

NEXT IAS

**DAILY EDITORIAL
ANALYSIS**

TOPIC

**HOW WE CAN BRING OUR
SCIENTISTS BACK HOME**

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Context

- India's announcement to bring back around 120 Indian scientists under the **Prime Minister Research Chair (PMRC) Scheme** currently working overseas. It raises deeper questions about **India's research ecosystem** and **empowering high-quality work**.
- India loses talent due to heavy teaching loads, administrative burdens, short-term funding, and instability in universities which push researchers abroad for better support and freedom.

About the Prime Minister Research Chair (PMRC) Scheme

- It aims to strengthen India's research and innovation ecosystem by attracting **distinguished Indian researchers working abroad** back to the country.
- The broader objective is **to enhance India's global research standing, promote high-impact research, and improve mentoring for young researchers**.
- **Key Objectives:**
 - ◆ **Reverse brain drain** by encouraging leading Indian-origin scientists to return;
 - ◆ **Strengthen research capacity** in premier institutions;
 - ◆ **Promote cutting-edge and nationally relevant research;**
 - ◆ **Mentor Ph.D. scholars and early-career researchers;**
 - ◆ Build long-term academic leadership within Indian institutions;
- **Nature of the Research Chair:** PMRC positions are **prestigious, time-bound appointments**.
 - ◆ Chairholders are expected to lead **high-quality research programmes**, build and guide **research teams**, collaborate nationally and internationally, and contribute to **capacity building and institutional development**.
- **Funding and Support:** Support generally includes **research grants, infrastructure access, and personnel support;**
 - ◆ Funding is expected to be **centrally supported** and aligned with national research priorities
- **Implementation and Governance:** The scheme is administered by the **Government of India**, with oversight by relevant ministries and expert committees;
 - ◆ Final guidelines, eligibility conditions, tenure, and selection processes are notified through official government orders;

Key Issues and Concerns in PMRC Scheme

- **Focus on Individuals Over Institutions:** The PMRC scheme primarily targets the return of a limited number of high-profile scientists.
 - ◆ **Research quality depends far more on institutional ecosystems** i.e. labs, research staff, funding stability, and administrative autonomy.
- **Limited Scale Relative to the Problem:** India's research talent outflow involves **thousands of early and mid-career researchers**, not just senior scientists.
 - ◆ Bringing back around 120 researchers is **too small an intervention** to reverse systemic brain drain or significantly reshape the research landscape.
- **Over-Concentration in Elite Institutions:** The scheme is largely centred on **IITs**, which already receive a disproportionate share of research funding.
 - ◆ **State universities** remain underfunded and heavily regulated, where most Indian students are trained.
- **Weak Support for Research Teams:** High-impact research is collaborative. However:
 - ◆ Postdoctoral positions in India are **few, poorly paid, and insecure;**
 - ◆ Technical and administrative research staff are limited;
- **Short-Term and Uncertain Funding:** If PMRC funding is time-bound, bureaucratically complex, and not assured over long horizons, then researchers may hesitate to undertake **high-risk, long-term projects**, undermining the very innovation the scheme aims to encourage.
- **Administrative and Regulatory Constraints:** Indian universities are often characterised by heavy bureaucratic oversight, limited autonomy in hiring and spending, and delays in procurement and approvals.

- ◆ Returning researchers accustomed to flexible systems abroad may find these constraints **deeply frustrating**, reducing effectiveness and long-term commitment.
- **Neglect of Early-Career Researchers:** The success of any research ecosystem depends on **Ph.D. scholars and postdoctoral fellows**. But, stipends remain low relative to living costs, career paths are uncertain, and mentorship quality is uneven.
 - ◆ Without improving conditions for young researchers, elite chairs risk becoming **isolated islands of excellence**.
- **Risk of Symbolism Over Structural Reform:** There is a broader fear that PMRC could become a **symbolic gesture** like high visibility, low systemic impact.

Other Related Efforts & Initiatives

- **Ramanujan Fellowship:** Implemented by **SERB / DST**; Targets **mid-career Indian scientists abroad**;
 - ◆ Competitive salary, research grants, and institutional flexibility;
- **VAJRA (Visiting Advanced Joint Research) Faculty Scheme:** Enables **short- and medium-term visits** by overseas scientists;
 - ◆ Encourages collaboration without requiring permanent relocation;
- **Global Initiative of Academic Networks (GIAN):** Brings **international and diaspora faculty** to teach and collaborate;
 - ◆ Focus on exposure of Indian students to global research practices;
- **Proposed National Research Foundation (NRF):** Envisioned as a **central pillar of India's research funding system**;
 - ◆ Long-term, competitive, peer-reviewed funding across disciplines;
 - ◆ Strong focus on universities beyond elite institutions;
- **Institutions of Eminence (IoE) Scheme:** Grants selected institutions **greater autonomy and funding**;
 - ◆ Aims to build globally competitive universities;
- **INSPIRE Programme:** Supports students from school to postdoctoral levels; Focus on **early identification and nurturing of research talent**.
- **Prime Minister's Research Fellowship (PMRF):** High-value fellowships for **Ph.D. students in STEM**;
 - ◆ Aimed at attracting top talent into doctoral research in India;
- **National Education Policy (NEP) 2020:** Emphasises research-led universities; interdisciplinary education; reduced regulatory burden; and advocates creation of **research-intensive universities**.
- **Atal Innovation Mission (AIM):** Promotes research translation, startups, and innovation; Supports incubation centres and research entrepreneurship;

Key Recommendations & Suggestions

- **Strengthen Research Institutions Systemically:** Invest in **long-term institutional capacity**, not just flagship schemes;
 - ◆ Prioritise laboratories, shared facilities, research staff, and maintenance;
 - ◆ Ensure continuity of funding beyond individual tenures
- **Expand Beyond Elite Institutions:** Allocate **dedicated research funding** to State universities;
 - ◆ Reduce over-centralised regulation and allow differentiated missions;
 - ◆ Support regionally relevant research aligned with local challenges;
- **Provide Long-Term, Predictable Research Funding:** Move from short-term grants to **5–10 year funding horizons**;
 - ◆ Encourage risk-taking and foundational research;
 - ◆ Reduce excessive reporting and compliance burdens;
- **Create Robust Postdoctoral and Research Staff Positions:** Expand **well-paid, multi-year postdoctoral fellowships**;
 - ◆ Professionalise research support roles (lab managers, technicians);
 - ◆ Enable portability of grants and positions across institutions;

- **Enable Retention, Not Just Return:** Guarantee academic freedom and intellectual autonomy;
 - ◆ Provide clarity on tenure, evaluation, and promotion criteria;
 - ◆ Support spousal employment, housing, and relocation needs;
- **Reduce Administrative and Bureaucratic Constraints:** Delegate financial and hiring powers to institutions;
 - ◆ Simplify procurement and project approval processes;
 - ◆ Shift from control-based oversight to outcome-based accountability;
- **Promote 'Brain Circulation' Alongside Return:** Support joint appointments, visiting chairs, and remote collaboration;
 - ◆ Enable diaspora-led research consortia and mentorship networks;
 - ◆ Simplify rules for cross-border funding and collaboration;

Other Reforms Needed

- **For Higher Education & Research Systems:** Substantially increase **public R&D spending** (India remains below 1% of GDP, compared to 2–3% in brain-gain countries).
 - ◆ Grant **institutional autonomy** in hiring, pay scales, and research agendas.
 - ◆ Create transparent, tenure-track-like systems with **internationally comparable evaluation norms**.
 - ◆ Reduce administrative burden on scientists and faculty.
- **Governance Reform:** Enforce **merit-based recruitment and promotion** across public universities, research bodies, and state institutions.
 - ◆ Strengthen **judicial efficiency, contract enforcement, and regulatory clarity**.
 - ◆ Decouple academic and scientific leadership positions from political influence.
- **Competitive Research & Innovation Ecosystems:** Build dense **university–industry–startup linkages**.
 - ◆ Expand mission-driven research funding (health, climate, AI, materials).
 - ◆ Improve intellectual property protection and technology-transfer offices.
 - ◆ Enable mobility between academia, industry, and government labs.
- **Diaspora-centric 'Circulation' Policies:** Long-term visiting professorships, joint labs, and dual appointments.
 - ◆ Simplified procedures for diaspora scientists to lead projects in India.
 - ◆ Recognition of foreign experience in seniority and pay.
 - ◆ Institutionalized diaspora advisory councils in science and technology.
- **Sector-specific Reforms:**
 - ◆ **Healthcare:** Better working conditions, safety, postgraduate seats, and research pathways.
 - ◆ **STEM:** Early-career grants, independence for young investigators, access to global infrastructure.
 - ◆ **Public Sector Professionals:** Competitive pay combined with performance accountability.
- **Data, Monitoring, & Policy Feedback Loops:** Establish a national **skilled migration observatory**.
 - ◆ Track return, circulation, and sectoral outcomes.
 - ◆ Use evidence to adapt policies iteratively.

Conclusion

- Reverse brain drain is **not a recruitment problem**; it is a **system design problem**. Scientists return and stay, when institutions are trusted, funding is stable, careers are viable, and research has meaning beyond metrics.
- Challenges such as climate change, public health, agriculture, and urbanisation cut across disciplines and regions.
 - ◆ They demand collaboration, diversity of institutions, and sustained commitment across the country.

Source: TH

Daily Mains Practice Question

- [Q]** Discuss the structural, institutional, and socio-economic factors that influence scientists' return, and suggest measures required to make such return meaningful for India's research and innovation ecosystem.