Women in STEM – Need for Political Change

Mains: *GS II - Education|GS III – Science and Technology*

Why in News?

While there have been significant strides in getting more women into STEM education, there is a stark gap between enrollment and long-term career retention And this situation calls for a comprehensive transformation that goes beyond policy gestures and aims at altering the systemic barriers that hinder women's progress in scientific fields.

What is STEM?

- **STEM** – STEM stands for Science, Technology, Engineering and Mathematics, encompassing disciplines that drive innovation and address global challenges.
- It fosters critical thinking, problem-solving and creativity, equipping individuals to tackle complex issues and contribute to sustainable development.
- **Status of India –** Women now make up 43% of enrollments in STEM disciplines in higher education.
- A much smaller percentage of women continue in research or STEM-based careers.
- **Reason for mismatch** – This mismatch is partly due to the persistent notion that a successful scientist is one who is continuously available, mobile, and focused solely on work.
- Such expectations fail to account for the realities of family care work, which overwhelmingly falls on women in India.
- **Inefficiency of policies** – Even when policies like "career breaks" or "WISE-KIRAN" are introduced, they often fail to address the broader cultural and institutional assumptions that these schemes aim to overcome.

What are the issues identified?

- **Lack of Uniformity –** The experience of being a woman in STEM in India is far from uniform.
- Women from privileged backgrounds—urban, upper-caste, and well-networked—often have access to better mentorship, resources and opportunities.
- While women from marginalized castes, rural backgrounds, or smaller institutions face multiple layers of exclusion.
- This structural inequality affects not only career trajectories but also the kind of research that gets pursued.
- **Barriers for Marginalized Gender Identities –** For gender minorities, such as trans scientists, the barriers extend beyond access to education or career opportunities.

- The difficulties begin at the administrative level, where mismatches between gender identity and official records are a daily hurdle.
- Such individuals also face significant harassment, exclusion, and safety concerns that often go unnoticed or unaddressed in institutional settings.
- A single hostile or discriminatory experience can derail a promising career.
- This treatment reinforces an exclusionary system that demands conformity to a narrowly defined set of norms regarding gender, mobility, and work ethics.
- **Structural Violence and Safety in STEM –** Workplace harassment, lack of childcare facilities, and unequal distribution of unpaid care work create an environment in which women often face unsafe, uncomfortable, or outright hostile conditions in the STEM field.
- This is not just a matter of interpersonal conduct; it's a systemic issue embedded in the culture of scientific institutions.
- As the report indicates, women often have to endure this as part of their "merit," or their ability to remain in the field.
- In rural or field-based research, the vulnerabilities faced by Dalit women or trans individuals are even more pronounced.
- **Economic and Job Security Issues –** India's economy is not creating enough secure, well-paying jobs in STEM fields to match the growing number of graduates, especially women.
- The country's low female labor force participation rate—31.7%—and the prevalence of informal, uncertain employment only worsen the challenges faced by women in STEM.
- These insecurities are magnified for women from marginalized backgrounds, where low job protections further increase exposure to discrimination and exploitation.

To know more about STEM in India click here

What needs to be done?

- **The Importance of Accountability and Institutional Change –** Even when women remain in the STEM field, they are often underrepresented in leadership roles and senior authorships, despite the increase in female participation at entry levels.
- For true gender equity to be achieved, it's crucial to not only increase representation but also ensure that women have the support, mentorship, and opportunities to rise to leadership roles.
- This requires a deep overhaul of institutional structures that perpetuate biases and exclusion.
- Moreover, gender inclusion in science directly impacts the quality of knowledge produced.
- A more inclusive scientific community can better address real-world issues like public health, climate change, and social justice.
- A diverse team brings different perspectives, which can help identify research questions that might otherwise be overlooked.
- Therefore, gender inclusion is not just about fairness; it's about making science more effective and relevant to a broader range of people and challenges.
- **Strengthening Deliberative Democracy through Science –** An inclusive STEM community is vital not just for scientific advancement but for the broader functioning

of a democratic society.

- If science in India can reflect a wider diversity of experiences and viewpoints, it can better contribute to discussions on key societal issues, from climate adaptation to the regulation of emerging technologies.
- Women, particularly those from marginalized communities, can reshape how problems are framed, what solutions are proposed, and what ethical considerations are prioritized.

What lies ahead?

- For India to retain women in STEM, political change is essential.
- This requires rethinking institutional structures, reevaluating meritocratic assumptions, improving job security, and ensuring a safe, inclusive, and supportive environment for women and gender minorities.
- Only then can India fully harness the potential of its diverse talent pool and produce high-quality, relevant scientific research that addresses the pressing challenges of the 21st century.
- India's need for political and institutional change to retain women in STEM is deeply intertwined with social, cultural, and structural challenges that persist at multiple levels.

Reference

[The Hindu| Women in Stem]