



## India's Scientific and Research Development Has Great Potential. But It Is Handicapped By Severe Funding Woes. In This Context, Elaborate On the issue of funding shortage in Indian Scientific Development (250 Words / 15 M) (GS-3 Science and Technology)

### Approach:

1. Introduction.
2. State about the paltry R&D expenditure of India.
3. What has government done in recent times ?
4. Conclusion highlighting steps needed.

Science is the life-blood of modern living. Knowledge generation of the natural world is becoming a highly competitive endeavor among the nations and in this, **science funding is often touted as a marker of social advancement.**

**Paltry state of India's R&D expenditure:** India's curiosity driven basic research is **primarily sustained by direct funding from the government**, as there is **negligible participation from private players**. But, **government's expenditure remains static** and **hovers between 0.6% - 0.8% of GDP for over a decade**, way below the US, China, Japan & EU countries. India's **global R&D expenditure has remained static at 1-3%** of the global total.

The **budgetary allocations has shown a consistent decline** over the last several years. **Much of the total funding goes to few institutions like DRDO, Dept. of Space, Atomic Energy, while the rest are starved of funding.** The current financial year (2022-23) is no exemption, with the Union Ministry of S&T earmarking **Rs. 14,217 crore – a drop of 3.9% from last year.** While the funding trend has remained frozen, the **number of Universities has jumped from 752 to 1016**, and **doctoral degrees escalated from 10,111 to 24,474.** This shows that available number of people willing to take scientific work as career option has enlarged exponentially.

This state of under-funding is reflected in **the low proportion of qualified researchers** in India. Acc. to **World Bank**, India has **255 researchers/million** people in 2017 – a miniscule fraction of the total population. Compared to **111 in US** and **423 in China**, India has **only 15 researchers per 1,00,000 population.**

**Government initiative taken:** realizing the demand & potential of this sector, the **2021-22 budget offered Rs. 10,000 crore every year starting from 2021, over the next 5 years.** This new funding agency called **National Research Foundation (NRF)** is envisaged to **boost university science research, as well as work in social sciences.** This new idea is also **in sync with the vision stated in National Education Policy 2020** – providing a **reliable base of merit-based but equitable peer-reviewed research funding, helping to develop a culture of research** in the country.



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India also plans to **invest Rs. 4000 crore over the 5 years in deep-ocean research and biodiversity conservation** and promised **four centers for virological research and commitment to developing hydrogen energy**. The NRF, an autonomous body, is expected to bring thousands of colleges & universities under its ambit, creating a **forum for democratization of the knowledge base**.

**What can be done ?:** a **lack of continuity in government policy towards science funding is a huge deterrent in achieving the fullest potential** of scientific research. To unleash the fullest potential, a **vibrant & responsive financial system** is required, which is not only **autonomous** but **participatory too**. India must choose to **break the bureaucratic barriers** and develop **innovative ways to help basic research flourish**. India cannot aspire to be a global leader in scientific research if enough funds are not put in by committing to **raise spending to at least 1% of GDP**. It is also important for **private players' to come in** and government should **incentivize them**. The promise to set up an **independent NRF and related financial commitments need faster realization**. Also, **upgradation of SERB (Science Engineering Research Board)** is needed to create a **dynamic R&D ecosystem**, which India lacks today.

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