Capacity Building of Science Diplomats*

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Science Diplomats are flag-bearers for developing knowledge-based relationships between nations. The inculcation of skill sets such as perception of a broad spectrum of science and technology and its impact on the economy, negotiations, understanding of foreign policy, capitalising on geopolitical tensions, interaction with counterparts, overcoming cultural and language barriers, encompassing global challenges, fusion of technological advancements, tripartite or multilateral cooperation, integration of human resources, facilitating the scientific movement, usage of informal interactions for policy breakthroughs and developing long term relationship need extensive priming.

With these critical skill sets, science diplomats are uniquely positioned to navigate the intersection of science and foreign policy, especially as science diplomacy becomes crucial in addressing global challenges and shaping international relations. Science diplomacy needs informed advice (mainly data- and evidence-driven) to engage with multiple entities in order to facilitate strategic agreements, promote scientific, technological, and innovative trade, and foster a cordial relationship. General diplomatic activities involving STEM topics include, among others, negotiating international agreements (such as climate accords), participating in international science and technology cooperatives, establishing trade deals (including technology transfers), addressing cybersecurity and internet governance, leading international public health initiatives, working on non-proliferation agreements, drafting démarches, promoting STEM education and research collaborations, and engaging in international standard-setting bodies.[1]

Successful science diplomacy depends on negotiators having a solid grasp of the underlying science. This means it requires either a scientist with exceptional diplomatic skills (diplomat scientist) or a skilled diplomat who deeply understands the scientific implications (scientist diplomat/career diplomat).[2] Sometimes, a civil servant, embassy staff, science/policy managers, innovation delegates, liaison officers and policy scientists also mediate science diplomacy.[3] A science diplomat is an umbrella term for science counsellors, science attachés or science ambassadors. A science diplomat facilitates international collaborations, the exchange of scientists, capacity building, technology exchange/licensing, encourages innovations and industrial trade-offs, dissolves cultural barriers, and builds trust and long-term relationships.[4]

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Foreign policies, economic demands, technological competitions, relevant policies for technological supremacy and the world's polarity influence the role of science diplomats. In order to delegate their responsibilities, science diplomats need multiple skills such as diplomacy, building trust using the soft power of science, human resource management, etc. Science diplomats often acquire these skills through empirical learning, i.e., experience, which is indeed time-consuming and opportunity-oriented. Therefore, it is pertinent that science diplomats must be trained in advance before deputing them on a foreign mission.

Current Training Agencies

Globally, some agencies provide short-term training courses in science diplomacy. Such courses are offered by the American Association for the Advancement of Science (AAAS), USA and Jefferson Science Fellowships by the National Academies of Sciences, Engineering, and Medicine, USA and Research and Information System for Developing Countries (RIS), India, as well as a few online platforms.[1,5,6] To strengthen the capacities of science diplomats from developing countries, AAAS and UNESCO-The World Academy of Sciences (TWAS), organise an annual summer course on science diplomacy in Trieste, Italy.[7] Further, the Global Young Academy also conducts workshops and seminars on science diplomacy.[8] The Geneva Science and Diplomacy Anticipator (GESDA) Foundation hosts the Geneva Science Diplomacy Week, an annual event launched in 2022. This week-long program offers a unique learning and networking experience, connecting current and future leaders with international agencies, diplomatic missions, academic institutions, global NGOs, and technology leaders to discuss and shape the future of science and multilateralism.[9] In 1989, establishing the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) in New Delhi is one of the few steps towards promoting science diplomacy.[10] The Ministry of External Affairs, India, also support courses on Science Diplomacy under its Indian Technical and Economic Cooperation (ITEC) programme at eminent training facilities and higher education institutions.[11]

Recommendations

Science diplomacy is a key component of the foreign policy of many developed and some developing countries. However, this concept is either non-existent or significantly under-utilised in much of the world.[12] To fully benefit from science diplomacy, these countries must invest in building the capacity of science diplomats and deploying them effectively. Here, a few measures are recommended to ensure the professional growth, personal development and productivity of science diplomats.

Science diplomacy is mostly rendered to career diplomats with limited scientific exposure, whereas some nations have started placing scientists on such assignments. Developing countries like India are still placing ten science diplomats abroad in just six out of the 195 countries in the world, which is reasonably imbalanced and minuscule.[13] India must target at least 10-20 countries consistently high in the global innovation index to ensure diversified cooperation, technology exchange and dissolving the barriers to scientific advancements. The challenge can be easily relieved by widening the scope of the existing science diplomats. From the Indian perspective, it would be helpful to expand the number and have Science Diplomats posted in Brussels (for Belgium and European Union), Toronto or Vancouver (Canada), Sydney or Melbourne (for Australia and Oceania), Paris/ London (France and UK), Addis (Ethiopia and African Union), Tel Aviv (Israel), Beijing/ Seoul (China and Korea), Brasilia (Brazil and Latin American countries).

Career diplomats at most global diplomatic stations serve as science diplomats, bridging science and diplomacy. While scientists and academicians may be assigned to diplomatic roles, they often have a limited understanding of diplomatic processes. Therefore, training scientists through desk experience is crucial to align them with diplomatic assignments over a substantial period. Many countries appoint science attachés for 2-4 years, though extending their term or rotating their postings could better leverage their relationships and expertise. This longer tenure allows for deeper scientific cooperation, fostering goodwill between nations. Their experience can be utilised upon their return to build collaborations with new stakeholders.

Science is broad, but scientists or academics assigned diplomatic roles often specialise in a specific area. However, the role of a science diplomat requires a broad understanding and openness to various scientific disciplines, innovations, and technological advancements. A science diplomat must embrace science holistically, beyond their own expertise, and be able to learn from the host country while sharing relevant developments with their home country. This approach fosters strong relationships and enables new collaborations.

Science cooperation produces return through persistent and long-term engagement, while career diplomats emphasise on current political circumstances and immediate return in cooperation. In order to sustain and thrive in new scientific collaborations, a science diplomat trained in the linguistic, cultural and diplomatic fabric of a foreign nation can be very helpful in bringing together the scientific and diplomatic community of the cooperating nations.

The role of a science diplomat is vital in addressing global challenges like pandemics, requiring rapid cooperation and solutions, as seen during COVID-19. The pandemic reshaped the relationship between governments, policymakers, and the scientific community, highlighting the need for strong communication skills.[14] Diplomacy relies on effective interaction, and science diplomats must stay updated on evolving communication tools. Continuous training is essential to adapt to these changes and master the art of clear, secure, and efficient communication. They must also learn to distinguish valuable and sensitive information from general content, especially in the age of social media, while safeguarding against misinformation.

Cooperation in high-end technologies is extremely challenging, considering their economic impact. A scientific diplomat can play a vital role in fine-tuning and aligning national demands to create win-win outcomes for all stakeholders. Sharp negotiation skills and strong logical reasoning can be game-changers in this process. To be effective, a science diplomat must also understand the economic aspects of such cooperation. To develop these negotiation skills, science diplomats should be exposed to high-level meetings involving multiple nations, such as G20, BRICS, Shanghai Cooperation Organization and Mission Innovation. They can also learn from case studies, simulated models like pilots or specially designed games.[15,16] On these global platforms, a nation's position is driven by well-informed scientific data. Therefore, a science diplomat must be skilled in data visualisation, assessing its relevance, and using it to support decision-making.

Science has long played a key role in fostering collaborations between nations, even in adversarial situations. Examples include SESAME in the Arab world, the International Space Station initiative between the USA and Russia during the Cold War, and health cooperation between the USA and Cuba. Building relationships under such conditions is a daunting task, requiring patience and continuous efforts. Persistent pursuance needs a high level of interpersonal and manoeuvrability skills. Such skills can be honed by closely working with experienced career diplomats.

In tense negotiations, there is also the risk of scientific collaborations being exploited for espionage. A science diplomat must remain vigilant and avoid involvement in any suspicious activities. Negotiations between opposing nations often involve tension, so staying calm, composed and non-reactive is essential in establishing cooperation. Stress management techniques are invaluable for science diplomats in these high-pressure situations.

A country's progress depends on factors like foreign investment, technology exchange, and ease of doing business, but pursuing these goals is challenging, especially in countries with strict regulatory environments. Therefore, science diplomats must thoroughly understand potential obstacles and approach foreign partners strategically. Given the economic impact of technology-related matters, regular training is needed to stay updated on relevant issues.

Translating scientific advancements into marketable products requires huge investment and co-sharing of the patents for broader market access. A science diplomat must have a stronger understanding of national and international patent regimes, as well as the regulatory environment of the host country, to avoid costly legal disputes arising from contentious data sharing and patentisation issues.[17]

Informal interactions, such as conversations over coffee or shared meals, often create a relaxed

atmosphere where real problems can be discussed and potential solutions can be explored. A science diplomat should be mindful of cultural norms to foster closer emotional connections.

During their tenure, science diplomats gain valuable professional experience, making them an asset to any organisation. Their skills and expertise can be utilised as consultants on key assignments, especially in negotiations or science-related foreign affairs.

Conclusions

The adaptability and skills of a science diplomat require thorough pre-departure training to effectively navigate diplomatic challenges, foster long-term relationships between the nations and ensure fair and equitable promotion of science and economic benefits for all participating countries.

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