Science Diplomacy: COVID-19 and Beyond

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If there is one time in the recent decades that science and scientists have received most attention, it is now! The novel corona virus that has brought the world to a standstill, eroding significant social and economic development gains in a matter of weeks, has proven to the world that countries are more inter-connected and dependent on one another now than before. Such lack of self-reliance is evident now when it came to use of science and its applications.

The mere collaboration of scientists across the globe to fight the pandemic has turned the discourse on multilateralism and diplomacy to unprecedented levels. Scientists and medical professionals, perhaps for the first time, started getting more media space than entertainers, sportspersons and politicians.

This point to one progressive direction – practicing science today needs collaborations, openness and diplomacy supported by trust and confidence. This article focuses on the trends and directions in science diplomacy and how the recent weeks it has evolved as well as how science diplomacy can help the future of development.

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Science Diplomacy

'Many of the challenges we face today are international and – whether it's tackling climate change or fighting disease – these global problems require global solutions . . . That is why it is important that we create a new role for science in international policymaking and diplomacy . . . to place science at the heart of the progressive international agenda.'

– Rt Hon Gordon Brown MP, Former Prime Minister of the UK

"Which world we will be living in" over the next decade was the lead topic in July/August 2018 issue of the publication *Foreign Affairs*, which presented six contrasting visions of a "grand narrative for an increasingly turbulent era". The key message from this publication is the future of the world can be a realist World, liberal World, tribal World, Marxist World, tech World, and warming World.[1] Science diplomacy has a role to play in all these future worlds. It can also help shape these worlds better.

After World War II, science diplomacy really got its start over the issue of nuclear weapons. Though not called so, scientists who engaged deeply on this issue with diplomats, security specialists and foreign colleagues did use diplomacy as a tool to deal with issues of non-proliferation.[2]

Governments, nongovernmental public health experts, diplomats and political leaders helped deal with challenges such as HIV/AIDS in Africa through the President's Emergency Plan for AIDS Relief (PEPFAR), launched in 2003 by the United States of America. Similarly, the spread of infectious diseases such as the Ebola and Zika viruses, "bird flu," MERS, and "swine flu" through coordinated global responses and the rise of antimicrobial resistance research through new international programs were all possible through science diplomacy.[3]

If we turn to current levels of success to deal with COVID 19, initiatives like the Global Initiative on Sharing All Influenza Data (GISAID), established in 2008, have proved to be the best results of science diplomacy wherein science based data and information is being shared freely and widely with enough safeguards for access to results and sharing the results and outcomes.[4]

In addition to undertaking specific and targeted research and development activities, initiatives such as the Forum for Indian Science Diplomacy (FISD)[5], Indian Technical and Economic Cooperation (ITEC)[6], Science Diplomacy programme of American Association for Advancement of Science (AAAS)[7] have all contributed enormously to promoting global and regional diplomacy using science.

Three dimensions of science diplomacy exists: (i) informing foreign policy objectives with scientific advice (science in diplomacy), (ii) facilitating international science cooperation (diplomacy for science) and (iii) using science cooperation to improve international relations between countries (science for diplomacy).[8]

Science in Diplomacy

Dealing with environmental, health and food security issues are now certainly multilateral where expertise from several countries would be needed. Science in these areas can hardly be self-sufficient though can be self-reliant. The role of science in diplomacy is best demonstrated during recent actions at various levels in managing development. Whether it is the Paris Agreement on climate change or the adoption of Sustainable Development Goals (SDGs), science played a critical role in reaching far-fetched agreements across countries. Successes through multilateral processes such as the Montreal Protocol were due to advancements in science. However, the key challenge that science faces, constantly, is the manner in which it is communicated to policy makers to seek diplomatic support that is strategic and timely.

Diplomacy for Science

Diplomacy for science facilitates key and strategic cooperation among countries to deal with complex, risky and high cost programmes and projects. International initiatives such as the Large Hadron Collider (LHC), the International Thermonuclear Experimental Reactor (ITER) are examples of complex science that is being pursued because of diligent diplomacy that has built the basis for collaborations, globally. Many bilateral, regional and multilateral cooperative programmes are built on diplomacy supporting need for cooperation in science.

Science for Diplomacy

Joseph Nye from Harvard University distinguished between 'hard power', which uses military and economic means to coerce the behaviour of other nations, and 'soft power', which builds on common interests and values to attract, persuade and influence as key to seek science support for diplomacy[9]. According to the Royal Society, the soft power of science interacts with international relations in several ways, ranging from cultural diplomacy to more traditional forms of negotiation and mediation.[10] Considering the need for focus on dealing with current and emerging challenges in conserving our ecosystems and biodiversity, countries around the world supported the establishment of Intergovernmental Panel on Ecosystems and Biodiversity (IPBES) on similar lines of the Intergovernmental Panel on Climate Change (IPCC). These initiatives, along with other 'soft' collaborations like provision of scholarships, training and others form the core of science working for diplomacy. The ITEC programme of Government of India is a brilliant example of showcasing India prowess in science and technology to the world by providing opportunities for number countries to study and get trained in India.

Science and COVID-19

At global and national levels academic, government, and industry labs mobilised too quickly and began to work collaboratively in unprecedented numbers across institutions and corporations to explore the potential for existing drugs to control the new virus. Research on diagnostics, vaccines and treatments is happening at lightning speed. Publications are being brought out in real time with social media serving as the vehicle of communication.

New experimental capabilities of genomics, proteomics, glycomics, high-throughput technologies, and fast-tracked clinical development strategies coupled with the pharmaceutical industry are looking for ways to accelerate the drug and vaccine development in matter of weeks if not months.

The pandemic is fought with the powers of science and technology (internet) which has enabled scientists and clinicians to share data and information using bioRxiv, medRxiv, ChemRxiv, and arXiv, all real-time servers used as the major medium by which scientific articles are being disseminated and evaluated by the community.

Current response also shows us how quickly innovation can move from laboratory to the clinic when there's an urgency to deliver. Whether it ismRNA vaccines, antibodies against the spike protein, novel coronavirus drugs, or new diagnostic tools, we have seen an incredible and rapid mobilisation of biopharma research and development, academic labs, government regulators, and the clinical community to expedite the path to testing and patient care.

The speed of developments in science and technology to mitigate the COVID-19 pandemic is unprecedented in the history of science. Synthetic biology, a new branch of science, has contributed to containing and treating the COVID-19 quickly.

DNA sequencing is crucial to fighting viruses like COVID-19. The sequence was available as early as 10 January 2020. On this day scientists from China shared with the public five full genomes of hCoV-19 via the Global Initiative on Sharing All Influenza Data (GISAID) open-access database. These sequences reveal the zoonotic origin of the novel coronavirus. As of April 18, 10,165 sequences of the virus from various parts of the world, including two from India have been added to the GISAID.

A report from the International Health Regulations (2005) Emergency Committee underlines the importance of the release of full viral genome sequences to a public platform to diagnose and contain infections early. Clinical trials of a COVID-19 vaccine have already started in more than three countries as of now. More information on the virus is coming on a daily basis.

Deficiencies in data-sharing mechanisms, which were highlighted during the 2013–2016 Ebola virus disease out-break in West Africa, raised the question of data access. It brought the issue to the forefront of the global health agenda. In September 2015, WHO reached an agreement on the need for open data-sharing, especially in public health crises like COVID 19. In 2008, GISAID went live, promoting the international sharing of influenza virus sequences, including clinical and epidemiological data associated with human viruses, geographical data, and species-specific data associated with avian and other animal viruses. Such information would help researchers understand how the viruses evolve, spread, and potentially become pandemics. In addition to the EpiCoV database, GISAID also hosts the EpiFlu database which 1,340,000 genetic sequences of influenza viruses.

The number of research collaborations related to COVID 19 is increasing on a daily basis. According to WHO, a global research roadmap has been prepared as of March 2020 to deal with COVID 19.[11] The number of activities currently underway to deal with the pandemic is being updated on a daily basis by the WHO.[12]

Science has played a crucial role in dealing with COVID 19 in an unprecedented fashion and has contributed enormously to enhanced diplomacy whether it is through provision of critical supplies or dealing with humanitarian support.

Conclusions

COVID 19 pandemic and the sudden but long-term impacts of the spread will certainly take months if not years to come to subside. Countries are caught unaware of the economic and social fallouts from the pandemic. The role of science has now been recognised as central to not only controlling the pandemic and treating the same but also preventing the same in the future. The situation has called for the need to create proper incentives for developing certain classes of medicines, like those for viral pandemics or drug-resistant microbes, so that effective therapies can be stockpiled in anticipation of when we need them. Anti-infective therapies can greatly benefit from new thinking and collaborations, including from those related to resistance therapies. Though this pandemic is a sad one, it sends a strong reminder that not everything needs to be cutting-edge science to have a big impact on health care. Overlooking the impact conventional interventions can have on patient care and disease protection - for example, the catastrophic impact of the shortage of basics like N95 masks and other personal protective equipment - are also important to deal with epidemics and pandemics.

Science diplomacy can help: (1) manage relations between countries, both developed and developing, (2) advance the values of the liberalizations in collaborations in the future, (3) achieve societal goals that capitalism misses, (5) maximise the opportunities and moderate the challenges associated with technological advance and (6) solve critical global challenges like climate change and ecosystem loss that potentially contributes to emergence of pandemics like CIVOD 19.[13]

In addition to finance and development ministries, foreign ministries should place greater emphasis on science within their strategies and draw more extensively on scientific advice in the formation and delivery of policy objectives of governments. Having scientific advisers in the foreign ministries is a critical need of the hour such as the one established in the UK where the mandate of the adviser is to integrate science across the Foreign and Commonwealth Office (FCO) priorities and develop stronger linkages with science-related policies in other government departments.[14]

Endnotes

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9 Nye J (2004) Soft Power: The Means to Success in World Politics. Public Affairs: New York.

10 New Frontiers in Science Diplomacy, the Royal Society, London. 2011.

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