India’s Prospects & Challenges in R&D Sector

What is the issue?

\n\n

\n
- India’s research industry has issues due to poor higher education regulation and low tertiary Gross Enrolment Ratio.
\n
- India must drastically increase R&D expenditure as well as reform policy in key research areas to address such issues.
\n

\n\n

What is the trend of India’s R&D industry?

\n\n

\n
- Biotechnology and engineering are the two fields where knowledge-intensive and technologically advanced economies dominate.
\n
- Research in these fields account for 57% of the total S&E publication worldwide, and, in 2016, the US and the EU accounted for the bulk of this. China, on the other hand, beat the two on engineering research.
\n
- In 2016, data from the US’s National Science Foundation (NSF) shows India overtook Japan as the fourth-largest producer of science and engineering (S&E) research.
\n
- Between 2003 and 2016, India’s article count in Scopus, the world’s largest catalogue of abstracts and citations, increased from 27,000 to 110,000.
\n
- Over that period, China’s went up from 87,000 to 426,000, a meteoric rise that helped it dislodge the US as the largest single-country producer of S&E research.
\n

\n\n

How India’s policy on R&D affects scientific development?

\n\n

\n
- India’s research output jump is no small feat, viewed against chronic problems like poor higher education regulation and low tertiary Gross Enrolment Ratio.
\n
- However Indian policymakers have taken such strident anti-genetic-modification positions for instance, over Monsanto’s patent rights and royalties that, even with the country’s biotech sector booming, a pall of uncertainty always hangs over such research.
\n
- Such myopia extends to the government sector as well, the fate of indigenously developed GM mustard variety is proof of this.
\n
- Indian research is also hobbled by its poor indicators over research impact.
\n
- Citation by researchers in a foreign country or publication are “strongly influenced by cultural, geographic and language ties”.
\n
- India’s share in the world’s top 1% of cited articles peaked in 2006, A decade later, it is somewhat lower not in terms of the absolute number, but in terms of the number relative to what is expected given the overall publication number.
\n

\n\n

What cues India can take from China in this area?

\n\n

\n
- China, which had a lower S&E research impact than India in 2006, now has the third-highest impact and is poised to dislodge the EU soon.
\n
- China has pumped in billions of dollars into its public education, with a focus on developing its leading universities to match, and even overtake, the global best.
\n
- China’s state-owned Chem China acquired seed-tech giant Syngenta for $43 billion; this should show how big the country is betting on

biotechnology.
\n
- It has stepped up funding for academics from $25/paper nearly three decades ago to $165,000 for a paper published in Nature.
\n
- Emulating China India have to begin with higher education reforms.
\n
- Else, even though India surpasses a Japan in terms of research output, the latter will continue to have much better research impact.
\n
- Thus India must drastically increase R&D expenditure as well as reform policy in key research areas.
\n

\n\n

\n\n

Source: Financial Express

\n