India’s Prospects & Challenges in R&D Sector

What is the issue?

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

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- Biotechnology and engineering are the two fields where knowledge-intensive and technologically advanced economies dominate.
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- 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.
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- 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.
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- 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.
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- 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.
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How India’s policy on R&D affects scientific development?

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- India’s research output jump is no small feat, viewed against chronic problems like poor higher education regulation and low tertiary Gross Enrolment Ratio.
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- 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.
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- Such myopia extends to the government sector as well, the fate of indigenously developed GM mustard variety is proof of this.
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- Indian research is also hobbled by its poor indicators over research impact.
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- Citation by researchers in a foreign country or publication are “strongly influenced by cultural, geographic and language ties”.
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- 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.
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What cues India can take from China in this area?

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

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