Gender Parity in India's Scientific Landscape: Evaluating Science Diplomacy Progress

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India's National Education Policy 2020 places significant importance on achieving gender equality and inclusivity in educational institutions. Simultaneously, gender equality is a pivotal focus area during India's G-20 Presidency and aligns with the UN Sustainable Development Goals. The Department of Science and Technology (DST) is actively involved in various initiatives to advance these objectives. DST is poised to take a central role in fostering gender equity to attain gender equality within the realms of research and development. This will involve not only the development and implementation of gender-inclusive programs at the national level but also the dissemination of best practices drawn from international programs to promote gender equality effectively.

The Athena SWAN (Scientific Women's Academic Network) Charter, established and managed by the United Kingdom's (UK) Equality Challenge Unit (now part of Advance HE) in 2005, serves as a global framework utilised to promote gender equality in higher education (HE) and research institutions. The charter is rooted in its encouragement and recognition of dedication to enhancing the professional trajectories of women in academia and research. It addresses four essential domains: bolstering representation, facilitating students' transition into academic roles, supporting career progression, and cultivating a positive working environment. Guided by ten pivotal principles, the Athena SWAN initiative serves as a framework for institutions to improve gender equality within their academic and research landscapes.

With a growing body of evidence on the efficacy and influence of the Athena SWAN Charter, its membership is rising within the UK, and its impact extends to other nations. The charter was successfully transferred and converted into globally comparable and locally contextualised, including Australia, Canada, Ireland, the United States of America and now India.

The Gender Advancement for Transforming Institutions (GATI) programme in India was initiated by DST in collaboration with the Advance HE & British Council and launched across 30 research institutions and universities during the pilot phase. GATI aims to rectify gender imbalances in Science, Technology, Engineering, Mathematics and Medicine (STEMM) institutions. The program evaluates inclusivity in policies and practices of participating institutions, gauges stakeholders' awareness and perceptions, and seeks to advance gender equality.

The pilot phase of GATI in India involved receiving 190 expressions of interest from institutions. Eventually, 30 Indian institutions were selected and supported by DST for two years, in partnership with six UK institutions in 2021. The British Council provided funding of GBP 25,000 each to six Athena Swan members in the UK, comprising a combination of UK-based higher education institutions and research institutes. This funding is designated to establish collaborative partnerships with selected Indian GATI pilot members to exchange

best practices and enhance gender equality in higher education and research. By 31 January 2023, DST had received self-assessment reports from 22 institutions.

Based on these reports, DST segregated the 30 institutions into two categories:

- Level 1 - *GATI Institutions* (18 institutions): These institutes acknowledged the need to work towards achieving gender equality in STEMM fields, accepted the GATI Charter, and demonstrated a high level of commitment to promoting gender advancement with evidence, etc.
- Level 2 - *GATI Achievers* (12 institutions): Besides meeting the criteria for Level 1, these institutions submitted a self-assessment application and developed action plans to address identified gaps within their premises.

Notably, merely applying for the GATI pilot program qualified them for 'Level 1: *GATI Institution*' status. However, becoming a '*GATI Achiever Institute*' required further action beyond the initial application submission. It involved identifying specific gaps and developing action plans to address these deficiencies within their respective institutions.

Based on the assessment criteria available on the GATI website and other sources, Level 2 *GATI Achievers* effectively pursued program objectives revolving around the establishment of a comprehensive database detailing the gender landscape over the past five years within the University's various domains, encompassing undergraduate and postgraduate programs, research and post-doctoral activities, teaching and research faculty, non-teaching staff, as well as officers and leadership roles at different organisational levels. Moreover, the program aims to highlight significant measures and exemplary practices in terms of gender equality while identifying disparities across both the main and satellite campuses.

Additionally, a baseline study conducted by Thinkthrough Consulting assessed the status quo in selected Indian STEMM institutions on behalf of DST and the British Council. The study, spanning five months from May to September 2021, employed a mixed-method and quasi-experimental approach. It involved 59 institutions, with 30 designated as *GATI Institutions* (the study's pilot sites) and the remainder as control institutions. The *GATI Institutions* were broadly categorised into three main types: 1) Academic Institutions, 2) Institutions of National Importance, and 3) Research Institutions. The assessment process was characterised by a highly collaborative approach involving comprehensive quantitative and qualitative data collection to derive meaningful insights.

The study encompassed input from 555 participants, including academic and non-academic staff members, with 296 identifying as female and 259 as male. The study's scope covered diverse roles, such as Faculty members, PhD scholars, Postdoctoral Fellows/Senior Research Fellows, Research Associates, Administrative Staff, and Finance and Human Resources professionals. This comprehensive approach sought a holistic perspective on gender dynamics within treatment and control institutions.

Findings from the study indicated a positive trajectory in female representation in STEMM fields, both in recruitment and leadership roles. However, these promising trends were overshadowed by the underrepresentation of women in GATI institutions compared to men. This imbalance can be attributed to various factors contributing to this situation.

Among the salient factors, one stands out prominently: the impact of societal expectations and the challenge of balancing caregiving responsibilities with work. The study revealed that female faculty members encounter significant obstacles in adhering to the tenure track – a trajectory crucial for the longevity of their careers – due to the demands of care responsibilities. Further exacerbating the situation, inadequate support systems within the workplace compound these difficulties.

Another noteworthy factor affecting the equitable inclusion of women in STEMM is the absence of a flexible career re-entry plan. Consequently, career breaks often lead to a downward shift in employment status, hindering women's professional advancement within these fields. These insights spotlight the intricate interplay of various elements perpetuating gender disparities within GATI institutions and emphasise the need

for targeted interventions to foster more inclusive environments for women in STEMM.

As reported by study participants, these challenges were particularly pronounced within research and technology-based careers, primarily due to the rapidly evolving nature of these fields. Moreover, the absence of gender-sensitive facilities, such as on-campus childcare support, significantly impacted women's choices, often causing them to prioritise care responsibilities over pursuing careers in STEMM. The study also identified instances of discrimination and sexual harassment, acting as hindrances to gender equality within *GATI Institutions*. However, recent years have seen the implementation of stringent legislation and increased awareness, which have helped mitigate the severity of these issues. In essence, the study's findings illuminated the presence of covert discrimination and implicit biases within the workplace, aspects that have become ingrained in the organisational culture.

The baseline survey by Thinkthrough Consulting revealed significant gaps within the 30 pilot institutions. Notably, these pilot institutions also compiled data on the gender landscape over the past two years. This represents a commendable step forward for GATI in motivating academic and research institutions to collect baseline data and pinpoint areas where India may lack gender equality in STEMM areas. It is worth noting that all participating institutions have established a distinguished committee known as *GSAT (GATI Self-Assessment Team)*, which is crucial in enhancing gender progression and advancement per the program's stipulations. Many *GATI Achievers* have reported the implementation of diverse initiatives aimed at promoting gender diversity, such as the recruitment and retention of female faculty members at the departmental level, conducting gender sensitisation workshops, and adopting family-friendly policies.

Furthermore, the Indian Institute of Technology (IIT) Delhi is actively working towards creating an inclusive infrastructure to foster a more diverse and equitable campus environment, transcending traditional gender binaries. However, it remains to be seen how other *GATI Achievers* plan to address the identified gap areas and how the survey results by Thinkthrough Consulting will be integrated into the overall process. Further clarification on this aspect is needed to comprehensively understand the program's impact and strategies to address gender disparities within these institutions.

Women's representation in STEM remains inadequate, particularly in higher leadership positions. These initiatives drive change within organisations, provide a structured framework for gender equality efforts, facilitate the exchange of best practices between nations, enhance public perception, and are viewed as cost-effective by research funders, as they are tested programs in other countries. However, there is a critical need for a thorough evaluation of the implementation aspect of such action-driven international programs. The engagement of various stakeholders is crucial for implementing the action plan effectively within institutions. The support from DST for only two years, without significant involvement from other stakeholders like the Ministry of Education and the Indian science academies, may diminish the desired outcomes. The significance of recognition letters issued by DST to recognised institutions, with a validity of five years, serves as a formal acknowledgement of the institution's capabilities & contributions and provides a sense of encouragement. However, the extent to which these recognition letters inspire and facilitate outcomes will depend on various factors, including the institutional context, leadership, and active involvement of the other stakeholders. The role and participation of UK institutions also need to be evaluated and defined by considering the differences in culture between these institutions and those of Indian institutions. Altogether, a robust strategy is necessary to transition the pilot program, initially involving 30 institutions, into a comprehensive plan encompassing all premier Indian research institutions and universities.

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