



"WOMEN IN SCIENCE & ENGINEERING – KIRAN (WISE-KIRAN)"

A STEP TOWARDS GENDER EQUITY IN STI

Dr Nisha Mendiratta

Adviser/Scientist G and
Head, Women In Science &
Engineering (WISE-KIRAN) Division
Department of Science &
Technology (DST), GOI
nisha67@nic.in

SCIENCE and gender equality are both vital for the achievement of the internationally agreed development goals, including the 2030 Agenda for Sustainable Development. Boosting the number of women and girls entering careers involving STEM (Science, Technology, Engineering and Maths) is vital for overall growth and development for a sustainable world. Though the global community has made tremendous efforts in inspiring and engaging women and girls in science, yet women and girls continue to lag in this field. As compared to developed countries, the gender gap in the STEM fields is more pronounced in India.

The government and society including science and research institutions have a stake in bridging this gap. It requires a focused approach to create opportunities for women and girls to learn, grow and innovate in science and technology, and also for the organizations to adopt the women's empowerment practices that promote gender equality in the workplace and the community.

Recognising this challenge, the Department of Science and Technology (DST) has been actively engaging to remove the obstacles in participation of women in the field of S&T through gender enabling programs over the past two decades. DST launched women centric programmes in the year 2002, now known as 'Women in Science and Engineering-KIRAN (WISE-KIRAN)' to provide career opportunities and create an enabling ecosystem for women scientists and technologists. WISE-KIRAN has implemented many schemes through various programmes and mechanisms to address cultural and institutional challenges that women scientists have to face.

WISE-KIRAN's Objectives & Approach

It was recognised that there is a need to focus on the challenges specific to India including the cultural beliefs, educational infrastructure, family pressures and policy framework at the institutional level. The key objectives that have been laid down to address these challenges are:

- Retain women in science and help re-entry of women scientists after a break into career paths within the S&T sector

- Enhance the representation of women in Science, Technology, Engineering and Mathematics (STEM)
- Implement programmes under different categories keeping in view the individual capability, competency and aptitude in the context of basic research, societal development and self-employment
- Provide avenues for capacity building, knowledge and skill enhancement both at national and global level.

Considering the enormity of the problem and task at hand, WISE-KIRAN adopted a holistic approach involving human resource development, infrastructure development and institutional policies alignment. This approach has shown encouraging results in creating a positive impact and making a difference across segments.

The programmes that have been conceptualised and launched by WISE-KIRAN are:

1. **Women Scientist Scheme-WOS** provides career opportunities to unemployed women scientists and technologists, especially those who had a break in career, for pursuing research in frontier areas of Science and Engineering. Due to this reason, many well-qualified women scientists have been left out of the S&T activities. The options for revival of their profession are meagre in the current system due to restrictions in age and qualification/experience criterion. This scheme addresses the social challenge that requires women to give up their career when starting a family. There are three major components of the Women Scientist Scheme:

- **Women Scientists Scheme-A (WOS-A)** for conducting research in Basic & Applied Sciences provides opportunities to women scientists & technologists between the age group of 27-57 years who desire to return to mainstream science and work as bench-level scientists. It covers five discipline areas, namely, Physical & Mathematical Sciences; Chemical Sciences; Life Sciences; Earth & Atmospheric Sciences; Engineering & Technology.
- **Women Scientists Scheme-B (WOS-B)** for S&T interventions provides opportunities to women scientists & technologists who had a break in career and would like to utilise their scientific knowledge and temperament for the benefit of society. WOS-B focuses on projects leading to S&T based solutions to societal issues and



challenges for social benefits. Such projects deliver possible solutions by way of development of viable technology/technique and or/lab-to-land technology transfer, its adaptation and scaling up.

- **Women Scientists Scheme-C (WOS-C)** enables them to become Intellectual Property Rights (IPRs) professionals. It provides a dual opportunity to women scientists to come back to the mainstream and take up the role of IPR professionals & entrepreneurs. The women are trained in the field of IPR and their management for one year, including patent search, know-how, drafting, filing, trademarks, trade secrets, copyrights, etc. A large number of alumni of this program are employed with law firms, Knowledge Processing Organisations and a few have even started their own firms.
2. **Vigyan Jyoti:** Vigyan Jyoti is a unique initiative of DST dedicated to create a level-playing field for meritorious girls in high school to pursue STEM in their higher education. It also offers exposure for girl students from rural background to help plan their journey from school to a job of their choice in the field of science. The Navodaya Vidyalaya Samiti (NVS), an autonomous organisation of MHRD, is the implementation partner of Vigyan Jyoti.
- The scheme encourages female students from Class XI to PhD level to pursue STEM education and career by creating an ecosystem for handholding, guidance & mentorship and helping them and their families overcome the cultural and other barriers. Various activities such as science camps, special lectures/classes, counselling of students and parents, interaction with role models, tinkering activities, visit to Knowledge Partners/Research Labs/Industries/NGOs are being conducted in the program in order to motivate girls. The scheme also provides for financial assistance to the girl students if they get into any top institute for pursuing these subjects.
3. **Indo-US Fellowship:** The fellowship provides international exposure and opportunities to Indian women scientists and technologists to undertake international collaborative research in STEMM (Science Technology Engineering Maths and Medicine) in premier institutions of the US to enhance their research capacities and capabilities. Through this program, women fellows get an exposure to the US scientific community and their contemporary research, means & methodologies. The area of work may include Agricultural Sciences, Atmospheric and Earth Sciences, Chemical Sciences, Cognitive Sciences, Computational Sciences & IT, Engineering and Technology, Life Sciences, Mathematical Sciences, Medical Sciences and Physical Sciences.
4. **CURIE (Consolidation of University Research for Innovation and Excellence in Women Universities):** Lack of adequate and good infrastructure at universities is one of the reasons for the declining preference for basic sciences. Women Universities require additional support to upgrade their research facilities; hence, a special program 'Consolidation of University Research for Innovation and Excellence in Women Universities (CURIE)' was started in the year 2008-09. The aim of the initiative is to develop

research infrastructure and establish state-of-the-art research facilities in women universities and PG colleges of the country to create world class women scientists in all areas of Basic & Applied Sciences.

5. **CURIE AI:** AI (Artificial Intelligence) is an emerging field that has been transforming the fields of science, technology, business & economics. The scheme has recently been launched to ensure equal participation of women in this field by providing enabling environment. DST has established AI labs in 6 CURIE beneficiary universities with the goal to foster AI innovations and set up AI-friendly infrastructure to prepare skilled manpower for AI-based jobs in the future. This facility is giving exposure of different AI tools to women students coming out from these universities and will improve employability of women in this upcoming field.
6. **GATI (Gender Advancement for Transforming Institutions):** GATI aims to develop a Charter for Gender Equality in STEM with focus on bringing about transformational changes at the institutional level for supporting diversity, inclusion and the full spectrum of demographic talent for their own success and progression. In particular, it aspires to create an enabling environment for equal participation of women in science, technology, engineering, medicine and mathematics disciplines (STEMM) at all levels, addressing deep-rooted problems. It envisages a fresh perspective on not just measures for increasing retention and recruitment but the progression of women throughout their professional journey. This will entail examining the full life cycle in the profession of women in STEMM at various levels in the institution.
- Key interventions under GATI Pilot would include, sensitization and awareness building to create an enabling environment, developing materials and tools for training, provision of hand-holding support, development and delivery of action plans to set up systems and practices at the institutional level to promote gender equality. GATI has developed a draft framework to measure organizational strengths and weaknesses in the area of gender equity in Science, Technology, Engineering, Mathematics, and Medicine (STEMM).

Apart from these programmes, the fifth Science, Technology, and Innovation Policy (STIP 2020) has been drafted by DST to bring about profound changes by building a nurtured ecosystem that promotes research and innovation on the part of both individuals and organisations. The STIP 2020 focuses on facilitating women for STEM employment and the Chapter "Equity and Inclusion" of the draft STIP 2020 addresses women in STEM.

It has to be realised that there is a need to empower women scientists from all walks of life in STEM education and encourage them to (re)build their careers by providing them scientific avenues and support. The challenges faced by Indian women workforce in higher education and further in scientific R&D and technology participation need to be addressed and more such initiatives for the benefit and empowerment of Indian women scientific workforce need to be conceptualised and implemented.

