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POLICY BRIEF

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Unlocking Just Energy Transition: Empowering Women's Participation and Agency in Regional Value Chains, Research, and Innovation Ecosystems

Executive Summary

Evidence shows that policies, projects and programmes aimed at supporting communities affected by climate change are more effective when women and girls fully participate (UN Women, 2022). Their exclusion perpetuates inequality and the probability of addressing their needs. For effective climate action, decision-makers should prioritise the meaningful and effective participation of women in all their diversity, recognising them as agents of change with unique perspectives, expertise, and problem-solving abilities (IRENA, 2023). Women in leadership and decision-making roles must be central to tackling climate change.

The scale of climate action needed globally can only be achieved through a just energy transition – one that creates decent work, promotes social inclusion, and leaves no one behind. To be truly just, this transition must systematically integrate more women at every stage of decarbonisation and the shift to renewable energy. Increasing the participation of women across renewable energy value chains is essential to accelerating decarbonisation, achieving the Sustainable Development Goals (SDG 5 and 7) and fulfilling the commitments of the Paris Agreement (WECF et al., 2025). Nature-Based Solutions (NBS) — such as reforestation, forest conservation, agroecology, and watershed restoration — offer vital pathways to sequester carbon, protect biodiversity, and strengthen community resilience. However, these solutions will only be effective and equitable if they intentionally integrate gender equity. The Intergovernmental Panel on Climate Change (IPCC) highlights that (IPCC et al., 2012):

- up to 80% of the world's energy supply could be met with renewable sources by 2050
- employment in the sector could increase from 10.3 million in 2017 to nearly 29 million by 2050.

The renewable energy sector offers diverse career opportunities across the value chain, requiring a wide range of skills and talents. Policy reform, financial access, institutional support, and integrated solutions are essential to recognising women's contribution and embedding gender equality throughout the renewable energy value chain – from mineral processing and manufacturing to energy delivery – particularly in the Global South (IGF, 2018; Perks & Hungwe-Nharara, 2025).

The full participation of women and girls in climate action ensures the inclusion of 100% of the population, enables access to more effective climate solutions, strengthens community resilience, addresses vulnerability, and enhances the recognition of women in climate planning (UN Climate Change, 2023).

Introduction

To equip G20 leaders with actionable recommendations for advancing an inclusive, fair, and just energy transition, the concept of a 'just transition' must encompass principles, processes, and practices that ensure the shift to a low-carbon economy is socially equitable. This includes mitigating adverse impacts on industries, communities, and workers, and ensuring that no individual or marginalised group is inadvertently left behind.

Women's inclusion goes beyond social justice – it is a strategic imperative that generates a "multiplier effect" across environmental, economic, and social dimensions. The meaningful and equitable participation of women – as energy users, producers, innovators, leaders, and decision-makers – is essential to achieving net-zero targets and Sustainable Development Goal7 (Affordable and Clean Energy). Excluding women as agents of development means overlooking 3.6 billion solutions.

A holistic approach that harnesses local potential and opportunities throughout the entire just energy transition value chain ensures that climate action simultaneously advances sustainable development, generates employment, and promotes social equity – particularly in developing economies (Development Gateway et al., 2022).

Recommendations

To scale up climate solutions and ensure a just, fair, and equitable energy transition – one in which gender gaps are reduced, women's agency is promoted, and equitable participation of women in the energy system is achieved – we call upon G20 leaders to:

- **Ensure energy infrastructure and transmission systems are designed, financed, and implemented using a gender-responsive approach.** The G20 can incentivise its business community to adopt gender protocols, enhance women's agency, and increase the representation of women in the workforce and at board level. This will help to address the root causes of climate change, stimulate economic growth, and contribute to building peaceful and inclusive societies.
- **Deploy a gender-responsive finance architecture across just energy transition value chains to increase women's participation at all levels, including targeted investment in women-led businesses**. Despite women operating 38% of businesses globally, women-led businesses in the energy sector receive less than 2% of all venture capital funding (ENERGIA, 2023). The G20 can support the creation of platforms for knowledge sharing among member states – particularly those focused on leadership development and increasing the visibility of women in the sector (Kraft & Qayum, 2023).

- **Promote and encourage greater participation of women and girls – from the school years through to the workplace – particularly in emerging technologies.** This is essential to ensuring that energy is available, accessible, affordable, including addressing often-overlooked costs, such as grid connection, clean cooking technologies and research into energy-efficient appliances.
- **Prioritise universal access to clean, modern energy services within national energy strategies, with a specific focus on women-headed households.**
- **Incorporate nature-based solutions and biofuels derived from agricultural waste into the just energy transition**. By focusing on both rural and urban women, this approach can unlock opportunities to advance circular economy principles, strengthen food security, and expand access to carbon market – a fundamental step towards sustainable climate action (UN Climate Change, 2023).
- **Guarantee a gender responsive architecture throughout just energy transition value chains – including technology, infrastructure, mineral beneficiation, and manufacturing – to increase women's participation at all levels, with a target of 50% representation in leadership.** Women remain significantly under-represented in climate negotiations, and according to OECD analysis, they account for just under 14% of senior managers, with the highest representation in the utility sector (IEA et al., 2021).
- **Apply a gender lens to just energy transition reporting to monitor women's representation and enable data-driven adjustments to accelerate climate action and ensure a fair and equitable transition for communities.** This approach will support and track progress in closing the gender gap (UK aid et al., 2023).

Research Evidence, Best Practice and Case Studies

Over one billion people lack access to electricity, while more than three billion lack access to clean cooking facilities (UN DESA, 2018). Transitioning to renewable energy presents opportunities to reduce energy poverty in remote areas and to position women as active agents of change.

Women's participation in the global renewable energy sector stands at 32% (UN Women, 2023). Women's representation in senior management positions within the energy sector is 15% and only 6% at board level in power and utility companies globally (World Bank & IFC, 2020). Governments have a role to play by investing in skilling, education and training opportunities for young people – especially women. A report by Ernst & Young found that utilities with greater representation of women in leadership outperformed their peers. The top 20 utilities for gender diversity had a combined average return on equity (ROE) of 8.5%, significantly outperforming their peers, who had a combined average ROE of 7%. Based on the asset-heavy nature of utilities, a 1.5% difference in ROE between the two groups can translate into millions less in profit (World Bank & IFC, 2020).

By intentionally directing funds toward women-led businesses, projects that address women's energy needs, and initiatives that promote women's agency and participation in the green economy, historical inequalities could be corrected (Kraft & Qayum, 2023).

The following best practice examples, drawn from international experiences, are presented to guide G20 nations in shaping future actions and initiatives, fostering cross-country collaboration, and building on proven successes — thereby minimising duplication and accelerating progress:

Energy Infrastructure and Transmission Systems

At Noor-Ouarzazate concentrated solar plant in Morocco, women make up just 4% of the workforce, ranging from feminised jobs, such as cleaning to high-skilled occupations. Women's unemployment challenges result from a lack of qualifications and discriminatory gender norms that affect their skilling and reducing employability (UN Women, 2023). Repurposing project land compensation – from payouts to community projects, such as drinking water facilities, community centres, and mobile health centres, predominantly benefited women (UN Women, 2023). The global female labour participation rate (of 21,7%) within the energy sector (Statista, 2025) provides an opportunity to use renewable energy infrastructure to address gender gaps in Morocco and beyond.

From 2018 to 2022, the Asian Development Bank led a project to empower women in remote communities by expanding their access to clean and renewable energy. The initiative included community sessions on the safe use of electricity, as well as training for women entrepreneurs in business development, new technologies, and market access. It also engaged local stakeholders to promote women's participation in decision-making. As a result, there was a significant rise in women-led energy enterprises, increased involvement in electricity cooperatives, and improved income and financial access for participating women (UN Women, 2023).

Effectively using advocacy, education, training, recruitment and retention strategies, along with targeted funding to bridge the gender gap in renewable energy projects, the solar-powered initiative at Anganwadi Centres in India enabled access to clean energy for 63 rural childcare centres (UN Women, 2023).

Gender-Responsive Finance Architecture

We-Fi's *Women btrgyiClimate Entrepreneurs: The Face of a Livable Planet* provides an overview of climate-related financing flows that incorporates gender objectives, using data from the OECD Development Assistance Committee (DAC). The DAC monitors development finance flows aligned with the objectives of the Rio Conventions, including funding for climate adaptation and mitigation. These flows are cross-checked for the presence of a gender component and the degree to which gender considerations are integral to the project's goals (We-Fi et al., 2024).

The *Gender Just Climate Finance Manual* is a practical guide developed by Women Engage for a Common Future (WECF) to promote a gender-responsive implementation of the Paris Climate Agreement. It introduces and explains the Gender Just Climate Finance (GJCF) Model, which aims to ensure that climate finance mechanisms are inclusive, equitable, and effective for women and marginalised groups (WECF et al., 2025).

The IFC's *Pursuing Gender Inclusive Climate Investment* states that climate investments can generate 213 million cumulative jobs globally between 2020 and 2030. With women's labour force participation at 47% compared to 72% for men, there is significant potential for women to make labour market gains in climate-related fields (IFC, 2024).

To strengthen accountability and track gender-responsive climate and Just Energy Transition (JET) progress, G20 nations are encouraged to adopt the WE-FI Code as a monitoring framework. This framework supports women's economic empowerment while advancing environmental goals.

Women and Girls' Participation

The *Energy2Equal* report on women's participation in the renewable energy workforce in Sub-Saharan Africa finds that failure to improve gender diversity at all levels of the sector could deepen the gender gap as the industry expands, and may hinder company competitiveness and achievements (Energy2Equal et al., 2024).

Women Energy Cooperatives *Training the Trainers* is enabling women to take on leadership roles, deepen their understanding of production and income generating alternatives, and lead the replication of the model. The involvement of local experts further strengthens continuous learning and supports the long-term sustainability of the initiative (UNFCC & Mande, 2023).

Swayam Shikshan Prayog (SSP) has empowered over 1,100 women entrepreneurs in the renewable energy sector across India. Through targeted training and support, these women have become key drivers of renewable energy solutions, improving energy access, and enhancing livelihoods in rural communities (SSP, 2025).

Access to Clean Energy – Women-Headed Households

Green Girls Org NGO provides lighting and clean energy cooking solutions in remote and off-grid areas of Cameroon, the Central African Republic, and the Democratic Republic of Congo. They train women in rural communities on how to assemble and sell solar lanterns and biodigesters. Since 2015, Green Girls have trained 4,500 women and adolescent girls across 68 villages (We-Fi et al., 2024).

In Kenya and Nigeria, the implementation of solar mini-grids has led to increased economic activities and advanced gender equality, with women gaining greater opportunities in decision-making and entrepreneurship (Carabajal et al., 2024). Similarly, Barefoot College in India trains illiterate women from rural areas to become solar engineers. Known as "Solar Mamas," these women have brought electricity to their villages, improving community health and education outcomes (Great Plains, 2025).

Gender Responsive Architecture and Women's Leadership

IRENA has launched a series of gender-focused publications, including sector-specific reports, such as the 2022 solar PV study, which highlights both progress and persistent challenges in women's participation. Through its institutional commitment to gender mainstreaming – via data, policy, and workplace culture – IRENA demonstrates how women can be positioned as key drivers of change in the renewable energy sector. It serves as a model for governments and organisations seeking to embed gender equity into their energy transition strategies (Abou Ali et al., 2022).

Guidelines on Mainstreaming Gender Equality and Social Inclusion (GESI) into the National Adaptation Plan Process in Viet Nam provides a comprehensive framework to equip policy-makers, practitioners, and stakeholders with the necessary tools to systematically embed GESI considerations into climate adaptation activities (Thuy et al., 2025).

Soléco Energy, a Caribbean woman-led renewable energy company, is driving innovation and inclusivity. With tailored gender technical assistance from investor Deetken Impact, the Soléco Energy team developed a solar panel assembly and installation training programme for women in the surrounding communities, completed the UN's Women's Empowerment Principles (WEPs) tool, and trained team members to address gender gaps and opportunities in the renewable energy sector (Soléco Energy & IDB Invest, 2024).

Nature-Based Solutions

The *IUCN Gender and Natural Resource Governance*: *Addressing inequalities and empowering women for sustainable ecosystem management* highlights a study from South Africa in which women stockpiled drought-tolerant seed varieties from their home gardens. During an extreme drought season, they planted these seeds alongside indigenous plants on family farms to ensure crop survival. By conserving diverse seed types with varying adaptive properties, women helped maintain food and nutrition security during extreme climate shifts – underscoring the critical value of gender-differentiated traditional knowledge (IUCN NL, 2021).

A partnership between L'Oréal and Nafa Naana is helping villages adopt improved cook stoves that require less wood consumption. The initiative has enabled more than 5,000 women – primarily shea gatherers in Burkina Faso's South-West region – to access cleaner cooking equipment, addressing energy poverty and mitigating the impacts of poverty and deforestation. In 2019 alone, the project avoided more than 10,500 tonnes of CO2 equivalent emissions, and prevented the harvesting of more than 5,000 tonnes of wood from forests. The distribution of 2,235 cooking units also reduced unpaid domestic work by women by more than 40,000 hours. Additionally, energy expenditures – often accounting for up to 30% of household budgets – were reduced by over CFA 345 million (UK aid et al., 2023).

Gender Lens to Tracking and Monitoring

WEDO has developed the *Gender Climate Tracker*, a tool for monitoring and promoting women's participation in climate negotiations (WEDO, 2025). Similar initiatives have been echoed at the_UN High-Level Climate Forum, where, for the first time, all five custodian agencies responsible for tracking progress of the SDG 7 (the World Bank, IEA, WHO, IRENA, and the UN Statistics Division), together with UN Women, civil society, and other stakeholders, issued a unified call for gender indicators in energy. This call was anchored at an official UN intergovernmental platform (ENERGIA, 2025).

The *ENERGIA 2024 Survey Analysis Reports* examine the current state of gender representation in the biogas sector and highlight the initiatives and policies needed to enhance female participation and leadership. The report explores how women interact with the biogas sector as active participants, specifically, analysing their progress and current standing relative to similar industries (ENERGIA, 2024).

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