How Indian enterprises can scale up R&D spend

Raising deduction for in-house R&D and identifying strategic sectors are vital, especially for smaller firms

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Recent Department of Science and Technology (DST) reports on R&D Statistics and Science & Technology Indicators show India's Gross Expenditure on R&D (GERD) rising from 0.71 per cent of GDP in 2013-14 to 0.84 per cent in 2023-24, with 0.9 per cent projected for 2025-26. This may look like the start of a transformation of India's innovation ecosystem, but India had attained 0.84 per cent as far back as 2008-09.

What do these data suggest for policymaking, given India's ambition to become a developed country in the next two decades? Two observations stand out. First, the share of Business Enterprises R&D (BERD), covering private and public sector enterprises, in GERD rose from 43.6 per cent in 2014-15 to 49.3 per cent in 2023-24. Second, multinational companies (MNCs), both Indian and foreign, account for a large and rising share of BERD, from 68.8 per cent in 2021-22 to 71.3 per cent in 2023-24.

Business accounting for half of GERD may appear impressive, but there is a long distance to cover: in Korea and China this sector accounts for more than 70 per cent. Without raising this share, a GERD-GDP ratio of 2 per cent is out of reach. The question is how fast this goal should be reached, and how.

Indian policymakers have periodically announced the 2 per cent goal since the mid-1980s. Why 2 per cent? Most OECD countries raised their GERD-GDP ratio from below 1 per cent to 2 per cent in about a decade, which some scholars call the 'technology take-off' of an economy. Once it happens, the momentum continues and the ratio keeps rising.

South Korea raised its ratio from 0.8 per cent in 1981 to about 2 per cent in the early 1990s. China, which moved from lower-middle to upper-middle income between 2000 and 2010, raised it from 0.9 per cent in 2000 to 2 per cent in 2013.

The challenge for India, then, is to go from 0.84 per cent to 2 per cent in about a decade, i.e., by 2036.

DRIVEN BY LARGE FIRMS

India's BERD is driven by large firms and is highly concentrated. Of the 41 industry groups covered by the DST reports, two — transportation and pharmaceuticals — account for 54 per cent of BERD. Within these, two transport firms, Tata Motors and Mahindra & Mahindra, and a handful of pharmaceutical firms account for much of the R&D.

How intensively do these firms invest in R&D? They figure among the world's top 2000 corporate R&D investors in the EU Industrial R&D Investment Scoreboard; in its 2025 edition, 10 of the 17 Indian firms are from these two sectors.

Yet among the eight Indian pharmaceutical and biotechnology firms, the highest R&D intensity (R&D to sales) was 8 per cent, against an average of 22.4 per cent for the top five firms globally. Although large firms drive India's BERD, they lag far behind global leaders in R&D intensity. Relying on large firms alone to reach 2 per cent in about a decade is therefore not desirable.



R&D SPENDING. Indian firms still have some way to go GETTY IMAGES

Smaller firms are often far more R&D-intensive, and they must be brought on board if BERD is to grow faster and on a broader base. The S&T Indicators report shows that in scientific instruments, private firms with an average turnover of about ₹45 crore had an R&D intensity of 23.2 per cent in 2023-24.

In comparison, private firms in transport, with an average turnover of ₹8,130 crore, had an intensity of 3.39 per cent, and those in pharmaceuticals (₹1,006 crore) 5.22 per cent.

WHAT IS TO BE DONE?

First, get the fiscal incentives right. When India raised the weighted deduction for in-house R&D to 200 per cent in 2010-11, R&D spending and patenting rose sharply among DSIR-registered firms, and international evidence shows that smaller firms respond most strongly to such incentives. Yet the deduction was cut to 150 per cent in 2017-18 and to 100 per cent in 2020-21. It should be restored and tilted towards smaller firms, as in Korea, where the R&D tax credit ranges from 12-25 per cent for SMEs to 1-15 per cent for large enterprises. Second, identify strategic sectors on grounds of economic and national security and job creation, and adopt mission-oriented policies for them, as Korea did in 1982 and China in 2006. The quantum, semiconductor and AI missions are a start, and the ₹1 lakh crore RDI scheme can be their financing arm.

Raising the GERD-GDP ratio to 2 per cent by 2036 requires BERD to rise from 0.42 per cent to about 1.4 per cent of GDP, growing roughly twice as fast as nominal GDP. A handful of large firms alone cannot carry that burden and a broad-based growth in BERD is essential.

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