Funding Woes in Indian Science

What is the issue?

India is primarily sustained by direct funding from the government which still remains static.

What is the status of India's R&D expenditure?

- **Public expenditure**- The public expenditure on science in India hovers between a 0.6 to 0.8% of GDP over a decade.
- While India's global R&D expenditure remains static at 1-3% of the global total, the U.S. and China accounted for 25% and 23%, respectively.
- **Private participation**-There is very little participation from the private sector in the country.
- **Qualified researchers**- The under-funding is reflected in the low proportion of qualified researchers available in India.
- The World Bank statistics indicate that India had 255 researchers per million people and only 15 researchers per 1,00,000 population in 2017.
- **Budgetary allocation**- The budgetary allocations over the last several years show a consistent downward trend (a drop of 3.9% from last year is witnessed in this year's budget).
- Much of the total of the funding available goes to DRDO, Department of Space and Atomic Energy, leaving only 30 to 40% for other agencies.

What about the status of India's research output?

- **Number of Patents**- India lags behind other nations in the number of patents produced (58,502 patents were filed in 2020-21).
- **Number of Publications**- India has been doing somewhat better, showing steady growth in its output but both the USA and China published approximately four times as many articles as India in 2016.
- **Quality of Research**- The quality of publications from India has also been substantially lower than global standards.

Is there any demand for science as a career option?

- The available number of people required to do scientific work as a career option enlarged exponentially.
- This can be seen from the following:
    - The number of universities jumped from 752 to 1,016
    - Doctoral degrees escalated from 10,111 to 24,474
- Realising this demand from the new generation of researchers, the 2021-22 budget offered Rs. 10,000 crore every year from 2021, over the next five years, for a new funding agency called the National Research Foundation (NRF).
- National Education Policy 2019 also stressed on the pressing need to set up– NRF.

What is the NRF?

- National Research Foundation (NRF) is a professional and comprehensive research and education framework that was aimed to strengthen the research ecosystem in India.
- The aim of proposing NRF is that it will improve linkages between Research & Development, academia, and industry.
- It will be set up under National Education Policy 2020.
- The total proposed outlay of the National Research Foundation is Rs 50,000 crore over a period of five years.
- **Structure**- The NRF will be established initially as a Society under the Societies (Registration) Act, 1860.
- Within three years, the NRF will by an Act of Parliament, become an autonomous body of the Government of India.
- The NRF will be governed by an 18-member NRF Governing Board consisting of eminent researchers and professionals in their respective fields.
- Experts may be drawn from within the country and internationally, and it is expected that about a third of the Board member are women.
- A President, Vice-President, and Chief Operating Officer will be searched for and selected by the NRF Board.
- The NRF will consist of ten major Directorates, each Directorate with a Chair and Vice-Chair, appointed by the NRF Board.
- The NRF will be given an annual grant that will eventually aim to reach at least 0.1% of GDP and will be conferred with the autonomy to set its own finances, governance, and statutes.

How significant is NRF?

- The NRF was expected to bring thousands of colleges and universities under its ambit.
- As most of the country's scientific research is being conducted by government laboratories and a few premier institutes, NRF was thought to be a game-changer by its intent of democratisation of the knowledge base.
- An autonomous, more participatory and less bureaucratic system is needed to unleash the fullest potential of Indian science.

What other efforts can be taken?

- **Infusion of more funds**- India needs to inject enough funds into basic research by committing to raise the R&D spending to at least 1% of the GDP.
- **Government incentives**-The government should incentivise the private players by giving them tax breaks for the private sector to chip in.
- **Upgradation of SERB**- Another option is to upgrade the SERB (Science Engineering Research Board) to play the role assigned to the NRF.

References

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