through international collaboration and development partnerships. India, for example, ratified a United Nations resolution ensuring fair and equitable access to key medical supplies and vaccinations developed to combat COVID-19. India's current initiatives to export Hydroxychloroquine (HCQ) to afflicted nations throughout the world are based on the country's long medical diplomacy tradition. As part of its grant support to nations battling COVID-19, India has given 2.8 million HCQ pills to 25 countries and 1.9 million paracetamol tablets to another 31 countries, according to reports dated 30 April. Over the next several weeks, India is preparing to satisfy the demands of over a hundred countries. The cost of this diplomatic endeavour is estimated to be between INR 1.1 and 1.2 billion (NDTV, 2020).

India has shipped the HCQ tablets to Afghanistan, Bhutan, Bangladesh, Nepal, Maldives, Mauritius, Sri Lanka, and Myanmar, as part of its "neighbourhood first" strategy. In addition, Indian military medics have been deployed in Nepal and the Maldives to assist local authorities in responding to COVID-19.

The first delivery of 150,000 doses arrived in Bhutan four days after India launched the country's first vaccination campaign on 15 January 2021. Prime Minister LotayTshering, who praised India's help, described the campaign as "at best a demonstration of generosity," adding, "It is of inconceivable worth when good things are shared even before addressing your own needs, as opposed to giving away only when you have enough (PMO, 2020)."Bangladesh received 2 million doses, Nepal received 1 million doses, the Maldives received 100,000 doses, Myanmar received 1.5 million doses, and Sri Lanka received 500,000 doses. These vaccinations were part of a grant-in-aid programme. 'Putting neighbours first, putting people first!' India's External Affairs Minister tweeted. According to a source, India has committed 67.8 million dollars in aid to Nepal. A total of 39.3 million dollars in assistance has been delivered. Bangladesh has received 36.1 million dollars in aid out of a total promise of 39.7 million dollars. Afghanistan was promised $22.3 million in help, but just 2.9 million has been delivered thus far (The Week, 2020).On March 25, 2020, the first

shipment of Indian emergency medical aid to Bangladesh was delivered, comprising 30,000 surgical masks and 15,000 headcovers. On April 26, 2020, the second consignment of 50,000 sterile surgical latex gloves and 100,000 HCQ medicine pills arrived from India. The third tranche, which was released on May 6, 2020, included 30,000 RT-PCR COVID-19 test units. Bangladesh signed a contract with the Serum Institute of India in November to buy 30 million parts of Covid vaccines made by AstraZeneca, a British pharmaceutical company. In April 2020, the Indian government sent the Sri Lankan government around 13 tonnes of critical medications in response to their request. In addition, a second and third shipment of gloves, as well as life-saving medications and medical gloves, were provided. A special Indian aeroplane brought the fourth batch of 12.5 tonnes of medications and equipment on May 8, 2020. In April 2020, India provided 825,000 doses of essential medications to Nepal, including 250,000 doses of HCQ and 320,000 doses of paracetamol, as well as other medical supplies. Indian Government sent around 13 tonnes of essential medicines as a consignment, as per the request by the Sri Lankan government in April 2020. In addition to the first consignment, second and third gloves, as well as life-saving medicines were provided. A special Indian flight delivered the fourth consignment of 12.5 tonnes of medications and necessary medical equipment on May 8, 2020. Likewise, in April 2020, India sent 825,000 doses of essential medicines to Nepal, including 250,000 doses of HCQ and 320,000 doses of paracetamol, as well as other medical supplies. In the month of May, Nepal got another shipment of 30,000 PCR kits and 28 Intensive Care Unit (ICU) ventilators. 2,000 vials of Remdesivir injections were provided as a gift during the unfamiliar Secretary's visit to Kathmandu. Since 1994, India has donated around 823 ambulances, with three types of ambulances being supplied in 2021: Advanced Life Support, Basic Life Support, and Common Life Support ambulances. India also promised to provide Nepal with COVID-19 vaccinations, as a response to the country's first worry from its neighbours. Following the acceptance of the vaccine inventory, Nepal Prime Minister K. P. Oli extended thanks to India for its kind assistance. Taking Science Diplomacy further, India signed an MoU with Maldives to provide grant assistance of 6,014,971MVR to construct a Drug-Detox centre and community centre in S. Hulhudhoo (Mohamed, 2019). Not only did India send a 14-member COVID-19 Rapid Response team of doctors and specialists to the Maldives, but the Indian Air Force also lifted medication worth 11.7 tonnes under the Sanjeevani operation (PIB, 2020). In addition India provided 580 tonnes of food aid, and lifted import restrictions on clinical consumables, respiratory devices, and testing equipment for Maldives (High Commission of India Male, 2020). 500 Seriously ill patients were allowed to visit India for medical treatment. In Sep 2020, India provided financial assistance of $250 million in the form of treasury bonds to the Government of Maldives to combat the economic difficulties faced by the novel coronavirus (MFA Maldives, 2020). Bhutan also received three consignments of medical supplies including 200,000 HCQ tablets from India.

India gave consent to its neighboring countries in order to coproduce vaccines and collaborate on vaccination studies. India is also enhancing its soft power approach to the rest of South Asia by making its medical and public-health knowledge available. Initial period of 6 to 8 weeks training programme was made to strengthen clinical trial research capability by developing diverse specialised capabilities among medical professionals and health care workers.Representatives from the field of epidemiology, clinicians, investigating background, participated in the training programme from most South Asian countries.

## Challenges and Way Forward

In spite of the fact that it would be deceiving to assume that SAARC would continue its dynamic stage, as India has been working on fortifying BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) and combining the idea of the Indo-Pacific all through its extended neighbouring region, regional efforts could lead SAARC back to the local game once more. In any case, numerous difficulties will come and provincial reengagement would not occur in a brief timeframe. The outcomes of an expected deterioration of COVID-19 appear, nonetheless, (in spite of the fact that with extraordinary trouble) to potentially assist Pakistan and India with conciliating current regional strains. However, only after the arrival of some sort of ordinariness, we will actually want to check whether the pandemic was an exogenous factor fit for surviving (for a moment) historical conflicts that mark South Asia's international relations.

Accordingly, contemplating a profound re-engagement of SAARC is still a long way from the real world. Regardless, local responsibility endeavors against COVID-19 in South Asia set an improving illustration of a regional reaction case, initiatives and know-how, which could lead SAARC to an institutional restoration before very long, relies upon how India and Pakistan can keep their disparities aside to conquer a more prominent issue. Despite the fact that the consequences of this regional behaviour could likewise design another regional format, in view of SAARC - 1 (Pakistan) or even SAARC +1 (China), taking into account that a few nations are included in the Belt and Road Initiative (BRI) project. Presumably, the world politics will change after COVID-19, yet solely after the pandemic has passed can we check whether SAARC's endeavour to exhibit to the world that a regional coordination of policies because of Covid flare-up can be fruitful in South Asia.

There is a vast amount of misinformation or “infodemic” being spread during COVID19. This includes stories playing down the severity of the disease, conspiracy theories, and other false affirmations for example drinking hot water during COVID19 (Minar&Naher, 2018; Rodrigues & Xu, 2020). However, this Infodemic is universal and has a more severe effect in the majority of the regions of South Asia. The reason for that is people in South Asia are low literate and lack critical evaluation skills. Secondly, most South Asian nations' governments do not have strong policies to avoid propagation of such information. Even the Information Technology Act, 2000 in India has limited regulatory measures against such misinformation. Thirdly, there is a lack of technical experts in this region, making it difficult to track the intensity of misinformation (Tasnim, Hossain, &Mazumder, 2020). In addition to this, the vast majority of people in this area are religious. Misinformation takes the upper hand over people by appealing to their strong beliefs or community identity, making it even more difficult to contain. It is the responsibility of the government, technology experts and scientists to reduce the spread of infodemic (Horton, 2020). The South Asian countries should engage in Science Diplomacy for combined policy formulations by passing stringent laws, software development, creating awareness amongst people against the spread of misinformation. The mindsets of scientists and policy makers in South Asia need to be changed. Some scientists are progressive about peace building in the region but because of a long history of conservative social, political and cultural mindsets, they are often judged as anti-nationals by their own peers.

South Asian governments need to develop priority areas for Science Diplomacy in the region. They can develop regional funding bodies similar to the EU flagship Horizon program to promote joint scientific research on regional challenges (EU, Horizon, 2017). Establish more Science Diplomacy forums for independent functioning with consultation from the Ministry of External Affairs. More Science Diplomacy workshops, national and international seminars can be conducted with quick and easy visa access in the region to attend such conferences and collaborate on projects. Simulation workshop where scientists can participate in the diplomatic roles of the country in terms of policy formulation and collaboration. Young scientists can play a key role in bridging the gap between science and diplomacy. They can expand their personal and professional skills by collaborating with the governments and policy makers so that science diplomacy can be embedded in national policies and plans. Various social media campaigns in different languages and cultures can augment Science Diplomacy in the region.

## Conclusion

Government officials in the region have so far not guaranteed adequate participation and joint effort among their nations of origin. Science diplomacy can possibly assume an important part in improving international relations as scientists are natural consensus builders. They are mostly driven by evidence, respected, and trying to serve mankind across borders. South Asian scientific communities from each of the eight nations should take part in Science Diplomacy to build bridges among communities, social orders, and countries and lift the job of science in foreign policy to address national and regional challenges. Now one of the significant ways forward is to create a culture of trust and shared values between the scientists, public and decision-makers, to understand multiple perspectives of all citizens including the marginalized section. Reinforcing the information and communication by the scientists, providing them with the truth to the public regardless of communications and decisions coming from the government. The only hope is that the current political tensions at the national and the global level arising from the pandemic will not deteriorate the science advisory ecosystem and a stronger science-policy-society interface at the global level.

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