



Action Agenda for Boosting Women's Participation in India's Energy Sector

Role of the Government and Industry

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Overview

Women workforce participation in India's Energy Sector

As the fastest-growing large economy in the world, India's energy demand is expected to grow by almost 5% per year till 2040 [1]. The International Energy Agency projects that India's expanding economy, population, urbanization, and industrialization will drive the largest increase in energy demand globally. This growth will be fuelled by a shift from coal to cleaner energy sources like solar and wind, projected to account for 70% of the global energy share by 2050 [2].

Globally, within the traditional energy sector, women hold only 22% of the jobs and the gender wage gap in the energy sector is about 15%, even when skill levels are comparable [3]. In India, women make up less than 10% of the energy workforce, including in oil and gas, and only 11% in the solar renewable energy sector [4]. According to LinkedIn Economic Graph data, while the representation of women among entry and mid-level senior positions is 14% and 17% in the oil and gas sector, it dips to 11% at the Manager and Director levels, and further decreases to 10% and 9% at VP and CXO levels [5].

Against this backdrop, CII — Centre for Women Leadership and The Quantum Hub (TQH) hosted a closed-door roundtable consultation session with Industry partners to understand the role of India's energy sector in accelerating women-led development in the country. The convening had representatives from both conventional and new and renewable energy firms, with facilitated discussions on advancing women's employment and leadership in the energy sector. Challenges, recommendations, and the way forward that emerged from these discussions have been summarized in the following sections.

[1] [International Energy Agency. \(2021\). India Energy Outlook 2021. IEA Publications.](#)

[2] [International Energy Agency. \(n.d.\). World Energy Outlook 2023. Retrieved August 28, 2024.](#)

[3] [Kindermann-Zeilinger, I. & Gómez, L.B. \(n.d.\) Women and Green Skills in the Renewable Energy Sector. *Global Forum on Sustainable Energy*. Retrived August 28, 2024.](#)

[4] [Mishra, V. \(February 12, 2024\). Gender Empowerment in the Renewable Energy Sector. *Global Energy Alliance for People and Planet*.](#)

[5] [The Quantum Hub. \(2024\). Women in Leadership in Corporate India: Insights from the LinkedIn Economic Graph. *TQH Consulting*.](#)

Challenges Related to Women's Participation

On-site v/s Corporate Roles

Education and Skilling Gaps

- While women's participation in STEM in India is higher than the global average, at over 40% [6], industry-aligned education that meets the demands of the energy sector is missing. This is especially true for new and renewable energy sectors, where most of the learning happens on the job. This missing link in education reduces women's employability, limiting women's participation and further widening the gender gap in the energy workforce
- There is also a mismatch between energy sector demand and the skill training offered at ITIs and other government-run skilling institutions/programs. Women's participation remains concentrated in gender-role conformant trades. In 2019, women accounted for 54.69% of non-engineering and 4.28% of engineering enrollments at Industrial Training Institute (ITIs) [7]. While short-term skilling under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) saw higher placement for women than men in 2016-20, more than 50% of training and placement was concentrated in Beauty & Wellness, Apparel, Media & Entertainment, Healthcare and IT-ITeS [8]
- When the industry also offers skilling programmes, especially for on-site work which requires specialized training, women often drop out either during or shortly after training due to marriage or childbirth. This difficulty in retaining women for long-term work takes away industry's incentive to invest in upskilling them

The Startup Challenge

- Most new and renewable energy firms are startups or early-stage businesses, given the nascent stage of the sector. While many have substantial investment or funding, the age of such firms is usually 5-10 years. Since young businesses have higher capital investments, investing in training or other programs that encourage women's participation, is a significant challenge for these firms

[6] Department of Higher Education. (2024). All India Survey on Higher Education 2021-22. *Ministry of Education, Government of India*.

[7] Directorate General of Training. (September 11, 2020). *Encourage Female Participation in Vocational Training Through ITIs*. *Ministry of Skill Development and Entrepreneurship*.

[8] National Skill Development Corporation. (2020). *Gender Analysis: PMKVY 2016-2020 - Short Term Training*.

Corporate Challenges

- Within energy firms, women tend to be concentrated in HR, finance, corporate affairs and other support departments, with minimal representation in technical units. Representatives from different energy firms present at the Roundtable also reported that women's representation at the corporate level also hovers around 11-15%
- Corporate roles, along with on-site roles, see high participation of women at the entry level. However, marriage, childbirth and other familial restrictions often result in low retention, preventing women from climbing the corporate ladder and occupying mid and senior management as well as executive level roles

On-site Challenges

- A 20-25% annual growth rate is expected in the renewable sector, which will generate demand for on-site roles. However, women tend to opt out of on-site servicing roles located in rural and remote areas because of safety concerns, lack of adequate connectivity and familial constraints. Basic gender-responsive infrastructure such as women's toilets and changing rooms is often missing at on-site locations, further discouraging women's participation
- Safety is a significant concern with on-site work. There is also a contrast between the environments of traditional petroleum plants or refineries and those of solar and wind farms. The former are typically large, enclosed campuses with controlled access, while the latter are spread out over open lands, often in remote areas. In the renewable sector, therefore, land-related conflicts and local politics can make on-site work unsafe and unpredictable, especially for women technicians. Additionally, solar and wind farms are usually built on vast, open locations. For instance, on average, setting up a 1 MW solar farm takes about 4 acres [9]. These can be open on-site locations with minimal or ineffective police presence, further aggravating safety risks. In the conventional energy sector, similar challenges are evident at diesel plants, which are at significant risk of being targeted by mobs or criminals for theft

[9] Shenoy, K. (n.d.). Challenges in Solar Farm Operations and Maintenance. Infosys. Retrieved August 28, 2024.

Recommendations

A. Growing the Talent Pool: Education and Skilling

Recommendations for the Industry

- Corporates in the energy sector can allocate Corporate Social Responsibility (CSR) funds to support STEM education for women to expand the talent pool
- Encourage the establishment of skill centers and on-site training for women. These centers should be particularly focused on rural and semi-rural renewable energy hubs

Recommendations for the Government

- Contribute to expansion of the energy sector talent pipeline by mandating an industry-aligned curriculum (periodically reviewed and updated). Facilitate the inclusion of specialized graduate courses on new and renewable energy (e.g., green hydrogen, decarbonization, solar energy). Enhance fund allocation for increasing women's participation in STEM, and assisting women candidates with energy sector placements by initiating public private partnership models.
- Introduce applied engineering programs that are aligned with the industry demand. This is especially true for new and renewable energy sectors, where currently significant on-the-job training is required. The gap between skills and demand can also be bridged by bringing in women industry leaders as faculty members
- Set up a government expert panel to review and improve the employability of course curriculums, inclusion of operational niches such as manufacturing, procurement, and site management
- Introduce industry-led internship and apprenticeship programs for women candidates at ITIs and Polytechnics in partnership with energy sector firms. This can also include on-site skill training programmes for the new and renewable energy sector, introduced in partnership with industry
- Offer short-term training, potentially through skilling centres in accessible locations, designed to boost women's participation
- Increase awareness about long-term career benefits of opting for energy education and skilling programs among women, and improve women's access to online learning programs through digital literacy initiatives

B. Policies to Attract and Retain Women in the Energy Sector

Recommendations for the Industry

- Public commitment to hire a specific percentage of women every year, with the larger goal of meeting an overall target for women's workforce representation within an internally set timeline
- Implement a policy-level shift such as the introduction of flexi-timing and returnship programs to encourage women to return to work post maternity leave for whichever jobs possible. Flexible policies may also include the option to return to work in a graded manner, such as introduction of part-time work for new mothers
- Initiate culture change through gender-sensitization, including mindset and behavior shift for leadership
- Create an equitable workplace by implementing policies to minimize the wage gap between men and women, such as strict adherence to 'equal pay for equal work' at the corporate level
- Increase the representation of women in leadership roles – as a first step, the share of women on company boards can be expanded. Women leadership tends to have a positive trickle-down impact on overall participation
- Encourage horizontal movement among different job profiles, allowing women to take on new roles and continue in the ones that offer aspired career progression. This can be particularly helpful if women hired in on-site roles can transition into administrative and corporate positions to achieve career progression
- Set up women-only worksites to enhance comfort and safety for women at on-site locations
- To counter the undesirability of on-site roles in wind and solar that are located in rural and remote areas, women's participation can be nudged in urban-adjacent areas. For instance, solar plants are located close to urban areas, where more women can be encouraged to take up on-site work

Noteworthy Industry Practice(s)

- **Skill Centers for Women:** As part of their CSR work, Avaada has set up skill centers in Rajasthan, and through awareness campaigns and a focus on gender-responsive infrastructure and safety, have encouraged women's participation at these centers. Additionally, the firm also offers training programs and placement tie-ups at mahila polytechnics
- **Flexible Returnship Program:** Triune is trying to experiment with a 9 am to 3 pm flexible work hours returnship program for women, who have had to leave the workforce because of child care responsibilities or other familial limitations
- **Inter-department Hiring:** Shell does inter-department hiring, encouraging women employees to make a horizontal shift and explore opportunities across different departments every few years. This aids skill development and career progression for employees
- **Mentoring for Women's Leadership:** ReNew launched a mentorship programme where senior leaders in the organization serve as mentors to support women employees in personal and professional development and elevate them to leadership roles

Recommendations for Industry Associations

- Facilitate the exchange of best practices from corporates in India and globally, while also accounting for government advisories to create gender-intentional industry policies
- Establish a women-focused chapter to enable mentorship and networking opportunities for women in the energy sector, enabling crucial access to support and guidance for women in the sector

Insight Box: Legacy Firms v. Startups

Legacy companies in the energy sector may not be able to hire women in senior management or leadership roles unless they are growing. In that regard, startups or emerging players who are building their management and leadership teams have a bigger opportunity to bring in women. However, legacy firms can focus on creating more entry-level jobs to bring in new women talent to the sector.

Startups and early-stage businesses can learn from the experience of legacy companies to identify most effective policies and practices for enabling women's participation, retention and leadership. By adopting best practices, these businesses can accelerate progress towards their own gender representation goals.

Recommendations for the Government

- *Creation of employment-linked incentives for women apprentices or workers can also boost women's participation in the energy sector. For instance, the Union Budget 2024-25 allocated INR 52,000 crore (over 6 billion USD) for three new employment-linked incentive schemes to increase first-time hires in the electronic manufacturing sector, offering wage incentives to both employer and employee*
- *Mandate flexible working policy across the energy sector for women returning from maternity leave*
- *Introduce Gender Awards to recognize companies with the highest number of women hires and successful women entrepreneurs in the energy sector. These awards can be modeled after the Energy Conservation Awards given by the Bureau of Energy Efficiency, Ministry of Power, Government of India*
- *Industry and government must also encourage and incentivize women entrepreneurs in the energy sector through favourable procurement policies*

C. Investing in Gender-responsive Infrastructure in the Energy Sector

Recommendations for the Industry

- Allocate a gender budget to ensure women's safety in the workplace. This can go towards providing safe transportation options to women, such as night cab services, to enhance security
- Stringent enforcement of POSH (Prevention of Sexual Harassment) policies and women's safety guidelines
- Equip women-only on-site locations with all-women security teams to improve safety
- Establish crèches and after-school childcare facilities to support working mothers at the corporate level
- Offer good nutrition and free education at childcare centers located near rural renewable energy hubs to incentivize women's participation
- Provide female-focused basic infrastructure such as female washrooms and changing rooms for on-site workers

Noteworthy Industry Practice(s)

All-women Technician and Security Teams: ReNew piloted both all-women technician teams and all-women security teams at on-site locations in Maharashtra to ensure safety in on-site work

Recommendations for Industry Associations

- Establish action-oriented working groups to set specific commitments to build gender-responsive infrastructure
- Conduct cross-learning workshops on cost-effective safety management and sharing of best practices for women working in on-site roles

Recommendations for the Government

- Ensure safer public infrastructure as a priority, such as street lights and all-women police booths near renewable energy hubs*
 - Integrate the 5th Sustainable Development Goal (SDG) into the ESG reporting framework. Gender-specific CSR and ESG reporting should be contingent on compliance with gender-responsive infrastructure best practices from across industries in India and around the world*
 - State governments with energy industry clusters – for instance, Rajasthan, Maharashtra, Gujarat, and Karnataka with the highest renewable energy industry potential – can play a significant role in designing policies that not only enable scaling and investment in infrastructure but also incentivize the creation of gender-responsive infrastructure*
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Acknowledgements

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The cover images are sourced from Prashanth Vishwanathan of the International Water Management Institute and Phtorxp from Pixabay, respectively.

The Centre for Women Leadership, launched in 2023 by the CII in partnership with the Bill and Melinda Gates Foundation, aims to address the socio-economic challenges hindering gender equity. Recognising that policies and programmes alone are insufficient, the Centre focuses on identifying barriers women face in reaching their potential. Through multi-stakeholder engagement, it works to create ecosystems that support women's entry, retention, and progression as leaders in both the formal and informal sectors.

The Quantum Hub (TQH) is a public policy research and communications firm based in New Delhi. Since its inception in 2017, TQH has worked on complex public policy challenges along the entire policy lifecycle from policy mapping and research to policy engagement with government stakeholders. TQH's multi-disciplinary team brings expertise on a range of rapidly evolving policy sectors including tech policy, education, social policy, property rights, gender, urban affairs among others.