S&T SECTOR

India Needs to Science Things Up

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Indian science is a sleeping giant in dire need to be awakened. It can repeat the magic of the economic reforms of the early 1990s if it can reform the science and technology (S&T) sector big time. There are some reasons for why India is being held back:

▶ India spends a mere 0.64% of its GDP on S&T, the lowest amongst Brics nations. The US, China and South Korea spend 2.73%, 2.4% and 4% of their GDP on S&T, respectively.

▶ As S&T research in India mostly occurs in government institutions, no surprise that cutting-edge scientific inventions continue to elude us.

▶ Despite being the 6th-largest economy, India ranks 50th on Bloomberg's Global Innovation Index 2021 and 48th as per the World Intellectual Property Organisation. Only IISc Bengaluru, IIT Bombay and IIT Delhi feature in the top 200 QS World University Rankings.

▶ India ranks 9th in research impact through citations, while the US and China are top rankers.

In contrast, CEOs of many global tech giants are of Indian origin. Indian professionals form one-fourth to one-third of most tech giants' workforce. Every 7th and 10th doctor in the US and Britain is of Indian origin. 12% of US scientists have their roots in India. So, what is lacking in India that makes many languish here, but shine abroad?

▶ Poor ease of doing research: Scientists in India complain that most of their time goes into administrative drudgery. Riddled with bureaucratic processes, there is insufficient adoption of global best practices. Institutions offer inadequate incentives and lack a merit-focused competitive environment for research to thrive.

▶ Outmoded procurement systems: These preclude government institutions from securing best-in-class research equipment. Poor compensation does not attract top talent, while inadequate career progression breeds mediocrity. Also, most PhD scholars in India receive minimal support, paltry funds and remain disconnected from global research networks.

Even with autonomy, S&T institutions will remain saddled with a suboptimal work culture entrenched over decades. Therefore, capacity-building of scientists and academics assumes significance. Even well-intentioned measures like the Institutions of Eminence, Indian Institutes of Science Education and Research (IISERs) and the PM's Research Fellowship only saw marginal improvements on the ground.

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Non-IITian, non-vedic scientist, Nobel laureate Venki Ramakrishnan

The Science, Technology and Innovation Policy 2020 has already identified some such challenges. Also, the National Research Foundation announced under the New Education Policy 2020 is an unprecedented opportunity for radical changes in the research ecosystem. There are several other reform ideas on the table.

We need to create efficient administrative mechanisms and research offices to free Indian scientists from hurdles, enabling them to focus on research. Ease of doing research can take a quantum leap by granting institutional autonomy, streamlining research funding and disbursements, bringing recruitment flexibility and creating stability in funding.

Research in S&T institutions must get aligned with India's challenges and developmental priorities. Similarly, a business case for the world has to be created to leverage India's cost arbitrage and talent by making India a global R&D destination beyond a research back-office.

Unlike most countries, major S&T labs in India are not an integral part of universities. India could bring universities and S&T labs closer in thematic or geographic clusters for collaborative and interdisciplinary research of global standards. It also needs to improve research governance, positioning and outreach to attract large-scale funding from industry and philanthropy.

India needs to create and nurture communities of PhD students and postdoctorates and improve career options for early-career researchers. This would eventually lead to world-class research outcomes. It also needs to recalibrate incentives for scientists to create an uplifting research environment.

India barely celebrates S&T and its scientists, with the media rarely covering S&T. There is abysmally low science content, such as documentaries and books, as part of popular culture. This foregrounds the need to disseminate S&T knowledge, especially among the young, and promote public dialogue on science.

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