



R&D Inadequacies in India

This editorial is based on [“Fixing India’s R&D inadequacies”](#) which was published in the Hindu BusinessLine on 26/02/2023. It discusses the issue of inadequate private sector involvement in research and development in India and needs to address it.

For Prelims: Public Private Partnerships, Department of Science and Technology,

For Mains: Issue of inadequate Private Sector Involvement in R & D, Government Policies & Interventions, Growth & Development

Kodak was a renowned company in the world of photography and videography, founded in 1888 by George Eastman as 'The Eastman Kodak Company'. However, the **company's downfall serves as a warning of the risks of neglecting innovation**, even for the most powerful companies.

Innovation and technical progress are prerequisites for economic growth. The central concept of growth in the Schumpeterian Paradigm of creative destruction is that previous innovations become obsolete as new innovations emerge.

Therefore, innovation is essential for an economy to grow. In India, **the government undertakes 60% of R&D expenditures**, unlike other nations where **private enterprise is the primary driver**. Despite efforts to boost R&D, the country spends around **0.7% of GDP on R&D**.

The latest Research and Development Statistics, published by the [Department of Science and Technology \(DST\)](#) in 2020, has provided an estimate of **Rs. 60.9 billion R&D spending in 2017-18 by foreign MNCs**, which is only about 10% of what U.S. firms have reported to have spent in India on R&D.

It is crucial to tackle the **issue of inadequate private sector involvement in research and development**, as it may have negative implications for the country's progress.

Why Participation of Private Players limited in R & D?

- **Weak Patent System:**
 - Historically, **India's patent system has been weak and unreliable in safeguarding commercial innovations**, which has created a sense of unease among firms, as they fear that their intellectual property may not be adequately protected, leaving their potential profits vulnerable.
- **Risk of Imitation:**
 - Private firms are **hesitant to invest in R&D in India because of the risk of imitation by local competitors**, which further disincentivizes investment in R&D.
- **Lack of Talent:**

- Private firms **invest more heavily in R&D than the government in the US and China due to the calibre of talent** that their higher education institutions attract. India needs to develop its higher education institutions to attract top talent and drive innovation.
- **Lack of High-Quality Research:**
 - Out of the approximately 40,000 higher education institutions in India, less than 1% actively participate in high-quality research, spanning both scientific and social science research.
 - This implies that 99% of HEIs are not contributing to the country's high-quality knowledge creation.
- **Suffocating Research Ecosystem:**
 - The **government's effort to impose fiscal discipline on States and educational institutions has suffocated the research ecosystem at institutions** like IISc, IITs and IISERs.
- **Challenges in Procuring Laboratory Equipment:**
 - Procuring laboratory equipment can be a nightmare for researchers due to bureaucratic red tape and delays in the system.
- **Capacity Issue:**
 - The **Indian Patent Office had only 860 patent examiners and controllers as of March 2022**, which is substantially lower than China's 13,704 and the US's 8,132 examiners and controllers, leaving the Indian Patent Office grappling to handle the demand.

What are the Other Reasons for the Low Private Players in R & D?

- **Lack of Funding:**
 - One of the main reasons for R&D inadequacies in India is the **lack of adequate funding for research and development**.
 - The government invests very little in research, and private companies are also not willing to invest a significant amount in R&D due to the high risks and uncertainties involved.
- **Lack of Infrastructure:**
 - India lacks **adequate infrastructure for research and development**. There are few well-equipped laboratories and research facilities in the country, which limits the ability of researchers to carry out advanced research.
- **Limited Collaboration between Academia and Industry:**
 - In India, **there is limited collaboration between academia and industry**, which hinders innovation and the commercialization of research. There is also a **lack of focus on applied research**, which is critical for the development of new products and technologies.
- **Brain Drain:**
 - **Many of India's brightest minds emigrate to other countries for better opportunities**, resulting in a brain drain that weakens the country's research and development capabilities.
- **Inadequate Education and Training:**
 - India's education system **does not adequately prepare students for research and development careers**. There is also a lack of training opportunities for researchers to improve their skills and keep up with the latest advances in their fields.
- **Bureaucratic Hurdles:**
 - There are **many bureaucratic hurdles that researchers must navigate to obtain funding and carry out research projects in India**. This bureaucratic red tape slows down the research process and discourages many researchers from pursuing projects in India.

What should be the Way Forward ?

- **Creating an Enabling Regulatory Environment:**
 - The government can **create a conducive regulatory environment that encourages private sector participation**.
 - This could **include measures such as simplifying regulatory procedures, providing incentives for private sector investment**, and ensuring a level playing field for all players.

- **Public-Private Partnerships (PPPs):**
 - The government can **work with private sector players through [Public Private Partnerships \(PPPs\)](#)**, where the private sector invests in and operates public infrastructure projects, such as roads, airports, and power plants.
 - This can **help leverage private sector expertise and resources**, while also ensuring that the public interest is protected.
- **Encouraging Foreign Direct Investment (FDI):**
 - The Indian government can encourage **[Foreign Direct Investment \(FDI\)](#)** by liberalizing investment rules, simplifying procedures, and providing incentives for foreign investors.
 - This can help bring in much-needed foreign capital and expertise to help spur economic growth.
- **Skill Development and Education:**
 - The government **can invest in skill development and education initiatives to help build a pool of skilled workers** that can help support private sector growth. This can help address the skills gap that many private sector players face when trying to expand their operations.
- **Infrastructure Development:**
 - The government can **invest in infrastructure development, such as building new roads, airports, and ports, which can help attract private sector investment**. Improved infrastructure can also help improve productivity and reduce costs for businesses.

Drishti Mains Question

What are the key factors contributing to the inadequacies of research and development (R&D) in India, and how can they be addressed to enhance the country's innovation capabilities?

UPSC Civil Services Examination Previous Year Question (PYQ)

Mains

Q. Examine the development of Airports in India through joint ventures under Public-Private Partnership (PPP) model. What are the challenges faced by the authorities in this regard? **(2017)**

Q. Why is Public Private Partnership (PPP) required in infrastructural projects? Examine the role of PPP model in the redevelopment of Railway Stations in India. **(2022)**