

Women in Energy Transition: Dialogues for a Just Transition towards environmentally sustainable economies and societies for all



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WOMEN IN JUST ENERGY TRANSITION

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Report summarizing the discussions and key takeaways from the expert speak, panel discussions, and open plenaries of the stakeholder dialogue series conducted from May -October 2023 by Sustainable Design Research Consortium to serve as a valuable resource for stakeholders and policymakers to understand the challenges, experiences, and lessons learned related to the governance of Just Transition, people and communities affected by the transition process, and technological tools for mapping a future for post-carbon economy and communities.

Introduction

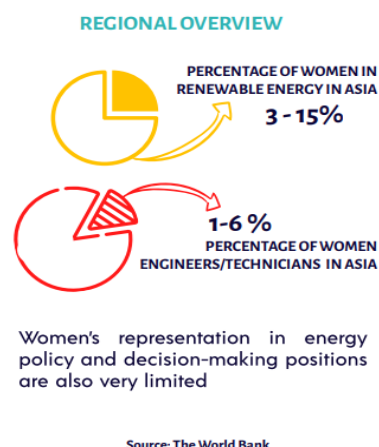
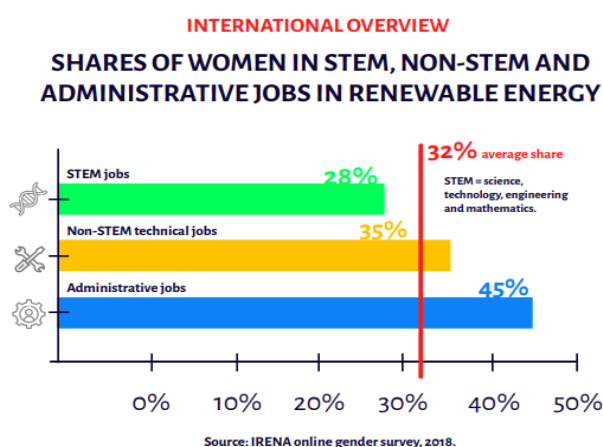
In making the shift to renewable energy, India has to manage the disruption of long-standing institutional arrangements in ways that enable clean energy in a sustainable manner. To enable this shift far reaching, systemic changes to our societies need to be made and this in turn offers important opportunities for greater inclusion and equality. Without addressing the issue of the huge gender imbalance in the clear energy sector, this transition cannot happen.

Even though research from the International Renewable Energy Agency (IRENA) shows higher percentages of women (32%) working in renewables than the rest of the energy sector (because of its multidisciplinary dimension, renewable energy potentially appeals to women more than the fossil fuel industry), women's participation in STEM jobs in the sector is still far lower than in administrative roles (28% versus 45% respectively). An IRENA report found this difference to be more pronounced in the wind energy sector, where women account for only 14% of the STEM total, compared to 45% working in administrative jobs.

Most estimates suggest women account for just 22-25% of total employees in the power sector. Globally, the number of women in the most senior roles at utilities remains low. Women account for just 17% of total board members, 21% of non-executive board members, 6% of executive board members and 15% of senior management team members. In addition, research suggests there are high degrees of gender segregation within electric utilities, with women commonly working in finance, HR, legal and accounting departments, and fewer working in science, technology, engineering and mathematics (STEM) jobs.

The renewable energy industry has a material interest in addressing its gender imbalance. A better gender balance is not a zero-sum game in which women stand to gain while men lose. Studies have shown that an increase in the number of qualified women in an organization's leadership yields better performance overall (Noland et al., 2016). Women are also likely to bring new perspectives into their work, are more likely to act collaboratively in the workplace and may contribute to greater fairness (Moodley et al., 2016).

LETS LOOK AT THE CURRENT STATUS OF WOMEN'S EMPLOYMENT IN THE CLEAN ENERGY SECTOR



The Indian Context

India has made significant progress in achieving its clean energy targets. As of July 2023, the country's installed renewable energy capacity stood at 165.54 GW, exceeding the target of 175 GW set for 2022. This includes 67.07 GW of solar power, 40.13 GW of wind power, and 10.31 GW of biomass power. India is now the fourth largest producer of renewable energy in the world. The country has also made progress in reducing its carbon emissions. In 2022, India's emissions intensity of GDP fell by 4.1%, exceeding the target of 3.5%. This was achieved through a combination of factors, including the growth of renewable energy, improvements in energy efficiency, and a shift away from coal-fired power plants.

Despite this progress, India still faces a number of challenges in achieving its clean energy goals. Fossil fuels continue to play a significant role in India's energy mix, accounting for about 75% of the country's primary energy consumption in 2022. India's reliance on fossil fuels has raised concerns about air pollution and greenhouse gas emissions. The country is among the world's top emitters of carbon dioxide, with fossil fuel combustion being a significant contributor.

Despite the growth of renewable energy, fossil fuels are likely to remain a significant part of India's energy mix in the near future, given the country's growing energy demand and the need for reliable and affordable energy sources. However, efforts to improve energy efficiency and promote cleaner technologies can help reduce the environmental impact of fossil fuel use. The country's energy demand is growing rapidly, and it will need to continue to invest heavily in renewable energy to meet this demand. India also needs to improve its grid infrastructure to accommodate the increasing amount of renewable energy.

Women's participation in India's clean energy sector is steadily increasing, but there is still significant room for improvement. According to a 2022 report by the International Renewable Energy Agency (IRENA), women make up about 11% of the workforce in India's rooftop solar sector, which is lower than the global average of 32% for women in the renewables sector overall. However, it is higher than the percentage of women in other energy sectors in India, such as coal, oil and gas companies, and electricity utilities. The participation of women varies across the value chain of rooftop solar companies. The design and pre-construction phase, and corporate segment – which offer mostly office-based positions – have a relatively high share of female employees at 18% and 34%, respectively. However, women's participation is lower in the installation and maintenance phase, which is more labour-intensive and often involves fieldwork.

Objectives of the Dialogue Series

The umbrella objective of the dialogue series was to advance India's energy transition by promoting the leadership and participation of women in the clean energy transformation. Empowering women in energy. The project seeks to address the current gender imbalances in the clean energy sector and to promote gender-sensitive action around the energy transition in a top down as well as bottom up approach.

The series was also be an opportunity to discuss among various Just Transition stakeholders the potential next steps for a future roadmap for implementation of the country's Nationally Determined Contributions (NDCs) and the Sustainable Development Goals especially goal 5 (Gender Equality). Economic growth, social inclusion and environmental protection are interconnected principles that

form the basis of the 17 Sustainable Development Goals and gender is woven throughout the SDGs as it sits at the intersection of economic, social and environmental issues.

There were three tracts of regional and local experts discussing the four pillars of India's energy transition: experiences from country policies and sectoral strategies towards environmental sustainability, the greening of enterprises and the promotion of green jobs specially in the MSME sector, citizen centric approach to combat climate change and a strong focus on social inclusion. This was followed by a multi-level Workshop-cum-Consultation involving key stakeholders of the Just Transition from across the country focussed on addressing current gaps in realizing the just energy transition.

Track 1 was divided into three sessions with an Expert Speak on Community and citizen centric approach to combat climate change. The panel brought out the best practices and challenges through sharing of case studies, followed by an open plenary.

Track 2 followed the same structure with the expert speak focussed on the use of technological tools for mapping a future for post-carbon, gender just economy including the greening of enterprises and the promotion of green jobs specially in the MSME sector. The panel had representation from the industry verticals discussing the present scenario, challenges and way forward followed by an open plenary.

Track 3 had experts focussing on the Governance of Just Transition and mechanisms from a central, state and community level followed by an open plenary on experiences from country policies and sectoral strategies towards reducing gender inequalities and gender mainstreaming to articulate the role of women in the energy transition ending with presentations from the roundtables.

Common Themes that Emerged from the Dialogue Series

In each of the tracts these common themes emerged which discourage women from pursuing leadership positions, STEM fields, or other traditionally male-dominated areas.

Gendered Division of Labor:

The expectation that women should primarily handle household chores and childcare, even when they have professional careers, creates an unequal burden and limits their time for personal development and career advancement and hindering their opportunities for leadership and equal pay.

Limited Access to Education and Resources:

In India, girls and women still face barriers to education, financial resources, and technology.

Discriminatory Laws and Practices:

Discriminatory laws and practices restrict women's rights to property ownership, inheritance, and equal participation in political and economic spheres.

Cultural Norms That Silence Women Coupled with Their Lack of Representation In Leadership:

The underrepresentation of women in leadership positions across various sectors, including government, business, and academia, perpetuates the perception that women are less capable of leadership. This lack of representation can discourage young girls from aspiring to leadership roles and hinder the advancement of gender equality.

Tract 1

Tract 1 of the dialogue series was focussed on community and citizen centric approach to combat climate change. Most of the participants for the tract work with or are linked to community level interventions on gender, climate action, women led decentralized generation, manufacturing and distribution of clean energy products and services and represented the clusters or educational units they work with. The role of the community, the present challenges and way ahead was discussed by the keynote speaker from his own experiences of working in the Sunderban coastal region where energy access is still a major concern. The panel discussion touched upon:

- Success stories delineating the journey of strengthening the agency of the local community.
- The need to showcase efforts of remarkable women led community level entrepreneurship in sustainable energy.
- Role of support institutions to build capacity in this transition.
Challenges of the access of women to financial resources, market connect, public schemes, compliance, rules and regulations to support the transition.

Key Findings

- The sociocultural bias against women which manifests in various forms, often intertwined with traditional norms and perceptions perpetuate gender inequality and significantly hinder women's empowerment, limiting their opportunities for personal and professional growth. That needs to be addressed urgently at the community level to engage a significant chunk of talent and labour pool needed in the clean energy transition.
- As women on one hand are disproportionately affected by climate change, they are also responsible for providing food, water, and energy for their families (particularly in stressed economic conditions), their decisions regarding the need to use clean energy sources can be favourably influenced based on their level of awareness of health hazards due to unclean energy sources which is lamentably lacking presently.
- Women have a wealth of knowledge and experience that can be invaluable in developing and implementing climate change solutions. They are also often more likely to adopt new technologies and practices, making them powerful allies in the fight against climate change.
- Climate change solutions must be tailored to the specific needs and vulnerabilities of local communities. This requires a participatory approach that engages women and other stakeholders in the development and implementation of climate action plans.
- Women sorely lack access to finance, training, and other resources to fully participate in the clean energy transition.
- The importance of data and disaggregated information to better understand the gender dimensions of climate change.
- The need for capacity building and training to empower women to take on leadership roles in climate action.
- The importance of creating an enabling environment for women-led clean energy businesses.

Tract 2

The goal of **Tract 2** of the series of stakeholder dialogues was to look at anthropogenic emissions' sources vis-à-vis energy performance metrics to evaluate the intensity and scalability of energy technologies and how they inform mitigation strategies. Speakers analysed the rapid progress and a trajectory of technology advancements through data-driven insights into the climate change mitigation opportunities found in clean energy technologies of photovoltaic solar panels, wind turbines, lithium-ion batteries and other energy technologies and potential of renewable energy technologies adoption by users, collated the challenges of implementation of clean energy solutions in relation to implementation and livelihood generation especially related to marginalised people and communities affected by the transition process. The discussions aimed at mapping a future for post-carbon economy and bring **together voices from the field to drive the post carbon** future collaboratively.

The discussions touched upon:

- The state of solar PV manufacturing and deployment, with advancements in panel efficiency, rooftop installations, and grid integration in India.
- The need for supporting local capacity for manufacturing solar panels as most are imported from China currently and assembled in India.
- The state of adaption scenario of new innovations like concentrated solar power (CSP) technologies for large-scale electricity generation and developing solar thermal applications for industrial heating and cooling, green hydrogen production from renewable energy sources, with potential applications in fuel cells for transportation and industrial processes and hydrogen storage technologies, such as metal hydrides and liquid hydrogen, to enable efficient and safe storage for future hydrogen-powered applications.
- Exploration of wind energy (off shore and on shore) ventures in India.
- The state of biogas production from agricultural and municipal waste, with advancements in biogas digester designs and utilization for cooking and electricity generation.
- Biomass gasification technologies to convert agricultural residues and woody biomass into cleaner-burning fuel gas for power generation and industrial applications.
- The critical question of battery storage technologies, particularly lithium-ion batteries (including the looming problem of sourcing the renewable minerals and possible solutions), to address the intermittency of renewable energy sources and provide grid stability.
- India's exploration of pumped hydro storage projects to utilize excess renewable energy during off-peak hours and provide dispatchable power during peak demand.
- Focus on smart grid technologies as well as decentralised renewable technologies where women participation is currently much higher.

Key Findings

- Lack of comprehensive and disaggregated data on gender and green jobs, particularly in the MSME sector, hinders effective analysis and targeted interventions.
- Need for tools that integrate gender-disaggregated data on employment, skills, and education with environmental and economic data to identify opportunities and barriers for women in green jobs.
- Limited availability of tools that map current and future skills requirements for green jobs, specifically tailored to the MSME sector and considering gender-specific skills gaps.
- Need for technology-enabled training platforms that provide accessible and inclusive skills development opportunities for women in green jobs, considering their unique needs and constraints, tailored guidance and support to MSMEs for greening their operations, including access to financing, technology adoption, and market linkages.
- Lack of comprehensive tools for assessing the environmental impact and sustainability practices of MSMEs, particularly considering gender-specific aspects of business operations.
- Limited availability of tools that simulate the impact of different policy interventions on gender equality and green job creation in the MSME sector.
- Lack of evidence-based policymaking, incorporating gender-specific data and insights to promote a just transition to a green economy.
- Lack of targeted communication and outreach tools to raise awareness about green job opportunities and promote gender equality in the MSME sector.
- Lack of comprehensive tools for monitoring and evaluating the effectiveness of interventions aimed at promoting gender equality and green job creation in the MSME sector.

Tract 3

Tract 3 of the dialogue series was focussed on exploring country policies and sectoral strategies towards reducing gender inequalities and gender mainstreaming for just transition. The goal of Tract 3 of the series of stakeholder dialogues was to look at macro level policy focus in areas like reducing the Emissions Intensity of India's GDP, the country's pledge for driving a cumulative electric power installed capacity from non-fossil fuel-based energy resources and how that translates into livelihood generation for women in the regional and local context.

Our scorecard in the area of women engagement in the clean energy sector has a huge gap. The state as well as private and developmental initiatives regarding skilling, education, financial access of women to benefit from this sector has tremendous need and scope of improvement. The structural and policy changes required to drive this agenda through sharing of experiences from the ground, best practices and a participatory problem solving was the objective of this tract.

The road map for **gender mainstreaming** formed a key discussion topic for this dialogue and the discussions touched upon:

- One of the key parameters to look at to identify the gaps is the inclusion status of gender within the NDCs. It is pivotal to holding countries accountable in translating their ambitions for gender equality in the context of climate change action.
- The most frequent way in which women were described in policy document are as a vulnerable group. This categorization emphasizes their needs; however, their participation and leadership in accelerating climate actions get overlooked and thus unmeasured and unsupported. Women are mostly characterized as potential stakeholders or beneficiaries. Very few categorize women as agents of change, recognizing women's potential to unlock more effective energy activities and to drive policy change.
- Energy frameworks also disregard women's economic potential and their role in the informal economy— which, in reality, is often an important source of employment for women in developing countries where urbanization is also rapidly rising. Fourteen energy frameworks identify women's ministries and organizations (or equivalents) as implementing partners, tasked with specific activities.
- India's policy initiatives with women as consumers where fuel scarcity and health and safety concerns underline the critical need for renewable energy solutions tailored to women's specific requirements, especially in the context of cooking energy were discussed.
- Rise of and adoption of solar-based technologies like power looms, sanitary napkin vending machines, and ATMs offering Indian women improved access to healthcare, financial services and steady income. DRE programs supported by govt. of India for women entrepreneurs were next discussed.
- Indian Government has launched various initiatives to bolster the participation of women in the energy sector, including a women's empowerment scheme focused on skill development and training in the renewable energy field. Additionally, the government offers incentives like subsidies on solar home systems installed by women to further encourage their involvement in the industry.
- Training and Capacity Building initiatives by both public and private sector agencies for Smart Urbanisation integrating women in key roles.
- Business models, especially based on the circular economy that can help marginalised women join this pivotal shift.

Key Findings

- Lack of targeted STEM education programs for girls and young women, limiting their exposure to clean energy technologies and career pathways.
- Limited availability of vocational training and apprenticeship opportunities specifically designed for women in the clean energy sector, hindering their skill development and hands-on experience.
- Inadequate mentorship and networking platforms for women in the clean energy sector, making it difficult for them to connect with role models and industry leaders.
- Absence of mandatory gender-sensitive workplace policies in clean energy companies, leading to potential discrimination and lack of support for women's needs.
- Insufficient measures to address pay gaps and ensure equal opportunities for career advancement for women in the clean energy sector, perpetuating gender inequality.
- Lack of robust mechanisms to address sexual harassment and promote a safe and respectful work environment for women in the clean energy sector.
- Limited access to microfinance and tailored loan schemes for women entrepreneurs in the clean energy sector, hindering their ability to secure funding for their ventures.
- Inadequate grant programs and seed funding initiatives specifically targeting women-led clean energy businesses, making it difficult for them to access early-stage capital.
- Lack of networking and venture capital opportunities for women entrepreneurs in the clean energy sector, limiting their access to growth capital and industry connections.
- Insufficient outreach and awareness campaigns in local communities to promote the benefits of clean energy and highlight the role of women in the sector.
- Limited engagement with women's groups and community organizations to identify and address local barriers to women's participation in the clean energy sector.
- Lack of visibility for successful women role models and entrepreneurs in the clean energy sector, missing opportunities to inspire and motivate other women.
- Gender considerations are not adequately integrated into energy policies and planning, leading to potential gender-blindness in policy formulation.
- Absence of targeted incentives and support mechanisms for women in clean energy policies, limiting their ability to overcome specific challenges.
- Insufficient collaboration between government agencies, industry associations, and civil society organizations to develop and implement gender-inclusive clean energy initiatives.

Key Takeaways

1. This report brings out the fact that if the Just Energy Transition map of Eastern India is to be drawn up, most of the interventions and projects are at a nascent or fairly primary stage.
2. Many projects, it has emerged have been articulated and started with government and private funding but either abandoned or at doldrums due to policy and governance gaps.
3. In continuation of the above point, high fidelity and high output equipment and networks are in need of better maintenance and upgradation.
4. There is a need for conscious understanding and behaviour transformation before any Just Transition project is to survive. sustain and - as is the ask for all such projects – become self-organising and sustaining.
5. Large, medium and small internationally funded projects often deliver high value but post the project duration (due to lack of matured, developed ecosystems being in place, start slowing down or running on empty).
6. There is strong emergent need for continued dialogue building and alliance building, measures and activities to take the present scenario further. Clearly outcome driven continuous research needs to form the analytic vertebra of the building of this ecosystemic alliance to ensure the breaking of the silos and bringing all dedicated players on to the same team.
7. Some of the key areas of focus that emerged was the urgent need to support women in clean energy business through interdisciplinary research, networking, advocacy, training, coaching and mentoring

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