Report on

PROMOTING INDIA-VIETNAM COOPERATION IN SCIENCE, TECHNOLOGY AND INNOVATION (STI): PERSPECTIVES AND PROSPECTS

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New Delhi

RIS
Research and Information System for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

Embassy of Vietnam
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Introduction

India and Vietnam traditionally share close and cordial bilateral relations. A "Comprehensive Strategic Partnership" between the two countries rests on strong foundations of trade, economic and political ties. The bilateral trade between the two countries has crossed US$ 10 billion and India's overall investments in Vietnam are estimated at around US$ 2 billion spanning areas like energy, mineral exploration, agro-processing, sugar, tea, coffee manufacturing, agro-chemicals, IT and auto components. The two countries also share a longstanding development partnership with Vietnam being one of the largest participants in training programs under the Indian Technical and Economic Cooperation (ITEC) Programme. Cooperation in science and technology constitutes an important area of India-Vietnam partnership. The two countries have signed several agreements including the "Exploration and Uses of Outer Space for Peaceful Purposes, IT Cooperation, Cybersecurity", and the "Framework Agreement on Uses of Atomic Energy for Peaceful Purposes". The Programme of Cooperation (POC) in Science and Technology covers wide-ranging areas such as biotechnology, material sciences, ICT, ocean development, pharmaceuticals and medical research, etc. In 2016, the two countries signed an MoU on Information Technology and are working to set up a Centre for Satellite Tracking and Data Reception and an Imaging facility in Vietnam under ASEAN-India Cooperation mechanism. The Joint Committee on Science and Technology meets periodically to review the progress made in cooperation in Science and Technology.

In recent years, there has been a significant increase in the number of exchanges between universities and scientific research institutions of the two countries. There is however a vast untapped potential for STI-related cooperation especially in the wake of ongoing COVID-19 pandemic, which underscores the pressing need for countries to elevate science, technology and innovation (STI) cooperation in both policy and practical terms. In this backdrop, RIS, in partnership with Overseas Office for Science &

Technology of Vietnam (VOOST, India) organized a Webinar on the theme, "Promoting India-Vietnam Cooperation in Science, Technology and Innovation (STI): Perspectives and Prospects" on 24th June 2020.[1] The webinar discussed several new sectors/areas to take forward bilateral STI cooperation and to identify new policy pathways/mechanisms to promote greater cooperation in science, technology and innovation between the two countries. The inaugural session of the webinar was co-chaired by H.E. Mr Pham Sanh Chau, Ambassador of Vietnam to India and Mr Pranay Verma, Ambassador of India to Vietnam. Prof. Sachin Chaturvedi, DG, RIS opened the webinar and underlined the need for fostering bilateral cooperation in the field on science, technology and innovation (STI). Highlighting the RIS work program on 'Science Diplomacy' supported by India's Ministry of Science and Technology (DST), Prof. Chaturvedi noted that S&T is cooperation is critical for development cooperation strategies with partnering countries. Stressing the need for promoting bilateral cooperation in various new and emerging technologies, he also referred to understanding the modalities of engagement and institutional architecture between India and Vietnam.

_STI Cooperation: Perspectives from India & Vietnam

H. E. Mr Pham Sanh Chau, Ambassador of Vietnam to India

Ambassador of Vietnam to India, H. E. Mr Pham Sanh Chau in his address noted that the webinar on science and technology cooperation is a welcome initiative in the light of growing cooperation and trade and economic ties between the two countries. Highlighting the importance of STI related cooperation between India and Vietnam, Ambassador Chau noted that the key lesson of COVID-19 pandemic is that issues such as environment and climate cannot be neglected and we need strong cooperation in science, technology, and innovation to address the economic downsides of COVID-19 pandemic. Furthermore, the transition towards industry 4.0 enabled rapid advances in digital and

[1] The concept note and agenda of the meeting can be accessed on the following link: URL: https://www.ris.org.in/webinar-promoting-india-vietnam-cooperation-science-technology-and-innovation-sti-perspectives-and.

manufacturing technologies and makes the role of technology and innovation more prominent than ever. In his context, the Government of Vietnam recently adopted a new strategy on Science, Technology, and Innovation (STI) and concurrently Vietnam's Ministry of Science and Technology also published the first-ever paper on Science Diplomacy.

Unlike other traditional forms of diplomacy, science diplomacy is unique and can be seen as a sub-set of economic diplomacy. Recognising the significance of science, Vietnam has stepped-up the engagement with organizations like UNESCO with a focus on promoting gender balance in national S&T endeavours. S&T cooperation is one of the 5 pillars of 'Comprehensive Strategic Partnership' between Vietnam and India; four others being political; economic & trade; defence & security, and people-to-people relations. As many as 25 overseas Vietnamese missions have been dealing with STI related cooperation and there is a separate division in Vietnam which deals with science and technology-related cooperation. Over the years, India and Vietnam have worked on several joint projects and signed many agreements including the framework agreement on the peaceful use of atomic energy, cyber-security, the programme of cooperation in science & technology, MoUs for exchange of scholars, etc.

The exchange of scholars and scientists between India and Vietnam however remains much lower than expectations. As the intensity of COVID-19 pandemic recedes, the two countries need to expand cooperation in a wide range of areas including renewable energy, etc. First, India and Vietnam traditionally worked in areas like agro-industry, processing, harvesting technologies, etc. India transferred several Green Revolution and While Revolution technologies to Vietnam in the past, and cooperation in this area needs to grow significantly. Second, cooperation in digital technologies is important for Vietnam. India has a significant advantage in this area, especially on services. Third, medicines, pharmaceuticals, are some of the areas where India enjoys a significant comparative advantage. Finally, climate change and environment protection also needs attention in bilateral STI cooperation. Given India's advantages in many areas, we need to foster the exchange of scholars and scientists from both sides to promote joint research, undertake more projects, and mobilize funds through both bilateral and multilateral funding frameworks like ASEAN and ASEAN-India. In conclusion, he was optimistic about promoting STI cooperation between the two countries and said that the Vietnam Embassy in New Delhi is fully committed to taking bilateral cooperation to new heights.

H. E. Mr Pranay Verma, Ambassador of India to Vietnam

Ambassador of India to Vietnam, Shri Pranay Verma said that it was commendable that RIS has taken this initiative to organize this webinar with support from Ambassador Pham Sanh Chau, to bring a new focus on science diplomacy between India and Vietnam. Science and technology have always been an important part of India's external outreach with several Indian Embassies having designated officials to handle S&T cooperation. S&T cooperation continues to remain an important theme in India's engagement with Vietnam. As part of the bilateral Comprehensive Strategic Partnership with Vietnam launched in 2016, science and technology have been identified as one of its five pillars. The focus under the Comprehensive Strategic Partnership framework is to diversify engagement with Vietnam in various areas that are important for national development. As aspirational societies endowed with youthful demographies, S&T cooperation between India and Vietnam has a crucial role in supporting each other's national development, of which India and Vietnam have a long tradition. S&T cooperation would continue to find an important place in the emerging landscape of bilateral engagement.

S&T cooperation between India and Vietnam has evolved through a long-existing framework agreement. S&T keeps appearing in its various avatars with sectoral focus in those engagements. The framework agreement on S&T was signed in 1976 and renewed in 1996 and then there have been several renewals of programmes of cooperation under that arrangement. Under those programmes, the two countries have identified several specific areas of cooperation and have gradually moved into more advanced aspects of S&T. In certain specific areas and sectors, there have been real success stories of S&T partnership. For example, the engagement in agriculture led to the establishment of the Cuu Long Rice Research Centre in Can Tho in the southern part of Vietnam in 1976 and then the Buffalo and Forage Research Centre in Ho Chi Minh City established in 1978 have been great examples of early bilateral engagements with Vietnam with a distinct focus on applied S&T as a tool for socio-economic development.

In the next phase of bilateral partnership, India extended several lines of credit which played a very important role in promoting technology-based sectors of Vietnam, such as railways, textiles, hydropower and steel. These are some fine examples of the usefulness of India's development partnership for Vietnam's national development. Some of the current captains, for example, of Vietnam's textile industry are companies which started their industrial journeys benefitting from the Indian lines of credit. In specific areas like the peaceful use of atomic energy and outer space, the framework agreement was concluded in

2016. These agreements highlight that modern S&T applications remain a priority in India's bilateral engagement with Vietnam. Vietnam was among the first countries with which India signed an intergovernmental agreement in peaceful uses of atomic energy, much before India's civil nuclear agreement with many other countries came up.

In the current phase, defence industrial cooperation with distinct S&T focus has emerged as an important area of the Comprehensive Strategic Partnership. The defence lines of credit are not just about providing defence supplies to Vietnam for its needs, but they are also about helping Vietnam in producing some of them in Vietnam, which contributes significantly to Vietnam's manufacturing capabilities. In the oil, gas and energy sector, the presence of Indian energy company OVL, in Vietnam since the 1980s is an example of how technology has welded the partnership in key sectors. In the new era, Indian companies are showing interest in investing in Vietnam's renewable energy sector, which is among the emerging areas of cooperation and which hopefully will continue to grow. He pointed out the advantages of having an applied, sectoral focus of science and technology in collaborations across wide-ranging verticals. Such sectoral and applied focus of S&T would help grow bilateral cooperation in a much more purposive and targeted manner, which is being seen in some key cooperation areas.

Promoting innovation and enhancing capabilities of Indian and Vietnamese enterprises, particularly to enable them to become part of global value chains, should be an important focus for moving forward in S&T cooperation. RIS and DST could consider that as an important objective and purpose of the strategies proposed for future S&T engagement. Among the potential areas of cooperation, agriculture should continue to be an area of interest While India has contributed to Vietnam's agricultural development over the years, today there is a lot that India can learn from Vietnam, given its impressive growth in agricultural productivity. Vietnam's success in integrating agriculture research with agricultural production, industry and marketing would be valuable for India. Some of the areas suggested by Ambassador Sanh Chau for future S&T partnership, such as biotechnology, material science, pharmaceuticals, Industry 4.0 are extremely important. He would also add oceanology to that. As two great maritime countries, oceanology is an area of interest to both sides. India's Indo-Pacific Ocean's Initiative (IPOI), which was launched by Prime Minister Narendra Modi at East Asia Summit in Bangkok last year, has a major S & T focus among several verticals of IPOI where oceanology is at the centre. So, whether it is maritime resources, maritime ecology, maritime capacity building, or maritime science and technology, all these areas

can be brought under the framework of oceanography and oceanology and two sides should look at this in a more meaningful way.

Healthcare sector is another area that needs attention. COVID has posed a new and unprecedented challenge for everyone and there is great scope for scientists from the two sides to work together – not only to control the pandemic but also to find solutions for it. Vietnam's success in managing the COVID pandemic makes it an ideal partner for such collaboration. Application of ICT in the healthcare sector, as well as pharmaceuticals, are also related areas where India is working with Vietnam not just as a trading partner, but also in building Vietnam's capacities. For example, India has been associated with a telemedicine healthcare project in Vietnam's Hai Phong Medical University under the cooperation framework of IBSA (India, Brazil and South Africa), and very positive feedback has been received about the role this project has played during COVID-19 pandemic. These are examples of a very action-oriented practical cooperation under the rubric of science and technology that should be promoted.

India is closely working with Vietnam in capacity building programmes. Again, there is a broader technology focus in many of them. For example, for India's e-ITEC programme that was launched in 2019, Vietnam was chosen from among a small group of four countries to introduce some new-era S&T courses through remote links. India has a long-standing partnership with Vietnam under the ITEC cooperation framework. The e-ITEC programme launched last year, even before the COVID pandemic, with the use of remote links proved to be an excellent medium to reach a target audience using platforms of online/distance learning between universities which are centres of excellence on both sides. In this case, IIT Madras from India and Vietnam National University in Hanoi partnered in this e-ITEC programme. The first course covered areas like data analytics; big data etc. which are cutting-edge subject matters. Similarly, India has recently offered one thousand post-doctoral fellowships in Indian IITs for ASEAN students, and there is a strong increase in the number of participants from Vietnam.

In the ICT sector, some of the leading enterprises in the Indian IT sector have been present in Vietnam for some time and are building local capacities in areas such as software development etc. Some other Indian IT companies are also exploring new investments in Vietnam. There is increasing attention from Vietnamese provinces in reaching out to India for collaboration in smart city development, an area where India has its own focus. There may be scope for the two sides to pool in their resources and knowledge in this emerging sector. Start-ups also offer both sides a platform to engage in mutually beneficial

cooperation. There is a very vibrant start-up community in Vietnam just as in India, but as yet there are not enough linkages between them. They need to be brought in closer contact with each other. Some areas where start-ups could explore cooperation include Fintech, IT-enabled services, innovation, healthcare applications etc. In conclusion, Amb Verma taking stock of the level of S&T-oriented cooperation focused on different technologies, their applications as well capacity building programmes centred on them, said that there is so much that is already being done. At the same time, there is still ample scope for expanding cooperation to newer areas of S&T that have a focus in national development. What is needed is to structure them and connect them under a more action-oriented, target-driven and outcome-generating collaboration rubric.

Opportunities for India-Vietnam STI Cooperation

Dr Sanjeev Varshney, Head, Int. Cooperation, Ministry of S&T, Government of India

Dr Sanjeev Varshney, who is a Head & Advisor, International Bilateral Cooperation Division (IBCD), at the Ministry of Science and Technology informed that DST is in the process of drafting a new science, technology and innovation (STI) policy. Science diplomacy is one of the important tracks of this policy and DST is keen to know how partner countries perceive India's policy and what India can learn from their experience. Apart from bilateral engagements, the DST is also engaging with Vietnam through regional platforms like ASEAN-India S&T initiative. DST is giving several fellowships and research grants. DST is training Vietnamese researchers in Grassroots Innovation, and a total of 14 Vietnamese scientists participated in the programme. The Council of Industrial Research had hosted several biotechnologists from Vietnam while the DST has announced many research and training fellowships for the ASEAN countries, which is currently open and it is hoped to have many more Vietnamese scientists coming to India next year. The ITEC programme of MEA is also ideal for scholarly exchanges. India and Vietnam have shared a long history of bilateral cooperation starting from the 1970s. Some of the successful projects include collaborations in leather and tannery research; propagation of neem tree, development and production of seed oil, microprocessor-based telecommunications, exploration of non-living resources, exclusive economic zones, integrated coastal management, etc. In recent times, however, the programme has become dormant. The ideas provided by Ambassador San Chau and Ambassador Verma are highly relevant in this regard, and it is necessary to revive and take forward bilateral cooperation in this regard.

Prof Le Van Toan,
Center for Indian Studies, Ho Chi Minh National Academy of Politics

Prof Le Van Toan, Chairman of Scientific Council, Center for Indian Studies laid out the reasons for India and Vietnam cooperation in the field of humanities and social sciences. He noted that cooperation and scholarly exchange in social sciences and humanities has facilitated political relations, trust and mutual respect. The early exchange goes over 2000 years with the arrival of Buddhism, which came to Vietnam which was followed by the arrival of Hinduism and both leaving an indelible mark on Vietnamese culture and traditions. In more recent times, Vietnamese revolutionary leader Ho Chi Minh and Indian Prime Minister Nehru laid the foundations for strong bilateral ties. The cooperation in political sciences and humanities has led to building trust, mutual understanding and cooperation in sectors like agriculture, animal husbandry, energy, technology, etc. Since 1960, India and Vietnam have cooperated in agriculture and animal husbandry. In recent times, the emphasis has mostly been on energy, technology, defence, education, and training. India's position has greatly improved in global technology rankings. There has been a significant adjustment in Indian policies in the light of COVID and India-China crises. These include Prime Minister Modi call for self-reliance to reduce the reliance on globalization. India is trying to reduce the trade deficit with China; taking proactive measures in Kashmir issue, and also taking a tough stance on China's aggression on the border. India has raised duties and banned several Chinese mobile phones apps. Since Prime Minister Modi came to power, India has increased engagements with countries like Australia, Japan and also Vietnam as part of the quadrilateral arrangement (QUAD). An increased understanding in sciences would enable India and Vietnam to create trust and foster cooperation in science, technology and innovation. Collaboration in the field of social sciences is crucial for increased collaboration in the field of science, technology, and innovation (STI).

Covid-19 & Prospects for India and Vietnam Cooperation

Mr Arvind Gupta, Founder iSPiRT & Digital India Foundation

Mr Arvind Gupta, Founder iSPiRT & Digital India Foundation spoke of the Silicon Valley of digital governance which is widely used in many developed countries. India, however, needs its model based on a bottom-up developmental approach. Given the large section of middle and lower-middle-income families in both India and Vietnam, the two countries have a huge potential in digital technology cooperation. India's experience in the development of the start-up ecosystem is highly relevant for many developing countries. India created a public goods infrastructure in the form of Digital Identity stack called or Aadhar. The identify stack has helped the country foster digital public goods, promote start-up ecosystem and addressed a range of societal

challenges. Using the digital identity stack, India developed a unique system called 'unified payments interface (UPI). This infrastructure is available for every citizen to use. Aadhar is a digitally verified system which can be used in multiple areas. Aadhar enabled wider financial inclusion by providing a bank account to every citizen. The net result was the opening up of more than 10 million accounts which are actively used by customers as envisioned by Prime Minister Modi. The direct benefit transfer system is based on Adhar enabled banking network. The Jan Dhan, Addhar and mobile (JAM) trinity has helped the country to provide targeted assistance and to address leakages in the public delivery system. More importantly, the integration of Aadhar with Arogya Setu application enabled in contact tracing during COVID-19 outbreak. The creation of digital infrastructure, therefore, marks an important innovation including use of S&T for effective governance. Aadhar is an important 'made in India' platform developed entirely within the country in public-private partnership mode.

Dr. Le Thi Hang Nga,
Vietnam Institute of Indian
and Southwest Asian Studies

Dr Le Thi Hang Nga in her presentation talked about India not only as a land of religion and philosophy but also the land of science and technology. Taking about ancient India's prowess in science and technology, renowned physicist Albert Einstein, once said, that world owes much to the ancient Indians who taught us the ability to count. Ancient India was a land of scholars and seers who contributed to science and technology and some of the Indian contributions such as metallurgy, medicines have been time-tested. Contributions from ancient India like the introduction of 'zero'; decimal system, and 'Sushruta Samhita' have been highly valuable. In the 1780s, Tipu Sultan, the Sultan of Mysore used the world's first iron-cased rockets. The modern science in India today is marked by its satellite rockets. Indian city Bangalore is called as second Silicon Valley with the presence of over 100 multinational companies (MNCs). Vietnam too had made progress in S&T. In 2019, Vietnam celebrated its 60 years of S&T formulation and development. Vietnam currently has over 4000 S&T organisations, 3 national hi-tech parks, 13 hi-tech agricultural zones, eight concentrated information technology parks, and nearly 67000 scientists.

The country currently ranks 42 out of 129 countries in terms of innovation capacity and is leading the group of middle-income countries. Vietnam's micro dragon satellite launch in 2019 marks a milestone event in the country's space satellite industry development. Vietnam's ST-25 rice variety won first prize in World Rice Competition in 2019. Prof. Pham Hoang Hiep of the Institute of Mathematics, Vietnam Academy of Science and Technology, received the 2019 Ramanujan

Prize for Young Mathematicians from Developing countries. Vietnam is currently increasing its innovation capabilities to foster participation in mega international projects and building a network with global S&T experts through science diplomacy. Numerous scholarships and fellowships have been initiated both between S&T institutions' and national levels for India-Vietnam S&T cooperation. After Vice Prime Minister Nguyen Thien Nhan visited India in 2012, the focus of cooperation between Vietnam and India has undergone a paradigm shift. From individual cooperation among S&T institutions, it assumed a national-level approach with a focus on key development sectors in the country. Prime Minister Modi's visit to Vietnam in 2016 is a new milestone in bilateral ties with the signing of about 12 agreements including exploration and peaceful uses of outer space and atomic energy, IT and cyber-security, etc. Cooperation in social sciences too has increased significantly between Vietnam and India. In recent years, as many as nine MoUs have been signed between various institutions and universities in India. However, most of the MoUs remain mostly on paper and need a strong push for its revival.

To promote India-Vietnam cooperation one requires capacity building and human resource development. The two countries have signed several agreements however there are many obstacles at the level of implementation. The challenges should be overcome and collaboration between Vietnam and India should be strengthened in education by opening joint universities, and by improving the quality and effectiveness of existing joint universities. The promotion of Vietnam-India relations also requires active participation from both state and non-state agencies, including effective coordination between their S&T institutions. The emphasis must be on advanced communication technologies and capacity building with a focus on both natural sciences as well as social sciences.

Dr Bhaskar Balakrishnan, Science Diplomacy Fellow, RIS

Dr Bhaskar Balakrishnan, Science Diplomacy Fellow, RIS in his closing remarks noted that Vietnam is a 'tiger' and 'dynamic' economy with rich culture and history. India and Vietnam have strategic level cooperation which also reflects similar views on regional and global issues. India strongly shares the importance of S&T cooperation between the two countries India and Vietnam and hopes to similar meetings in future. India recognises Vietnam's interest in science diplomacy. Apart from science diplomacy program, RIS is also partnering with the World Bank and Japan to develop the STI roadmap for achieving the SDGs. He hoped to include many countries in this endeavour including Vietnam. The S&T cooperation between India and Vietnam has been very dynamic covering a wide variety of fields and include sectors such

as agriculture, oil and gas, biotechnology, ICT and defence. There is further scope for diversification, and cooperation in other areas as like Oceans, ASEAN-India and Indo-Pacific framework and expressed hope that webinar will give a boost to bilateral cooperation.

RIS A Think-Tank of Developing Countries

Research and Information System for Developing Countries (RIS) is a New Delhi-based autonomous policy research institute that specialises in issues related to international economic development, trade, investment and technology. RIS is envisioned as a forum for fostering effective policy dialogue and capacity-building among developing countries on global and regional economic issues.

The focus of the work programme of RIS is to promote South-South Cooperation and collaborate with developing countries in multilateral negotiations in various forums. RIS is engaged across inter-governmental processes of several regional economic cooperation initiatives. Through its intensive network of think tanks, RIS seeks to strengthen policy coherence on international economic issues and the development partnership canvas. For more information about RIS and its work programme, please visit its website: www.ris.org.in

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