



**drishti**

## Women in Research And Development

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### Why in News

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According to the **Science and Technology Indicators (STI), 2018**, India's private sector research companies appear to **employ a larger proportion of women in core research and development activities** than government-funded major scientific agencies do.

### Key Points

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- India had 3,41,818 scientists in R&D with nearly 2,03,759 employed by government institutions or in the higher education sector, as of 2018.
- Of the 20,351 women employed in private R&D companies, about **three in four** were involved in "R&D activities".
- However, of the 23,008 women in major scientific agencies (government), **fewer than half** were in the same 'R&D activities' category.
- Also, for **every one woman, there are six** male scientists in **private** sector R&D establishments. However, the ratio is **four for one** in major scientific agencies.
- The bulk of scientists (in private and publicly funded organisations included) were in 'Engineering Technology' followed by the Medical Sciences and Natural Sciences.

### Science and Technology Indicators (STI)

- The STI is a periodic compendium of the state of scientific research in India.
- It is prepared by the **National Science and Technology Management Information System**, a division of the **Department of Science Technology**.

- **Reasons for low participation of women in R&D:**

- The recruiters and managers at private firms are held **more accountable** to hire as well as promote female employees, as compared to those in government offices.
- The large drop in the number of women between the doctoral and professional stages appears to be in part due to **social pressure on women** to have a family which is seen as incompatible with a professional career.
- There are also **patriarchal attitudes in hiring practices**, so many women are discriminated against at this stage as well, with administrators deciding that women ‘should’ be opting for family over a career.

- **Global Scenario:**

- **Women in STEM:**

- **UNESCO** data from 2014-16 shows that only around **30% of female students** select STEM (Science, Technology, Engineering and Mathematics)-related fields in higher education.
- Female enrolment is particularly **low** in information technology (3%), natural science, mathematics and statistics (5%) and engineering and allied streams (8%).

- **Research as a Profession:**

According to a 2018 fact sheet prepared by UNESCO on women in science, only **28.8% of researchers are women**.

- **Share in Nobel Prizes:**

Between **1901 and 2019**, 334 **Nobel Prizes** have been awarded to 616 Laureates in Physics, Chemistry and Medicine, of which just **20 have been won by women**.

- **Share in Abel Prizes:**

- In 2019, the **American mathematician Karen Uhlenbeck** became the first woman to win the Abel Prize, following 16 male mathematicians.
- The Abel Prize is a Norwegian prize awarded annually by the King of Norway to one or more **outstanding mathematicians**.

- **Share in Fields Medals:**

- The Fields Medal so far has also been awarded to only one woman mathematician, the late Maryam Mirzakhani of Iran, as opposed to 59 men since 1936.
- The Fields Medal is awarded **every four years** by the **International Congress of Mathematicians** to recognize outstanding mathematical achievement for existing work and for the promise of future achievement.

- **National Scenario**

- **Women in STEM:**

- The female enrolment in science streams rose from 2010-11 to 2015-16.
    - According to the **NITI Aayog** report in 2015-16, 9.3% of female students in Undergraduate (UG) courses were enrolled in engineering, compared to 15.6% across genders. Conversely, 4.3% of female students were enrolled in medical science, compared to 3.3% across genders.

- **Research as a Profession:**

- Only 13.9% of women work as a researcher in India. At **master's and doctoral levels, female enrolment** remained **lower** than overall enrolment.

- **Presence at Technical Professions:**

- The NITI Aayog report has also found that in over 620 institutes and universities, including IITs, NITs, ISRO, and DRDO, the presence of women was 20.0% among Scientific and Administrative Staff, 28.7% among Post-Doctoral Fellows, and 33.5% among PhD scholars.

- **Gender Gap Index**

- According to the **Global Gender Gap Index 2020**, a study covering 153 economies, India has slipped to the 112<sup>th</sup> spot from its 108<sup>th</sup> position in 2018.
    - The report also says it would take nearly a hundred years to close the gender gap in various fields in India compared to the time it would take in other countries.

- **Work Participation:**

- According to the **World Bank**, India ranks **163<sup>rd</sup> out of 181 countries** in **female labour force participation**.
    - Also, India is one of the few countries in the world where women's work participation rates have fallen sharply – from 29% in 2004-5 to 22% in 2011-12 and to 17% in 2017-18.

- **Inequality at Work:**

- According to the **Centre for Monitoring Indian Economy (CMIE)**, a large percentage of all the jobs lost last year were held by women. Out of the 11 million jobs lost in 2018, women accounted for 8.8 million.
    - **Indian women receive 34% fewer wages** than men for equivalent work, spend around five hours a day on unpaid care work compared to a mere half an hour for men and are primarily engaged in low-paying, informal sector work.

- Initiatives to Promote Women in Science

- **Vigyan Jyoti Scheme:**

- **Vigyan Jyoti Scheme** is launched by the **Department of Science & Technology (DST)**.
    - It is intended to create a **level-playing field** for the **meritorious girls in high school** to pursue Science, Technology, Engineering, and Mathematics (STEM) in their higher education.
    - It also offers exposure for girl students from the rural background to help to plan their journey from school to a job of their choice in the field of science.

- **GATI Scheme:**

The **Gender Advancement for Transforming Institutions (GATI)** will develop a **comprehensive Charter and a framework for assessing Gender Equality** in STEM

- **KIRAN Scheme**

**Knowledge Involvement in Research Advancement through Nurturing (KIRAN) Scheme** is started by the **Department of Science and Technology (DST)** aimed to **bring gender parity in the Science & Technology sector** by inducting more women talent in the research & development domain.

- **Beti Bachao Beti Padhao (BBBP) Scheme**

**BBBP** is the joint initiative of the Ministry of Women and Child Development, Ministry of Health and Family Welfare and Ministry of Human Resource Development to ensure **survival, protection, and empowerment of the girl child**.

- **National Science Day (NSD)** was celebrated on 28<sup>th</sup> February 2020 with the theme ‘Women In Science’.

**Dr Niti Kumar**, a senior scientist from the **CSIR- Central Drug Research Institute (CDRI)**, Lucknow received **SERB Women Excellence Award-2020** on this occasion.

- According to the **All-India Survey on Higher Education (AISHE) report 2018-19**, the gender gap in the country **narrowed** as compared to the previous year, i.e. 2017-18.
  - Initiatives like **She-box** are ensuring **workplace safety** and boost better participation of women in all areas of economy,

## Way Forward

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- Inequalities in gender participation in science emanate from social-economic issues, which can be treated by bringing **behavioural change**.
- Also, **better political representation of women** can go a long way in deconstructing the stereotype of women

- **Better workforce participation** can only be brought by collective effort of the society and the people in governance.
- Growth in jobs must be inclusive and new jobs need to be secure with **better work conditions, including social security benefits.**

**Source: TH**