Funding Basic Research in Science

What is the issue?

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India's funds for Science in general and for small scale science projects in particular are very low.

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How is India's expenditure in Science?

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- Currently, **research and development expenditure** stands at around Rs. 1 lakh crore.
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- This amounts to **0.8% of the GDP.**
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- The recent Economic Survey highlights the role of scientific and technological innovations in economic prosperity.
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- It thus calls for doubling the above share.
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- Even the doubled amount would be behind that of China, Israel, Japan and the U.S.
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- Notably, each of these countries spends more than 2% of their GDP on research.
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What are the concerns?

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- **Research Grants** - This year’s Budget has allotted around Rs. 28,000 crore to science ministries.
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- Out of this, a mere **3.22%** is for **basic science projects**.

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- This will be disbursed as competitive research grants by the statutory body, Science and Engineering Research Board (SERB).
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- This is very low in comparison to many other countries where the share is around 30 to 40%.
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- **Small Projects** - Share of expenditure for R&D in GDP is a significant indicator.
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- However, more importantly, appropriate share between small and large scale projects also needs attention.
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- Notably, funds for exploratory small-scale science researches are diminishing.
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How have small science projects transformed?

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- Creative and indigenous innovations often result from the efforts of scientists working alone or in small groups.
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- The small science projects often emerge as harbingers of technological changes.
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- **Higgs boson** - Discovery of Higgs boson/God particle in 2012 at CERN, European Organisation for Nuclear Research was popular.
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- It came with $1 billion annual expenditure of CERN.
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- Yet, this began in seminal theoretical works of several independent scientists including Peter Higgs.
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- **Spectrometer** - In 1928, C.V. Raman spent about Rs. 200 on his laboratory-built spectrometer.
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- Today, the global market for Raman spectrometers is about $1.2 billion.
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- It also brought to India its first science Nobel prize.
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- **ISRO** - Through the 1960s, Vikram Sarabhai was experimenting with simple

sounding rockets.
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- These ultimately grew into the Indian Space Research Organisation of today.
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What is desired?

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- India’s provision for **competitive research grants** needs upward revision.
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- **Science budget** has to be balanced between mission-oriented projects and the small research grants.
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- Mission-oriented projects include those in the areas of defence, space, nuclear and environmental sciences.
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- Besides these, the **research ecosystem** that provides human resources and feeds for innovations needs enough policy focus.
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- The Economic Survey recommends having a greater share of an **investigator-driven model** for funding science research.
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- These are voluntary, independent researches.
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- Here, the investigator or the institution (academic, private, or governmental) serves as the Sponsor.
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- It provides more scope to generate individual, innovative ideas.
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- The Survey also calls for **expanding resources** in this regard.
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- It stresses on creating **governance structures** for facilitating supportive research environment in the country.
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Source: The Hindu

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Quick Fact

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SERB

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- The Science and Engineering Research Board is an autonomous body.
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- It works under the **Department of Science and Technology**.
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- It was set up by the **Science and Engineering Research Board Act, 2008.**
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- It is aimed at **promoting basic research** in Science and Engineering.
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- It provides financial assistance for those involved.
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- These include individual scientists, academic institutions, R&D laboratories, industrial concerns and other agencies.
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