



## Read The Signs, Upgrade Science

### Four big-ticket reforms that can transform India into an innovation-led economy

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India was the first country to explicitly adopt 'scientific temper' in its Constitution, with the 42nd amendment in 1976 declaring that it shall be the duty of every citizen to develop a scientific temper, humanism and the spirit of inquiry and reform. Despite such constitutional focus, India did not usher in transformative reforms in the science and technology (S&T) ecosystem.

Around the same time, in 1978 China began to open up its economy. This was followed by a revitalisation of its science ecosystem through systematic reforms in the 1990s. It is now even ahead of the US in a few areas, like artificial intelligence.

By contrast, despite the spectacular success of India's economic reforms of 1991, we did not follow up with big-ticket changes in S&T. The outcome is abundantly clear as India remains a distant cry from being an innovation-led economy.

India must nurture the ambition to be at the forefront of research for creating new S&T knowledge, its translation into economic and social goods, and to enable sustained economic growth. India has the economic scale, the large talent pool, the huge market size and the vibrant startup ecosystem to invest in research and then unlock its economic value.

Four major reformist interventions could potentially revolutionise Indian science.

**National Research Foundation:** The NRF announced by GoI with an outlay of Rs 50,000 crore over five years is a never-before opportunity to transform the research ecosystem, especially from the governance and funding perspectives.

- Eventually, this would also improve linkages between R&D, academia and industry.
- Given the enormity of the tasks involved, India now needs to fast-track the creation of an appropriately structured NRF as an organisation which has the requisite capacity to execute.



**Ease of doing research:** In India scientists spend more time on managing administrative overheads than on research. Most systems in government universities and scientific labs continue to be bureaucratic.

- Indian institutions need to create centralised research and allied industry-interfacing and fundraising offices as well as administrative support, to allow scientists to focus on research without getting bogged down by cumbersome processes.
- The funding value chain needs to be optimised by streamlining research proposal submission and evaluation, as well as disbursements, along with building a robust and seamless technology backbone.
- Similarly, the outdated procurement processes need drastic reforms.
- Compensation structures need revision to attract scientific talent, along with progressive HR policies that have performance centrality.

**Collaborative research clusters:** Most S&T labs in India are not an integral part of universities unlike in most developed nations.

- It is time to bring together R&D labs and institutions of higher education in a geographical area under a unified thematic cluster through functional mergers, both hard and soft.

- This would fundamentally overhaul the way research is conducted by encouraging collaboration, improving governance, democratising resources and seeking international research opportunities, along with a closer industry integration.
- Clusters in the long term would yield immense value if we are able to create cohesive and well-functioning geographical groupings with thematic linkage and interdisciplinary interactions.
- Clustering would also enable these entities to be competitive in securing international research projects, and to attract leading overseas faculty and superior researchers.
- These would eventually lead to improved global research ranking of universities.
- This cluster-like structure would lead to an overall increase in the efficiency and effectiveness of research outputs, ultimately leading to better economic and social value-creation for the country.

**Science in the public imagination:** India does not celebrate science and there are very few scientists in public imagination today. Print and electronic media rarely cover S&T and there are very few popular science films, OTT content or books.

- Institutionalise a robust science communication function in each university and S&T unit.
- Create an imaginative line-up of initiatives and activities round the year. This will go a long way in popularising and celebrating science in India.

What India needs is to narrow the gulf between science and society. We must understand scientific knowledge is a common public good in the country.

Scientific and technological research forms the backbone for innovations; but this is not strong enough in India to enable the nation to address its societal problems and developmental challenges or leverage intellectual property to seize economic opportunities. It's time to strengthen India's research backbone by revitalising India's S&T agenda. Indeed, India should declare 2020-30 as a decade of radical transformation for our science.

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