

A **Just** Transition

or *Just* a Transition:

Making the Case for
Women in Energy



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**Making the Case for
Women in Energy**

RES4Africa Foundation proudly presents the first Report on women in the energy sector. The Foundation strongly believes that women should have equal opportunity to benefit from, participate in and lead the energy transition and should have equal access to and control over sustainable energy products and services. This Report calls for targeted actions to make the energy transition equal, just and possible for women across the energy sector and supply chain.

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Methodolgy

Methodology

This study examines to what extent women are currently included and represented within five dimensions in the energy sector:

- ① energy access,
- ① energy-related education,
- ① employment and leadership (both managerial and political),
- ① entrepreneurship and
- ① policy-enabling environment.

It looks at which obstacles women encounter, and what key steps can be put forward to promote women's participation on a par with men's in sustainable energy. The findings and recommendations in this report were informed by anonymous surveys, semi-structured interviews, and primary and secondary research that was conducted in the third quarter of 2023 and the first quarter of 2024.

The survey questionnaire was designed to provide valuable insights on what could be done to increase women employment in the renewable energy sector in North Africa. The survey was addressed to people working in North Africa in the energy and renewables value chain segments and related topics, whether in academia, private, public, non-profit or international institutions. The survey was available in French and English on the jotform platform and a total of 48 people responded to it.

The survey included six sections each containing 56 specific questions (with closed and open answers). The sections were as follows:

- ① General questions;
- ① National policies and systems in North Africa look at energy and gender-related laws, institutions, and policies and positioning of gender equality and women's empowerment on relevant policies and plans;
- ① Organizational structure in the institution looks at the degree of women's participation in decision-making system, decision makers' experience participating in gender awareness training, degree of understanding of gender among stakeholders, presence or absence of gender equality officer and gender mainstreaming initiatives and good practices;
- ① Construction, operations and maintenance looks at employment and working environment of on-site workers;

- ① Women entrepreneurs in energy sector looks at the business enabling environment for women in the energy sector, access to finance, the obstacles, the business models, the number of women entrepreneurs in energy sector; and
- ① Diverse stakeholders section looks at the existence or absence of ministries or related agencies with jurisdiction over gender issues (for example, ministries or public entities, the possibility of collaboration between national public agencies with jurisdiction over gender issues and international and regional organizations and Non-Governmental Organizations (NGOs) active in the renewable energy-related sectors.

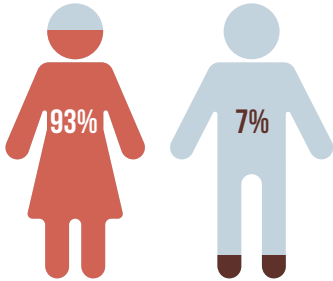
The online survey does not look at the diverse demographic representation of women (class, ethnicity, religion, presence or absence of disabilities, gender of head of household, marital status, number of children, income level) and how it affects their circumstances and the challenges they face. The survey does not look at the gender-specific-division of social, labour and behavioural patterns. Due to the relatively small sample size, the findings are not intended to be generalized but to provide a comprehensive view of the impact of gender barriers on women's participation in energy-related spheres.

This report was also informed by a desk review of other reports focusing on women's entrepreneurship and gender mainstream in the energy sector. The report was additionally influenced and enriched by direct conversations with 20 female leaders working in the public and private sector, academia, women-led international organizations and local organizations and women-led small-medium enterprises in the energy sector in Norway, Europe and North Africa. The semi-structured interviews covered six questions and experts shared their experience and insights on ways to increase women participation in energy-related sectors. The six questions are as follow:

1. Do you think women are considered/represented in the energy sector? If yes, in which country, entity, sub-energy sector?
2. If not, why should we consider them when discussing the energy transition?
3. To your knowledge, is there any action in place to promote women's representation in the energy sector? (For example, policies, strategies, national plans, training).
4. What are the obstacles for women working in the different segments of the energy value chain?
5. What do you hope/foresee/expect will change in the upcoming years in how women are represented in the energy sector?
6. To your knowledge, are women and men treated equally in the customary law (for example, in land ownership, authority of head of household, freedom of movement, and disability)?

Profile of survey respondents

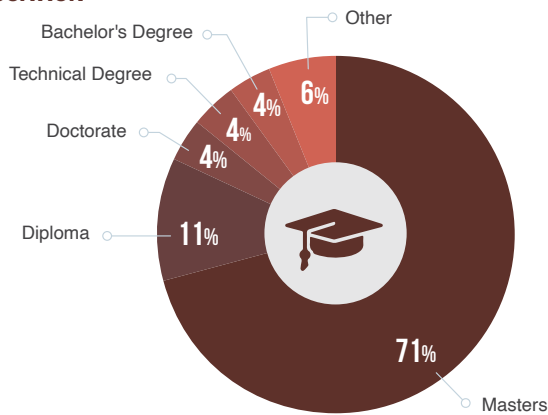
TOTAL NUMBER OF RESPONDENTS **48**



AGE COMPARISON



EDUCATION



DUTY OF CARE



59%
HAVE A CARING RESPONSIBILITY, FOR CHILDREN AND ADULTS

REGION

50%
ARE BASED IN NORTH AFRICA: MOROCCO, EGYPT, TUNISIA AND ALGERIA



EMPLOYMENT

80% ARE EMPLOYED IN ENERGY SECTOR



EMPLOYMENT STATUS

38% ARE EMPLOYED IN GOVERNMENT	7% IN RESEARCH ORGANISATION AND UNIVERSITY
17% IN BUSINESS ORGANISATIONS	7% IN CONSULTANCY
11% ENERGY UTILITIES	20% DO NOT WORK IN ENERGY SECTOR



82% OF STAFF WORK FULL TIME

61% IN PRESENCE
36% HYBRID
3% REMOTE

YEARS OF EXPERIENCE



Acronyms and Abbreviations

ADB	Asian Development Bank
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
EBRD	European Bank for Reconstruction and Development
ECOWAS	Economic Community of West African State
ENSSUP	Ministry of Higher Education, Scientific Research and Innovation
GWNET	Global Women's Network for the Energy Transition
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICRW	International Centre for Research on Women
ICT	Information and Communication Technology
IEA	International Energy Agency
IFC	International Finance Corporation
IFRC	International Federation of Red Cross
ILO	International Labour Organization
IRENA	International Renewable Energy Agency
IUCN	International Union for Conservation of Nature
MENA	Middle East and North Africa
NREL	National Renewable Energy Laboratory
OECD	Organization Economic Cooperation and Development
PEI	Poverty-Environment Initiative
PERG	Renewable Energy and Global Rural Electrification Project
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency
UAE	United Arab Emirates
UNDP	United Nation Development Program
UNEP	United Nations Environmental Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Emergency Fund
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
SE4All	Sustainable Energy for All
SDGs	Sustainable Development Goals
SDG 5	Gender Equality
SDG 7	Affordable and Clean Energy
SMEs	Small and Medium-sized Enterprises
STEM	Science, Technology, Engineering and Mathematics
WECF	Women Engage for a Common Future

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**A call for multi-
stakeholder
approaches**

A call for multi-stakeholder approaches

We are all aware of how critical it is for the future of our planet that we transition away from fossil-based forms of energy into cleaner, renewable forms of energy. This is vital to fight climate change. When we discuss this transition, we focus on issues such as upgrading the infrastructure, improving regulations and promoting new technologies and innovations. While these are critical issues, this approach is too narrow.

We must recognize that a just transition is ultimately about people and communities. All voices need to be heard. Everyone needs to be involved. Particularly those who are often overlooked, particularly women and girls. To date, gender inequality persists in the energy sector and going forward, the energy transition cannot happen without half of the world population.

To achieve a just transition, we need to work together and harder so that women have equal opportunities to participate, lead and benefit from sustainable and inclusive energy transition.

We need multi-stakeholder approaches that bring together diverse groups of actors and co-design initiatives to promote women's participation as end users, consumers, workforce, entrepreneurs and leaders in the energy sector.

Initiative could include promoting decentralized renewable energy systems and solutions as an opportunity to electrify Africa and foster participation of both women and men in energy procurement, design, installation, maintenance and consumption. Also, initiatives could support the public sector in mainstreaming gender and provide financing opportunities to support women-led enterprises in off-grid solutions.

Public to private energy partnerships could create dynamic exchange platforms, linking and empowering female professionals in the energy sector. It could promote the sharing of knowledge, encourage women to discover their full potential, and enhance their skills. In turn, this empowerment will amplify women's impact and contribution in driving energy transitions and climate protection efforts.

Skills development cross-sector initiatives (including governments, energy industries and education) are good examples to identify where the skills gaps are across the value chain for specialist and non-specialist workers and design education and training opportunities for women and men.

Supporting an ecosystem approach to women's enterprise development by bringing together: entrepreneurs, public organizations, financial institutions, civil society organizations and the public sector. Initiatives could enable a conducive policy and regulatory environment, facilitate access to funding, provide business development

support, mentoring and link entrepreneurs to markets, and strengthen the value chains as a whole.

As Hellen Keller puts it: “Alone, we can do so little; together, we can do so much.” Together, we can voice the need for a gender-responsive energy transition and forge a future that is equal, sustainable and just.

Roberto Vigotti,
Secretary General, RES4Africa Foundation.

Executive Summary

Executive summary

COP28 ends on a high note on gender equality, launching the New COP28 Gender-Responsive Just Transitions and Climate Action Partnership. Endorsed by sixty ministers and high-level officials, the Partnership aims to support women's economic empowerment and ensure a gender-responsive transition through a series of commitments that signatories will implement over the next three years before reconvening at COP31. It builds on objectives previously outlined in the United Nations Framework Convention on Climate Change (UNFCCC) Gender Action Plan to advance understanding of gender-responsive climate action. At COP28 Gender Equality Day, the UN Women Executive Director Sima Bahous said: "We must ensure that women have a seat at the decision-making table. We must strengthen inclusive decision-making so that the voices of feminists, youth, indigenous and other grassroots movements can be heard loud and clear from the local to the global level." A month later, Azerbaijan appointed twenty-eight men and no women to the COP29 organizing committee. Faced with scrutiny from eighty-eight women leaders from across the globe, a couple of days later, Azerbaijan added twelve women to the committee. While the quick fix for 'leaving no one behind' came swiftly, one would wonder: can a just energy transition happen without women?

This report makes the case for women in the energy transition to ensure the transition is Just and not just a transition. This report contributes to advancing the role of women in a just transition and a sustainable energy future, taking into account the global challenges - climate and environmental emergencies, pandemics, conflicts, war and energy crises - and their disproportionate impacts on women and girls. According to the International Energy Agency, the economic fallout of COVID-19 caused many countries that only recently gained energy access to lose it, among them 15 million Sub-Saharan Africans. The pandemic also meant many could not afford modern fuels, including clean cooking. Soaring costs of oil and gas due to the war in Ukraine have had deleterious effects on women's and girls' energy poverty and on already unequal access to energy. With six years to go, it is unlikely that the world will achieve the Sustainable Development Goals (SDGs) targets by 2030. These global crises require collective action to design and implement inclusive and gender-responsive solutions, particularly in the energy sector. As the dominant contributor to global emissions, the energy sector can and should play a pivotal role in ensuring a just transition to a green economy and sustainable energy future, to be achieved through the full and equal participation, leadership and decision-making of women and girls.

Gender equality in energy is substantial in five key dimensions where progress in closing gaps needs to be scaled up:

- ① energy access,
- ① energy-related education,
- ① employment and leadership (both managerial and political),
- ① entrepreneurship and
- ① policy-enabling environment.

This report delves into these five dimensions, looking at the obstacles and actions to reduce the gender gap in the energy sector.

The First chapter links gender equality to energy arguing that an intersectional approach is necessary to ensure that the transition to a sustainable future encompasses women and girls in all their diversity. It looks at the energy transition as a social and economic opportunity to achieve gender equality.

The Second chapter looks at access to energy as a precondition for gender equality and calls for a perception shift: from considering women as end users of energy to voicing them into energy plans as customers, entrepreneurs and key players in rural electrification.

The Third chapter investigates the lack of women in Science, Technology, Engineering and Mathematics (STEM) education and introduces actions to increase their presence. It highlights the need for multi-stakeholder partnerships led by universities, schools, energy companies and governments. Although STEM fields constitute the core of the energy sector, the energy transition is an economic shift and, therefore, will need all types of education fields, skills and competencies.

The Fourth chapter looks at the low presence of women in the energy workforce and leadership. Although progress has been made in the past decades, women are still seen in administrative, legal, and communication positions, and only some make it to senior top management. Going forward, the energy sector cannot make it without half of the population. Efforts must be twofold and be led by the private sector to implement gender-responsive corporate policies.

Chapter Five examines women's entrepreneurship in the energy sector and defines barriers in particular the 3Fs - family, friends and finance - as a precondition to unlocking the market potential for women's entrepreneurs. It also highlights the role of mentoring and coaching in empowering women to become visible and be heard and the benefit of networks in supporting, guiding and leading women's efforts in the energy transition.

Chapter Six delves into the policy environment of gender and energy and the dimensions of gender mainstreaming in energy plans, strategies and laws. Without government leadership and endorsement of gender equality, the energy transition will be just a transition.

The report concludes with actions to ensure women are included and represented in the energy transition. Special attention goes to increasing women's access to and control over sustainable energy products and services, creating pathways for women to access STEM subjects and excel in the energy sector, promoting gender-inclusive work policies to allow women to apply their skills in the energy workforce and at decision-making, creating entrepreneurship opportunities and, directing resources towards gender-responsive investments and financing.

Leveraging the interlinkage of gender and energy

Leveraging the interlinkage of gender and energy

To build a more sustainable and just world, the United Nations adopted the 2030 Agenda for Sustainable Development in 2015 and developed 17 SDGs to end extreme poverty, reduce inequality, and protect the planet from irreversible climatic change. The SDGs gained broad consensus amid rising tensions between economic growth and environmental degradation at both global and local scales. They became important reporting tools to achieve the triple bottom lines of economic development, environmental sustainability, and social inclusion. Among them, Gender Equality (SDG 5) and Affordable and Clean Energy (SDG 7) are crucial measures of the progress towards inclusive and sustainable economic development.

SDG 7 targets call for: by 2030, ensure universal access to affordable, reliable and modern energy services, substantially increase the share of renewable energy in the global energy mix and double the global rate of improvement in energy efficiency. Meanwhile SDG 5 recognizes the importance of gender equality not only as a fundamental human right but a necessary foundation for a peaceful, prosperous and sustainable world. In reality, energy access and gender equality are inextricably linked, and addressing them together can offer multiple development gains. The UN Resolution adopted during the High-Level Dialogue in 2021¹ recognized that sustainable energy access and its deployment can be improved and accelerated by gender equality and the empowerment of all women and girls. The Resolution calls upon governments, the United Nations, and any other relevant stakeholders to take action to mainstream gender equality in policies and programs. This reflects the growing recognition that the gender-energy nexus involves more than a simple focus on the role of women and girls as primary energy managers at the household level; instead, the attention is directed to the interaction of gender equality considerations with renewable energy, energy efficiency, and circular economy initiatives more broadly. With the 2030 Agenda's commitment to leave no one behind, an intersectional approach is necessary to ensure that the transition to a sustainable future encompasses women and girls in all their diversity.






[The energy transition] must ensure the opportunities it creates are equally accessible and the benefits it provides are equitably distributed.

Paula Riveros

¹ UN, 2021

Box 1: Gender Mainstreaming

Gender mainstreaming means integrating a gender equality perspective at all stages and levels of policies, programs and projects. Women and men have different needs, living conditions and circumstances, including unequal access to and control over power, resources, human rights and institutions, as well as the judiciary system. The situations of women and men also differ according to country, region, age, ethnic or social origin, or other factors. Gender mainstreaming aims to take into account these differences when designing, implementing and evaluating policies, programs and projects so that they benefit both women and men and do not increase inequality but enhance gender equity. Gender mainstreaming aims to solve - sometimes hidden - gender inequalities. When adequately addressed and implemented, gender mainstreaming is a transformative approach with great potential for social change. It is a long-term strategy: every step counts to achieving gender equality. Some measures could include:

-  Promoting equality of opportunity and treatment for women by ending gender-biased practices;
-  Eliminating non-conscious bias and harassment in the world of work; and
-  Fostering equal and inclusive employment policies and equal treatment in recruitment, promotion and training in the industry.

Source: [Council of Europe](#)

The energy transition, according to Paula Riveros, the Country Manager at Enel Green Power Morocco “must ensure the opportunities it creates are equally accessible and the benefits it provides are equitably distributed. Adopting gender policies in the energy transition is crucial to ensure that women’s contributions – their skills and views – are an integral part of the growing industry.” The greater participation of women would allow this rapidly growing sector to draw on untapped female talents while ensuring the socially fair distribution of socio-economic opportunities of the global energy transformation. Adopting a gender perspective to renewables development is essential to ensure that women’s skills and views are part of the growing industry. Riveros believes that “when we talk about energy transition, we must open our mind to a much broader world than just renewables. We can imagine a profound transformation in all energy uses, in all sectors. We are talking about renewables, decentralisation of energy or distributed energy and decarbonisation, which must represent a set of social and economic benefits, including growing employment.” Ibtissem Hammi, the Head of Regulatory Affairs Africa, Asia and Oceania at Enel Green Power, views the green transition not a mere corporate energy transition that promote sustainability and has a positive impact on society, and highlights the values of inclusion, diversity and respect. It is about people: workers, consumers, businesses, communities, taxpayers and voters that are ultimately affected by the energy transition. She says” by putting people, women in particular, at the centre

of the clean energy transition, we can improve people's lives and livelihoods alongside the benefits of avoiding the worst of climate change."

The International Renewable Energy Agency (IRENA) published four studies on women in the renewable energy sector (2022), solar power (2022), wind power (2019) and gender perspective in renewable energy (2019). According to IRENA's analysis, the renewables sector alone will result in at least 38 million more jobs by 2030 globally, and the number of jobs in the energy sector could rise to 139 million, including more than 74 million in the energy efficiency, electric vehicles, power, flexibility systems and hydrogen sectors. In 2022, the industry surpassed 12.7 million people working in solar PV, one of the highest technologies in terms of employment. This, of course, includes many opportunities and jobs on decentralized solar solutions. In this sense, renewable energy and decentralized solutions offer an unprecedented opportunity to transform the energy sector in all aspects and ensure that opportunities are equally accessible and equitably distributed. The transformative changes in the energy sector are creating an array of opportunities, including job opportunities. This means that STEM careers and a vast range of skills and competencies will be needed. During the interviews, several experts highlighted that the energy transition will need all types of profiles, including engineers, communicators, administrators, lawyers, experts in sustainability, community engagement among others. The energy transition is about harnessing the full potential of the population, both men and women, in order to accelerate the journey to a more sustainable, equitable and resilient energy future. The Economist (we interviewed) considers including women in the sustainable energy transition "is not just a moral imperative but a practical one that aligns with the energy and environmental goals. Engaging women in the energy transition isn't just the right thing to do, it's the smart thing to do. It's an investment in our future, and it's also about ensuring that most of our collective talent, creativity, and resilience are made good use of."



Including women is not just about equality. It's about fostering a culture of innovation that can also drive the development of cleaner and more efficient energy solutions.

Silvia Piana

Silvia Piana, the Head of Market Strategy at Enel Grids, considers the energy transition "a cultural change, one of the biggest changes we had in the recent years. Being such, it requires everyone, men and women to contribute equally and be active members in realizing it. Also, the energy transition requires all kinds of professions: not just technical blue collar or engineers, but also philosophers, communicators and teachers. It requires a diverse team where innovation is embedded. The energy transition involves all areas – from agriculture to tourism, research and development to administration, social sciences, meteorology and climatology. So, including women is not just about equality. It's about

fostering a culture of innovation that can also drive the development of cleaner and more efficient energy solutions.”

Moreover, the energy sector will need to have more bridging people in between the new (renewables) and the old (conventional) energy sectors. Several experts argued that fossil fuel industries will keep playing a central role for years to come. According to IRENA,² phase-out of coal alone could lead to the loss of 12 million fossil fuel jobs, a shift that poses challenges for affected workers, communities, businesses operating those assets and investors. As the Policy Analyst puts it “we will need people who can connect and support the adaptation and the decarbonization of the sector, and who better than adaptable people (women) to do so.” Policies will need to cater for women with training, upskilling and retraining the existing workforce, and equipping workers (current and future) with the skills to meet future demands.

Whether they are working to “overcome the impact of energy and food security, installing off-grid solar systems to bring electricity to villages in Africa and Asia, or taking leadership roles in the renewable energy sector, women are agents of sustainable change. They bring unique perspectives, knowledge, and skills to conservation efforts, and their contributions are essential for achieving a sustainable future.” adds Anne Barre, the Gender and Climate Policy Coordinator at Women Engage for a Common Future (WECF). They better understand the negative impacts of the energy source that can be used and “have shown remarkable resilience in adapting to environmental challenges and using threatened resources creatively.” Women bring valuable insights into practical, local solutions in the transition to sustainable energy and economic development because they are the primary energy managers in households and communities. Women think differently about energy, tend to be more sustainable consumers, and are sensitive to ecological, environmental and health concerns. According to the Organization Economic Cooperation and Development (OECD),³ women globally are more likely to recycle, minimize wastage and buy organic food and eco-labelled products. They also place a higher value on energy-efficient transport and, in general, are more likely to use public transport than men. Women can, therefore, be key actors in shifting consumption towards more sustainable patterns. The public, private and non-governmental sectors should consider women’s perspectives when designing energy-related interventions; otherwise, energy practices are more likely to benefit men than women, just like in the car manufacturing sector (see box 2). Women’s engagement in the energy sector can empower them economically, translating into increased employment opportunities, higher incomes, and eventually greater financial independence. ultimately benefiting not only individual women, but also their families, communities at large and energy industries.

² IRENA, 2022

³ OECD, 2020

Box 2: Frontal Car Crash Affects Women More than Men

According to recent studies, women are 73% more likely to be severely injured or die in a frontal crash than men. The car safety tests are done using car test dummies used by scientists and engineers to gain an understanding of the multiple ways in which collisions impact car occupants. Strapped into car seats and propelled at speed, they are designed to measure the effect and the impact of real-life crash situations and highlight potential injuries. The crash test dummies are essentially based on the size and stature of an average adult male and do not in fact capture female geometry, such as the shape and form of the torso, muscle strength, spinal alignment, or the mass distribution of different body parts. To protect half of the global population, car manufacturers should address this disparity by developing car test dummies modelled on average-size women.

Source: [Consumer Report \(2019\)](#)

Access:

**Voicing women in
energy plans**

Access: Voicing women in energy plans

Electricity access is a precondition to gender equality

Goal 7.1 of the SDGs calls for universal electricity access and clean cooking fuels and technologies by 2030. Electricity access has progressed farther and faster than access to clean cooking, but even here, the momentum has stalled in recent years. According to the International Energy Agency (IEA), in 2022, 760 million people lack access to electricity, while 3 billion people did not have access to clean cooking technology and fuels and were exposed to dangerous levels of air pollution from using wood, coal, charcoal or animal waste for cooking and heating. These numbers show a considerable gap that has to be filled in the six years left until 2030.

Energy poverty is a worldwide phenomenon with a strong gender dimension. In developing countries, lack of access to energy is an obstacle to women's and girls' well-being and economic opportunities, as it strongly affects their living conditions and time-use, and undermines their educational and economic opportunities. Women in many developing countries spend, on average, fourteen hours a day collecting fuelwood and four hours cooking, in addition to other household tasks that could be supported by energy access. This limits their access to education and employment. Multiple studies⁴ show that women (9% to 23%) are more likely to gain employment outside the home after household electrification. Lack of electricity excludes them from new digital technologies that are prerequisites in the modern world for decent jobs and cultural and political engagement. It also lowers productivity in their businesses and farms.⁵

Energy access is broadly accepted as beneficial to economic development: access to clean energy delivers broad socio-economic benefits, such as increasing income per capita, reducing poverty, promoting children's educational attainment, lowering health risks from household air pollution, and growing media access. But women, in particular, stand to reap significant benefits from clean electricity and cooking energy in terms of time use, access to information, and intra-household relations.

North African countries have already achieved near-universal access to electricity and clean cooking thanks



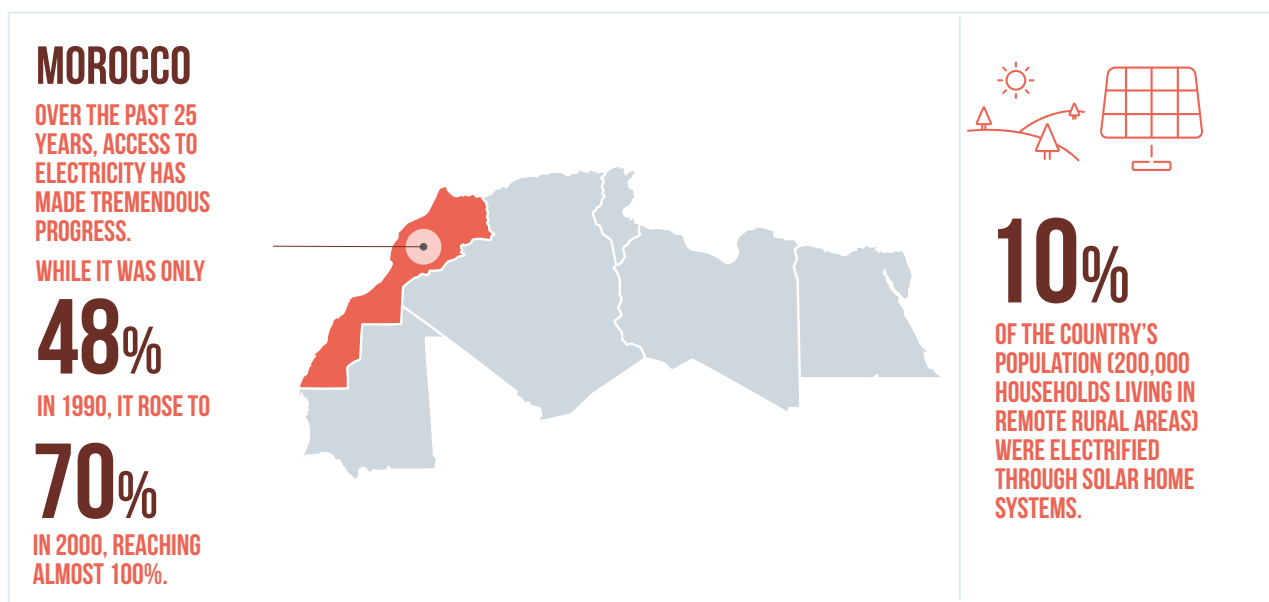
By putting people, women in particular, at the centre of the clean energy transition, we can improve people's lives and livelihoods alongside the benefits of avoiding the worst of climate change.

Ibtissem Hammi

⁴ ESMAP, 2015, 2018, 2021

⁵ UN Women and UNIDO, 2023

to effective public policies promoting major grid extensions and dedicated rural electrification programs. For instance, Morocco has been pursuing since the 1990s an ambitious policy to free itself from energy dependency and enable all Moroccans to have access to electricity. Over the past 25 years, access to electricity has made tremendous progress. While it was only 48% in 1990, it rose to 70% in 2000, reaching almost 100%. Around 10% of the country's population (200,000 households living in remote rural areas) were electrified through solar home systems. Morocco is Africa's success story in scaling up solar-driven electrification programs wherever grid extension programs were not feasible.



According to the Massachusetts Institute of Technology (MIT), three key factors⁶ have underpinned the dramatic success of the Moroccan experience with solar:

- ① A strong political support in favour of solar systems, which translated into ambitious agendas and adequate public resources to achieve government objectives;
- ① The ability of local stakeholders to design and implement solar concessions and attract capable international solar developers on the basis of extensive pre-feasibility analysis that match demand estimates with various supply options through solar systems; and
- ① The ability of the national utility and solar concessionaires to leverage all possible sources of funding available for energy access around a transparent and financially sustainable private sector-driven model, from cross-subsidies to direct public subsidies and international debt.

⁶ MIT Energy Initiative, 2020

Morocco's successful electrification has shown the potential of integrated utility-led electrification policies planned at a national scale and was the first program to demonstrate solar's critical role in bridging any gaps left by the national grid. One of the key success factors of the Renewable Energy and Global Rural Electrification Project (PERG) has been to rely on an integrated planning approach leveraging all possible electrification strategies without dismissing solar as a credible electrification solution acceptable to local households. While traditional electrification programs had quasi-exclusively relied on grid extension as the sole electrification means, the PERG integrated grid extension and the diffusion of solar home systems into a grand national strategy aimed at harnessing the potential of all existing technologies to reach universal energy access on financially viable terms. By conditioning the deployment of each electrification strategy to clear indicators relative to electrification costs and levels of demand, the PERG maintained a coherence between the various technical options for electrification (for example, grid versus solar home systems) and the local market and ability to pay, thereby ensuring a balance between profitability for power suppliers and affordability for local populations. The Moroccan experience confirms the potential of solar concessions backed by a national utility, and provides interesting insights into the different strengths that other countries could leverage to electrify remote unelectrified households. One of the key innovations of the PERG was to integrate off-grid electrification right from the outset as a systematic alternative to grid extension projects in remote and/or sparsely populated areas.

A gender lens in off-grid energy

For people in locations where the electric grid remains unavailable, unreliable, or too expensive to connect, off-grid energy can provide viable power solutions. A growing number of companies are leveraging this business opportunity worldwide by designing, producing, selling, and distributing off-grid energy technologies – which span solar lights, solar home systems, mini-grids, and clean cooking solutions. Companies in the off-grid energy sector have much to gain through taking a purposeful gender lens throughout their operations and supply chains. In most off-grid households across the globe, women are primarily responsible for collecting, cultivating, and using energy resources. They spend many hours each day collecting fuel wood, cooking over an open



Women tend to be closer to and more knowledgeable about their customers [...] women are able to leverage existing social networks and form trusting relationships with potential customers, especially women.

Latifa Seroukh

flame, and engaging in manual labour. Given these gender roles, women are essential consumers of off-grid technologies within households and enterprises. Such consumer insights indicate that clean cooking products should first and foremost be tailored to women's needs, with marketing and after-sales efforts adapted to their preferences. Many companies overlook the influence of women consumers as most of their sales are to men. According to the European Institute for Gender Equality,⁷ women tend to be more sustainable consumers than men as they buy eco-labelled products, pay more attention to green procurement; attach more importance to energy-efficient transport and fuels and are willing to change their behaviour to achieve sustainability goals, including energy efficiency.

Understanding how and why women benefit differently than men from off-grid energy technologies (including solar cooking, solar lanterns and mini-grids) enables companies to unlock market insights and potential new customer segments. In this sense, gender as a factor of analysis can highlight opportunities and reveal risks that can strengthen investment decision-making to achieve more significant financial and social outcomes. "Off-grid distributed energy offers tremendous opportunities for women's engagement along multiple segments of the value chain" states Paula Riveros, adding that "many of the skills needed to take advantage of these opportunities can be developed locally and women are ideally placed to lead and support the delivery of energy solutions, particularly in view of their role as primary energy users and their social networks." Oumayma Chraa, the Vice-President of NourSun in Morocco, says that distributed renewable energy can foster a gender-inclusive future, and through NourSun women receive training on solar cooking construction and food drying techniques, and on how to recognize and establish energy-related businesses. She adds, "when empowered, women are no longer perceived as just energy users but also as a key part of the value chain across the entire energy sector." Women become key players in the transition to clean energy as customers (energy buyers), helping to shift energy consumption, and leading transformative change in the energy industry.

Line Begby, the Thematic Lead on Sustainability at Glitre Nett, highlights that "mainstreaming gender is at the heart of energy poverty and energy access interventions." It would voice women's needs and more likely shape energy interventions to benefit men and women.⁸ Without gender considerations, energy interventions in low-income communities are more likely to benefit men than women. However, targeting women and leaving men behind can cause a rebound effect of greater gender division, thus it is crucial to look at the issue through the gendered lens. For these reasons, Begby argues that "gender mainstreaming must be in place to ensure both women and men benefit

⁷ European Institute for Gender Equality, 2012

⁸ Pueyo A., Maestre M, 2019





from energy access for consumption and productive use and can afford it.” Besides focusing on the integration of gender equality at the company organizational level, Begby encourages energy enterprises to apply gender mainstreaming practices in the design, marketing and after sales of energy solutions and interventions. According to a 2023 study analysing this issue,⁹ companies adopt a range of gender mainstreaming methods but these are not integrated into a coherent and comprehensive gender mainstreaming process and strategy. To address this narrow understanding and application of gender mainstreaming in energy projects, companies could apply several gender and diversity mainstreaming processes (toolkits, handbooks and manuals) issued by international organizations (IFRC, ADB, USAID, UNDP, Energia)¹⁰ and applied in international development practices for the past decades. For instance, the International Centre for Research on Women (ICRW) developed tools for the off-grid and power sector to better integrate gender into investment processes and to make more innovative investments that enhance returns, gender equality and women’s economic empowerment.¹¹



Mainstreaming gender is at the heart of energy poverty and energy access interventions .[...] Gender mainstreaming must be in place to ensure both women and men benefit from energy access for consumption and productive use and can afford it.

Line Begby

Box 3: Gender lens in off-grids

-  Integrating a gender lens in design and research and development can ensure that the needs of female and male customers are taken into consideration when designing products and services. This can ultimately increase sales, adoption, and customer satisfaction.
-  Engaging women to work in production and manufacturing of off-grid energy products can leverage women’s traditional skills in ceramics and other fields.
-  Gender-specific marketing, sales, and distribution can enable companies to better speak to and reach a diversity of consumers. Recruiting women can help companies access hard-to-reach households and utilize woman-to-woman marketing techniques. Women may be trusted promoters of products among their peers, and are frequently organized in networks that can access vast new market segments.
-  A gender lens in after-sales service helps companies ensure both female and male end-users remain satisfied and loyal customers. Female customer service representatives may be particularly valuable in communities with conservative norms of social contact that restrict interactions between men and women within the home.

Source: [ICRW](#)

⁹ Ceschin F., et al., 2023

¹⁰ IFRC, 2016, ADB, 2021, USAID, 2017, UNDP, 2014, Energia, 2016

¹¹ ICRW, Materiality Map and Gender scoring tool

Moreover, as off-grid projects could be an opportunity to foster energy access and women's empowerment, gender smart investing could be applied. Gender smart investing¹² is an investment strategy that seeks to intentionally and measurably use capital to address gender disparities and better inform investment decisions. Fund managers can assess and invest in companies across different gender smart strategies, including companies that are:

- ① Owned by women and with women represented in leadership;
- ① Committed to a gender-diverse and equitable workforce;
- ① Committed to a gender-inclusive value chain;
- ① Committed to offering and designing products or services that consider the distinct needs of women as a consumer segment; and
- ① Committed to ensuring their operations do-not-harm women in the community.

¹² IFC, 2020

Key recommendations for voicing women to improve energy access



Energy access:

- ① Broadening the understanding of energy access beyond household connections. Energy access is an opportunity for livelihoods, productivity, and economic development, particularly for women;
- ① Ensure that energy access is clean and sustainable by tapping into the renewable energy resources; and
- ① Promote energy efficient cooking and RE off grid solutions as they equally contribute to energy efficiency targets and access to energy.



Off-grid solutions:

- ① Understanding how and why women benefit from grid and off-grid energy could enable companies to unlock market insights and potential new customer segments. Energy enterprises could apply gender mainstreaming practices in the design of energy solutions and interventions to propose energy solutions that are affordable and designed with a gender-lens and that would benefit both men and women; and
- ① Off-grid energy technologies could be an opportunity to foster energy access and women's empowerment.

Education:
**Get the genies out
of the bottle**

Education: Get the genies out of the bottle

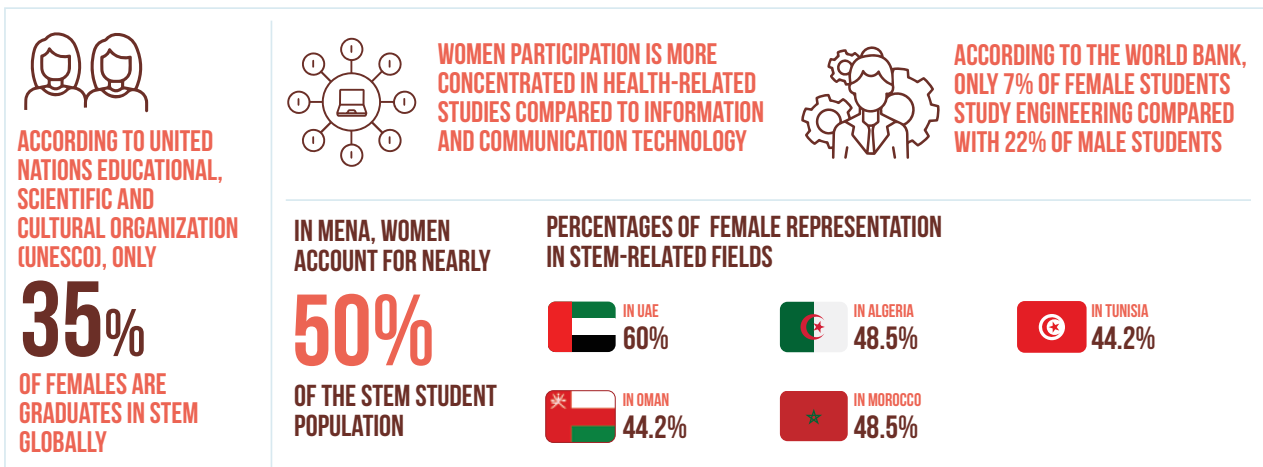
The STEM gap persists

STEM education is the foundation of the energy workforce, among other sectors. STEM education is also at the centre of innovation and technology advancements. They are the jobs of the future, driving social well-being, inclusive growth and sustainable development. Students in these fields - at every age and grade level - can gain access to a range of job opportunities in technology and innovation including industries and research institutions that are propelling the national transition to a clean energy economy. Despite progress in gender equality and growing interest over the last decade in STEM fields among both men and women, the underrepresentation of women continues to persist. According to United Nations Educational, Scientific and Cultural Organization (UNESCO), only 35% of females are graduates in STEM globally.¹³ Some particular subjects show even more notable disparities: women participation is more concentrated in health-related studies compared to Information and Communication Technology (ICT). According to the World Bank, only 7% of female students study engineering, compared with 22% of male students¹⁴ and only 12% of the members of national scientific academies are women, in spite of the fact that women make up 55% of those studying for Master's or doctorates.¹⁵



It's not about one gender over the other or one particular set of skills over the other. The energy transition needs as many people at different levels, playing different roles, it's more of a collaborative approach than competition.

Israa Osama



¹³ UNESCO, 2017, last update 2023

¹⁴ World Bank, 2020

¹⁵ UN Women, 2021

Nevertheless, the percentage of female engineering graduates is rising in sub-Saharan Africa, the Middle East and North Africa (MENA), as well as parts of Asia. In MENA, women account for nearly 50% of the STEM student population: in the United Arab Emirates (UAE) female representation is approximately 60% of graduates in STEM-related fields, it reaches around 48.5% in Algeria, 44.2% in Tunisia, 43.2% in Oman and 43% in Morocco. These rates are often higher than France (26.1%), Australia (23.2%), Japan (14%), or the United States of America (20.4%).¹⁶ Despite the high share of female students in MENA, few women are in STEM occupations: for instance in Egypt women represent less than 10% in science and engineering occupations, in the UAE female representation is at 7%.¹⁷ According to Maha Mostafa, Executive Committee Chairperson at the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE), there is at least one theory as to why women in these countries with less gender equality show better gender parity in STEM degrees. In these countries, there is no deep-seated belief that boys are naturally better at maths and science than girls. This enables girls and women to enter STEM education without the same social pressure and self-doubt often found in other places. This is not to say that MENA has created gender parity in STEM, as employment outcomes still lag. Women in the region account for just 10% of the STEM workforce. The disparity between women in MENA earning degrees in STEM and working in the field may have little to do with STEM itself. MENA have the world's lowest rate of female workforce participation: many women in the region are not employed, even after obtaining a university degree, regardless of the field of education.

In Morocco, the high share of female students can be interpreted by the adaptation of Moroccan higher education to the changing needs of the national and global market and the future career.¹⁸ These percentages, however, decrease in graduate and postgraduate levels, hence confirming global trends. According to the Ministry of Higher Education, Scientific Research and Innovation (ENSSUP), in 2021 Moroccan female graduates represented 56% of the total higher education diploma holders in the field of science and technology: 74% of them were Bachelor graduates, while 21% held a Master degree, and a minority of 3% were PhD graduates. According to several experts, this under-representation is related to different structural, economic, cultural and social constraints.

Several initiatives are happening in Morocco to encourage women to pursue energy-related education and a career in the energy sector. These include the OECD training and capacity building, and the WECF training and mentoring programs. Anne Barre specifies that “the energy transition is one of the most important sectors gaining in job creation potential and an opportunity for women to improve their access to technical

¹⁶ UNESCO, 2021

¹⁷ UNESCO, 2020

¹⁸ Bouchara A., 2022

and leadership training, skills development and high-quality jobs. This is why WECF works on training programs in coalition with several organizations, universities and companies. Some programs focus on women and energy poverty, the gender dimension of energy savings and access to energy, other programs equip women with the skills for the heating and cooling sector.”

Getting more women onboard

Going towards 2050, women could make up a significant portion of the workforce in the energy sector, and harnessing their skills and expertise is also critical to effectively achieving the energy transition. Israa Osama, Human Resources Director at Legrand Egypt, says “it’s not about one gender over the other or one particular set of skills over the other. The energy transition needs as many people at different levels, playing different roles, it’s more of a collaborative approach than competition.” Indeed, cross-sector collaboration with education information and communication technologies is fundamental to preparing a qualified and inclusive workforce.

Energy employers can do a lot: they could be proactive, reaching out to schools and universities and speaking to students about the opportunities in the energy sector. Access to more information about the career possibilities and returns of studying STEM can increase girls’ interest and influence their educational choices. Osama mentions that sometimes, girls and parents don’t have much information about energy jobs as well-paid opportunities for young women. For instance, companies could offer on-the-job training, vocational programs and internships to expose girls and women to the sustainable energy work environment and the required skills. Training programs and internship opportunities are key aspects of women’s participation and contribution to the energy transition. Christine Lins speaks about ensuring access to role models and mentors in particular successful women in STEM fields, to discredit stereotypes and myths about gendered abilities and careers, to expand understanding of educational and career pathways in these fields, to enrich skills, networks and social capital, and to help girls and women transition into the STEM workforce.



The energy transitions are not merely technical and economic issues; they are also political.

Maha Mostafa

But to increase the number of women in STEM-related fields, schools, governments, communities, and households need to do their part as well. Meriem Houzir, President of the Association Initiatives Climat, highlights the role of schools in increasing STEM access for women and girls through formal, school-based interventions and other informal opportunities to complement and build on school-based approaches, such

as social marketing of STEM for girls, themed and sponsored after-school activities and competitions between schools with gender-balanced teams, scholarships for girls to high achieving STEM schools, scholarships for girls to university. For instance, the STM school¹⁹ in Morocco introduces the STEM pedagogical approach to nurture the students' curiosity to understand the world through science, and bolster their academic skills, life skills, and mental habits enabling them to thrive in any field. Mariam Es-Sih, Chair of SunPowerCoop in Morocco, speaks of the efforts in gender-transformative STEM career guidance and orientation. Teachers in particular have an important role to play in reaching young people. They can instil the knowledge, values and skills in young people to drive the energy transition. The 3-led Energy Transition Education Network,²⁰ a multi-stakeholder partnership, established to build the capacity of teachers, lecturers and trainers to deliver effective renewable-energy learning to their students. The network provides teachers with the tools, capacity and innovative practices to enable them to integrate renewable energy into their teaching practices. Equipping young people with skills for a climate-safe future will be essential to drive the energy transition and teachers have a central role in creating awareness and motivation to contribute to achieving a net-zero economy.

Box 4: IRENA Energy Transition Education Network

IRENA, with the support of the Government of the UAE, has launched the Energy Transition Education Network (ETEN) at COP 27 with the aim to advance energy education for both social transformation and training of the energy transition workforce.

The network unites governments, intergovernmental organizations, educational and training institutions, teaching associations, professional bodies, and other local and international stakeholders working at the forefront of education and skilling for a more sustainable future. Founding partners include the UNESCO, Teach for All, the United Nations International Children's Emergency Fund (UNICEF), the Institute of Electrical and Electronics Engineers and the Higher Education and Sustainability Initiative.

Source: [IRENA](#)

School and university curricula could strengthen STEM curricula and linking it to real-world situations (using interactive experiences, project-based learning, and other strategies) could appeal more to girls rather than using more traditional methods. The World Bank²¹ advocates the need to remove gender biases in learning materials at school.

¹⁹ www.stmschool.ma

²⁰ IRENA, 2022

²¹ World Bank, 2020

Such materials often portray male examples of professionals such as engineers and scientists, while women are more likely to be depicted as teachers and nurses. Portraying women who have succeeded in male-dominated fields can shift girls' career aspirations from traditional to non-traditional. Also, informing parents about the advantages of choosing STEM classes through brochures or websites can increase their support towards female participation in STEM classes. Parents must be brought on board by designing and implementing parental outreach programs to dismantle harmful gendered stereotypes about intelligence, aptitude and appropriate fields of study for women and raise awareness of the importance of STEM for girls, not only as energy consumers or customers but also as knowledgeable consumers of energy and ICT technologies among others. Several experts highlight the need to give girls and women confidence in STEM-related fields as a catalyst for their empowerment.

To bridge this gender gap and encourage female students to choose scientific careers, several universities could introduce a series of merit-based financial incentives for female students who decide to undertake scientific studies. For instance, Ca' Foscari University of Venice introduced a new incentive program that involves a €500,00 reduction or reimbursement of university tuition fees for Bachelor's Degrees to be awarded every year to the female students who achieve the best academic performance in Informatics, Environmental Sciences, Sustainable Chemistry and Technologies and Engineering Physics. The Polytechnic University of Milan introduced scholarships to support female students in achieving their academic goals in STEM subjects. Students awarded the grant are also granted total exemption from paying university fees.

Nouzha Bouchareb, the Vice President of the Foundation Maison Climat de la Méditerranée and Former Minister of Urban Planning, Housing and Urban Policy of the Kingdom of Morocco, adds that "governments' programs and policies can recognize the demand for STEM skills and the need to ensure that everyone, regardless of their gender, has the opportunity to pursue a STEM career." Addressing the shortage of STEM skills is essential to supporting the country's economy and its growth. This can be done, for example, by supporting a range of STEM gender equity initiatives through grants programs to boost the participation of girls and women in STEM education. The government can also lead and advocate for greater evaluation and data collection of female students in STEM-related fields. There are many initiatives focused on supporting greater participation of girls and women in STEM, but very little evaluation on impact.



When empowered, women are no longer perceived as just energy users but also as a key part of the value chain across the entire energy sector.

Oumayma Chraa

While many jobs in the energy sector require a STEM background, there are also opportunities²² for non-STEM individuals to work in the field. Here are some examples:




- ① Business professionals: The energy sector needs individuals with expertise in finance, accounting, marketing, and human resources to help manage operations and ensure that the business runs smoothly;
- ① Lawyers and policy analysts: With regulations playing a significant role in the energy sector, individuals with legal and policy expertise are needed to help navigate the complex regulatory landscape;
- ① Communications and public relations specialists: As the energy sector becomes more focused on sustainability and renewable energy, companies need professionals who can effectively communicate their message to the public and stakeholders;
- ① Environmental scientists and sustainability experts: Non-STEM professionals with expertise in environmental science and sustainability can work in various roles, from ensuring compliance with environmental regulations to designing and implementing sustainability programs;
- ① Project managers: Individuals with project management expertise are in demand in the energy sector to oversee the planning, execution, and completion of energy projects; and
- ① Sales and customer service professionals: Energy companies need individuals with sales and customer service skills to help market their products and services and provide support to customers.

²² IRENA, 2023

Key recommendations to getting more women in energy-related education







At school level:

-  Address gender bias in learning materials by portraying women in STEM careers and showcasing women's role in the energy sector as end users and active actors in shaping the energy transition;
-  Publish more information about the career possibilities and returns of studying STEM can increase girls-interest and influence their educational choices; and
-  Promote STEM and energy transition for girls at school through clubs and after-school activities and scholarships for those high achieving in STEM materials.






At university level:

-  Design merit-based financial incentives to foster female participation in STEM fields;
-  Involve women-role-models in the energy-related course;
-  Design vocational programs and internships opportunities with female quotas in the sustainable energy work environment; and
-  Strengthening and innovating STEM curricula linking it to real world situations.





At business level:

-  Reach out to schools and speak to students about the opportunities in the energy sector;
-  Reach out to universities and speak about the energy jobs, salaries, opportunities, career growth, professional profiles: and
-  Develop targeted programs for women to enhance their participation in the sustainable energy workforce.



At policy level:

-  Support universities in increasing women's enrolment in STEM through government-funded courses and scholarships; and
-  Encourage companies to hire and retain more women through tax incentives.

Employment:
A glass half full

Employment: A glass half full

Energy sector remains male dominated

Equal opportunities in the workforce are essential to guaranteeing a just energy transition. Yet the energy sector remains male dominated and unrepresentative of the workforce at large. The number of people employed in the renewable energy sector has steadily grown over the past decade²³ from 7.3 million in 2012, to 12.7 million in 2021. According to the IRENA World Energy Transitions Outlook, and assuming the necessary large-scale investments are undertaken and the right policy frameworks are put in place, a 1.5°C-aligned energy transition could create close to 85 million additional energy transition-related jobs by 2030, providing opportunities for people with a range of skills and educational levels.

Women are currently underrepresented in the energy sector, and most acutely when it comes to STEM positions and senior management jobs. Yet, their participation is higher in the renewable energy sector (32%) compared to 22% in the oil and gas industry. Deloitte, McKinsey, and Global Energy Talent Index²⁴ report much lower numbers: women account only 8% across the conventional energy sector and for no more than 14% of the workforce within the renewable energy sector.

This perception is aligned with our survey respondents. Because of its multi-disciplinary dimension, the renewable energy field appeals to women in ways that the fossil fuel industry does not.²⁵ While this seems positive, when broken down further, the jobs held by women are mostly administrative roles (45%) closely followed by women working in non-STEM (35%) and finally STEM (28%). So, if administration roles are removed, the ratio drops to about a 20% participation rate for women. For management levels, the numbers decrease substantially as one moves into management and technical areas. In the conventional power sector, women's share in employment in utilities may be even lower.²⁶ The lack of women in leadership positions at all levels in the clean-energy sector is considered to compound the difficulty in recruiting and retaining female leaders.



[including women] will be really a detrimental factor, a crucial factor for the industry if it wants to grow and to thrive to find the best talent, they can't neglect just the women, and that's why they need to look at women in all parts of the value chain. There is no other possibility. I think more and more it will become an economic necessity.

Christine Lins

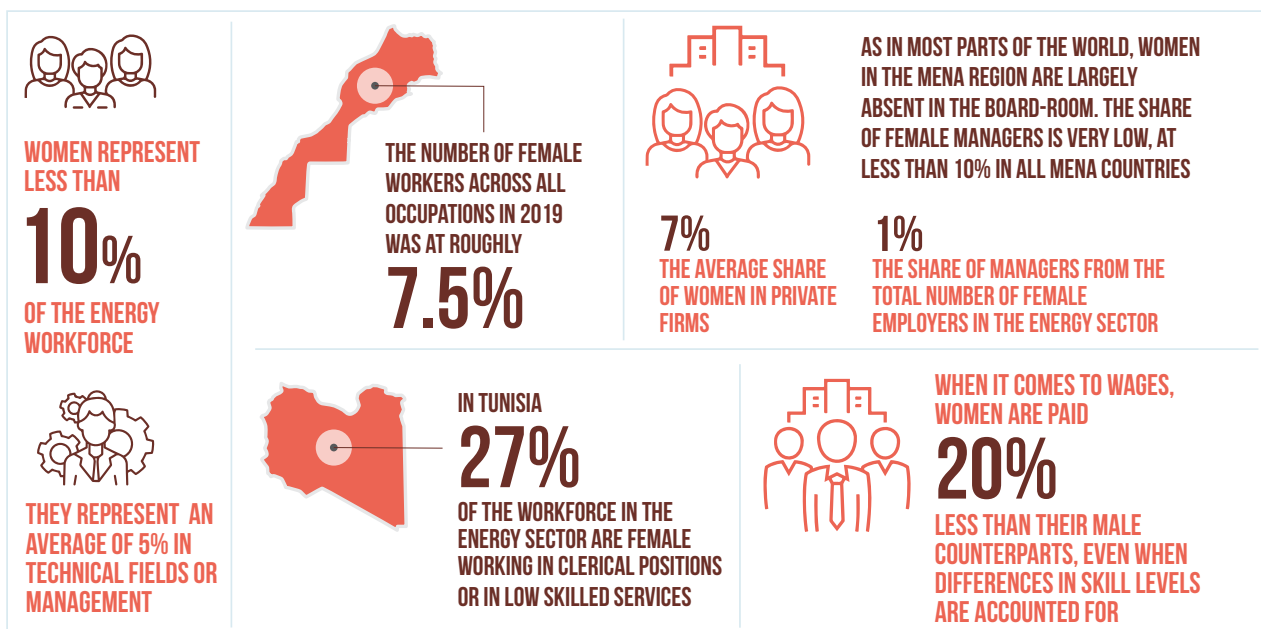
²³ IRENA, 2023a

²⁴ Deloitte, 2023, McKinsey, 2023, GETI, 2019

²⁵ CWNET, 2019

²⁶ Global Green Growth Institute, 2020

This underrepresentation of women in the energy sector is even more pronounced in MENA. The region is a very complex one where intricate socio-economic dynamics come into play. The female employment in MENA has a generally low participation rate in the labour force, with only 20% of women employed or seeking employment (less than half of the global average). In the energy sector this figure is even lower despite the fact that around 50% of women in MENA hold STEM degrees. Women represent less than 10% of the energy workforce, and an average of 5% in technical fields or management. In Morocco, for instance, the number of female workers across all occupations was at roughly 7.5% in 2019. As in most parts of the world, women in the MENA region are largely absent in the board-room. The share of female managers is very low, at less than 10% in all MENA countries: the average share of women in private firms is at 7%, less than half the global average of 18%. The share of managers from the total number of female employers in the energy sector is under 1%. In Tunisia 27%²⁷ of the workforce in the energy sector are female working in clerical positions or in low skilled services. While the numbers seem higher in renewables, there are only slight differences. For example, in Jordan and Egypt, the difference between women in renewables and the overall energy sector is only 1%.



When it comes to wages, women are paid 20% less than their male counterparts, even when differences in skill levels are accounted for.²⁸ Around 36% of survey respondents consider a lack of legal provisions on equal pay, while 64% believe men and women are equally paid because corporate internal policies and national laws are in place to guarantee equal pay.

²⁷ According to 2014 Tunisia Labour Market Panel Survey

²⁸ IEA, 2022

Some experts attribute this gender gap to the lack of confidence among girls and women in their technical skills and STEM career prospects. However, studies²⁹ have found women in STEM paths are often more confident than men, shedding light on looking for other reasons for the failure to attract and retain more women in STEM careers. Other experts consider gender stereotypes as one of the main obstacles, which can lead to bias in hiring, promotion and project assignment. More particularly, the perception that certain roles are better suited to men can limit women's opportunities, particularly in technical and managerial positions. This conscious bias in hiring and promotion processes can disadvantage women.

Almost all experts agree on the entry barriers and the barriers linked to the perception of a glass ceiling and assuming managerial or leadership positions. The McKinsey report on women states that "women are less likely to be hired into entry-level jobs than men [...] and the first promotion is the most difficult for women." At the very beginning, it's really difficult to break that glass ceiling. Early gaps in hiring and promotions can be explained by performance bias. "We tend to overestimate men's performance and underestimate women's, as a consequence, men are often hired and promoted based on their potential, while women are often hired and promoted based on their track record." On the very top, it's getting tougher: the higher they go up, women receive less support from managers, and when they ask for promotions, they get them less often. It makes it more challenging for women to climb this top career ladder. Indeed, 46% of survey respondents perceive no measures taken to increase women's representation at all levels. Regarding top management, 54% of respondents consider women to be present at a rate between 1% to 30%, while in technical positions, it is between 11% and 30%. This underrepresentation in management and technical positions can make it difficult for women also to find role model mentors within the industry, which is very essential for career development. According to McKinsey report³⁰ on Egypt, Saudi Arabia and the UAE, the second-most reported reason why women do not join or stay in the workforce is a lack of mentorship and role models.

Another barrier almost all experts (we interviewed) stressed on is that well-established male-corporate structures (such as energy) are male-dominated. They may not be inclusive or supportive of women and this can create a hostile and uncomfortable work environment, making it difficult for women to thrive in advance.



Women are agents of sustainable change. They bring unique perspectives, knowledge, and skills to conservation efforts, and their contributions are essential for achieving a sustainable future.

Anne Barre

²⁹ Martinez G.O., et al., 2023, Bennett D., et al., 2021

³⁰ McKinsey, 2020

Particularly, some roles in the energy sector, such as field roles or offshore positions, can also present safety issues, and it can also be challenging to balance family responsibilities with a demanding career in the energy sector because the industry involves long hours, field work or travel, which sometimes can be problematic or can pose issues for women with caregiving responsibilities. Besides, 78% of survey respondents believe women face sexual misconduct and harassment and, combined with the lack of a reporting system and restroom and changing rooms set up for women's use, on-site jobs remain men-recruited and men-led.

Silvia Piana says that “the barriers women face in the energy sector are similar to those they face elsewhere in the economy. However, the challenges of the energy sector are more pressing since the sector is going through a process of transformation. Clean energy transitions will require innovative solutions and business models to be adopted and greater participation from a diverse talent pool.” Many energy companies have difficulty in attracting talent so “they can simply not spare 50% of the population in their search.” Christine Lins agrees adding “I think this will be really a detrimental factor, a crucial factor for the industry if it wants to grow and to thrive to find the best talent, they can't neglect just the women, and that's why they need to look at women in all parts of the value chain. There is no other possibility. I think more and more it will become an economic necessity.” Israa Osama adds the pandemic has shown us that companies can be very flexible, or they have to be very flexible. Before it was very much a culture of presence in the office and allowing for this flexibility often makes it easier for men and women to combine work and care duties - work-life balance, that is often quoted. Being the HR director at Legrand Groups, she is leading the actions to achieve gender equality in the workforce by 2030 while having one third of the Group's key jobs occupied by women. They have in place gender-responsible human resources policies especially when it comes to recruitment, selection and placement, performance management, rewards and recognition, and learning and development.

Diversifying the talent pool

IEA estimates that investments in green jobs in the energy efficiency and renewable energy sectors are expected to bring about investments of around USD4 trillion by 2030.³¹ This will create millions of new jobs, significantly lift global economic growth, and achieve universal access to electricity and clean cooking worldwide by the end of the decade. The workforce in the renewable energy sector is predicted to rise. This enormous potential growth is at risk due to the lack of suitable specialists in the field. Increasing women's participation in the green labour market may help to address the workforce shortage.³²

³¹ IEA, 2023a

³² IRENA, 2023b

Women have a lot to offer for the energy sector, especially in times of change. Scientific research in other sectors has found that a diversified workforce delivers better results, not only in terms of increased creativity and innovation potential, but also related to better decision-making and greater profits. Initial research findings have also led to conclude that companies with more women on their board of directors are inter alia more likely to invest in renewable power generation, mitigate climate change and proactively address environmental concerns.³³

The European Investment Fund³⁴ shows that women-led firms have higher environmental, social, and governance scores than other companies, and that businesses with greater representation of women in leadership positions have better track records of adopting environmentally friendly practices. Similarly, women leaders are more likely to invest in renewable energy, leading to reduced greenhouse-gas emissions and improved environmental outcomes, and women-owned businesses are more likely to pursue greater energy efficiency and practices such as recycling. Companies with women in their management tend to invest more in sustainability, are more energy-efficient, and more environmentally sustainable³⁵ and at least 30% female leadership in firms is linked with profit margins of up to 6% points higher than in firms with no women in the top ranks. More effort is required to overcome the current culture, legal and policy barriers that reinforce gender stereotypes and occupation segregation³⁶ and have more women engaged in the sector, especially at the managerial levels and in technical areas.

According to the experts, some progress in integrating women in the energy sector is noticed. Many energy companies have pledged to address the gender gap by adopting gender-neutral corporate policies and recruitment practices, proposing a better work-life balance and quotas for the composition of Boards of Directors of Companies, and creating attractive work environments and flexibility in the workplace. Technology is helping to digitize physically burdensome tasks and facilitate flexible working, removing some of the barriers for women. Yet, 71% of survey respondents consider the lack of an officer dedicated to gender issues a significant barrier to women's growth within the industry, and



Networking helps to build relationships and break down barriers, allowing women to connect with decision-makers and other key players in their industry and participate in networking events and engaging with others in the industry.

Maria Caterina Mattiolo

³³ ECGI, 202

³⁴ Working Paper 2023/87

³⁵ EIB, 2023




³⁶ World Bank, 2023a

when training on gender mainstreaming is organized 70% of participants are women. While efforts to reduce the gap are taking place, more attention needs to be paid to understanding that without having men onboard, gender equality won't happen swiftly and effectively.

Box 5: Enel and the Statuto della Persona

In 2022, Enel signed the Statuto della Persona with some of the national trade union organizations (namely FILCTEM, FLAEI and UILTEC).

This innovative declaration involves the entire network of companies collaborating with Enel and embraces the following aspects:

-  Well-being, participation and productivity to promote dignity, inclusion, absence of prejudice and work-life balance;
-  Life-long learning to provide training and vocational courses, empower women in STEM fields and foster external training opportunities; and
-  Safety at work to reduce and prevent accidents, empower employees and strengthen a safety culture.

In the context of continuous learning, the company's efforts to provide access to more advanced career paths (upskilling) and to learn new ones (reskilling), while also improving transversal and soft skills, are particularly noteworthy. In this sense, Enel also promotes the "training of trainers" and the transfer of skills between generations.

The Statuto della Persona inaugurates a new system based on a relationship of care and responsibility between the parties.

Source: ENEL

Some companies introduced pink quotas for senior and top management while others are working towards creating inclusive workplaces through identifying and addressing unconscious biases and fostering a culture of inclusivity. They have implemented diversity and inclusion policies offering mentorship and sponsorship programs, and providing opportunities for career advancement and creating flexible work arrangements. They also organized training on company level about unconscious bias. Unconscious bias is echoed in the McKinsey report: women are often faced with microaggressions, and people might not really notice this.

Lack of strong professional networks, leadership role models and valuable mentorship opportunities form obstacles to women's full professional development in the renewable energy sector, according to Barbara Fischer-Aupperle, Co-founder and Board Member of Global Women's Network for the Energy Transition (GWNET), Coach, Mentor and Speaker. She adds "mentorship, empowerment, training opportunities and the creation

of effective professional networks” are crucial for advancing women’s careers in a male-dominated industry. She argues that women face constraints when it comes to networking and accessing information about job opportunities or internships where they can get practical experience. There is growing evidence showing that women and men network differently, due to the specific hurdles that women face, particularly as they advance in their career such as balancing responsibilities and building confidence.³⁷ Reflecting on her experience, she often saw women missing out on networking opportunities early on in their career because of childcare constraints. But above everything, “women do not make themselves enough visible and heard, this is why we need more female role models in the energy sector and we can do this through mentoring.”

Box 6: Women in Wind Global Leadership Program

The Women in Wind Global Leadership Program was launched in April 2019 by the Global Wind Energy Council (GWEC) and the GWNET. It helps accelerate the careers of women in the wind industry, facilitating empowerment and career development by providing training, mentorship, knowledge-sharing and fostering a global network of professionals in the industry. Its objective is to advance the role of women as agents of change in society and the energy transition, and to promote best practices within the wind industry. The program is designed to support their pathway to senior leadership positions and foster a global network of mentorship, knowledge-sharing and empowerment.

Source: [GWNET](#)

Hind Abdaoui, Head of service at renewable energies and energy efficiency department at the Ministry of Energy Transition and Sustainable Development of the Kingdom of Morocco, speaks about the efforts being made in Morocco to promote gender diversity and inclusion. She praises the efforts of the Minister Dr. Leila Benali to encourage and include women at the various ladders and particularly in key decision-making positions. The Ministry has defined several renewable energy programs and projects integrating the gender dimension in their development. These programs and projects aim to reduce gender inequalities in the regions of establishment, strengthen the integration of women into the socio-economic environment of these regions and improve professional integration, social and



[Women] do not make themselves enough visible and heard, this is why we need more female role models in the energy sector and we can do this through mentoring.

Barbara Fischer-Aupperle

³⁷ Woehler, M., et al., 2021

economic empowerment and the employability of women through various training programs. She adds “the transversality of gender, combined with the multidimensional nature of energy, has contributed to giving a certain and essential dimension to the development of projects and programs focused on gender equality in the energy sector.” For example, the NOOR Ouarzazate project seeks to reduce gender inequalities in the Ouarzazate region, where women and girls are disproportionately underemployed, by seeking to strengthen the integration of women into the socio-economic environment of the Ouarzazate region, particularly through the indirect jobs that will be generated by the NOOR Ouarzazate. Various actions are planned, among others the partnership with the Poly-disciplinary Faculty of Ouarzazate (renewable energy sector), the training of women entrepreneurs in the Ouarzazate region. All these efforts combined will improve the professional integration, social and economic empowerment and the employability of women in the region. Particular attention is paid to the participation of women in decision-making through their presence in local decision-making bodies, including that of women’s associations with gender perspectives present in the Ouarzazate region. Furthermore, MASEN designated an environmental and social management team to monitor social and local development actions, particularly those aimed at the empowerment of women in the Ouarzazate region and their integration into economic and social development.

Some companies operating in Morocco have developed diversity and inclusion strategies, including targets for female representation in their workforces and mentorship and leadership development programs for female employees. Paula Riveros delves into the different segments of the renewable energy value chain and shares the clear benefits for integrating women. For instance, during the development stage, while keeping the perspective of sustainability, the role of women can be present in the technical aspects of defining the layout of projects, financing, and planning. The contribution of women in the environmental and socio-economic territorial studies enables developing projects for the creation of shared benefits - understanding how the project can connect with community and social needs and create sustainable value. During the construction stage, women can work in the field, as engineers or technicians, and ensure the quality of the installations. They can also participate in human resources management and in the management of relations with local communities. During operations, women can work in various segments from energy management to facility maintenance.

Key recommendations to increasing women in energy workforce



Recruitment:

- ① Adopt a gender-responsive approach when drafting the job description using language that avoids gender discrimination and stereotypes;
- ① Publish the vacancy announcement in women networks active in the sustainable energy transition;
- ① Prevent and address gender bias and discrimination in job interviews, including by using non-discriminatory interview questions, competency-based evaluation methods and standardized interview questions that take into account gender perspectives; and
- ① Set female quotas.



Retention and re-entry:

- ① Establish and scale up work-life balance policies and benefits to respond to the care needs and priorities of workers and managers (childcare, elder care, et cetera.);
- ① Ensure equal access to company-supported education and training programs, in particular on technical and ICT subjects as well as leadership programs designed for women;
- ① Institute an enabling workplace environment through policies and practices that are gender-responsive including on flexible working hours, remote work, career growth particularly after maternity leave; prevention and protection against sexual conscious or nonconscious harassment at work; and
- ① Design “returnship” programs to encourage seasoned and qualified women who have taken time off to re-join the workforce without having to start their career journey all over.



Career advancement and leadership:

- ① Establish policies and practices to ensure equal-access for senior and executive level positions (setting gender quotas);
- ① Provide equal opportunities to women and men for formal and informal networking and mentoring;
- ① Ensure that women have equal access to retraining and re-skilling programs or develop specific programs for women; and
- ① Provide mentors and role models for women.

Entrepreneurship:
Turning missed
opportunities
into gold

Entrepreneurship: Turning missed opportunities into gold

Leading off-grid solutions

The sustainable energy sector has the potential to enhance women's entrepreneurship while women entrepreneurs and enterprises can play a key role in the transition to a green economy. Today's energy access gap presents a large market opportunity for clean energy. Customers in remote areas do not shop through standard retail channels, local distribution chains are fragmented and sales volumes are low. The possibility of off-grid and small-scale, renewable energy generation is making the industry more accessible. Opportunities for off-grid energy service companies are fast emerging as a disruptive force, marketing household solar electricity systems that can support varying bundles of LED lights, mobile phone chargers, radios, fans and/or high-efficiency televisions³⁸ and clean cooking solutions. As such, decentralized solutions are expected to provide the majority of new access connections in the period up to 2030. In this context, women's entrepreneurship in energy is gaining recognition³⁹ as an emerging strategy to bring energy products and services to unserved and underserved communities, that collectively also represent a huge economic potential. According to the International Finance Corporation, engaging women as active agents in delivering off-grid renewable energy solutions, especially in areas unserved by national electricity grids, can create opportunities for women's leadership and employment. As these are deployed at the local level, women are more likely to participate in related decision-making and be involved in the energy value chain

Decentralized sustainable energy solutions also have the potential to reduce women's unpaid care and domestic work and can contribute to a gradual change towards more equal, social and cultural gender norms. Over the past decade, more women-owned and led businesses, particularly the small-medium businesses, are entering off-grid markets for green energy solutions and are succeeding. Latifa Seroukh, co-founder of NoureSun states that "women tend to be closer to and more knowledgeable about their customers,"



Women's businesses need to overcome greater hurdles than their male peers. These bottlenecks include discriminatory cultural and gender norms, business experience, competing demands of household and family responsibilities, a lack of financing and poor access to productive resources.

Nouzha Bouchareb

³⁸ SE4ALL, 2018

³⁹ ENERGIA, 2022

and therefore face lower supply chain management and customer acquisition costs as well as a lower risk of delayed payment or non-payment, especially in rural areas.⁴⁰ She adds “women are able to leverage existing social networks and form trusting relationships with potential customers, especially women. Due to cultural norms in many settings, women may be better positioned to gain entry into homes and access female consumers than male sales agents. Further, since women are often the primary users of energy technologies and fuels, they are at an advantage when discussing the benefits and features of the products they are promoting.” All of this suggests that women entrepreneurs can improve the effectiveness of the energy supply chain by fast-tracking the last-mile distribution of renewable energy technologies, due to their unique ability to selling and servicing energy products and services, and they can also increase awareness in their communities and deliver products and services through untapped social networks.⁴¹

Further, the number of female-owned enterprises is growing at a faster pace⁴² than that of male counterparts. Across the globe, a large number of women are engaged in small and medium-sized enterprises (SMEs); 30% to 37% of all SMEs in emerging markets are women-owned. Women in Morocco are also entering the energy market for more efficient renewable energy solutions. Renewable energy cooperatives provide an opportunity for women to engage all along the value chain, including in production. In 2023, around 40 women technicians in the regions of Tangier-Tétouan and Al Hoceima and in Arganeraie finished their three years training cycle to create solar energy cooperatives 100% female-led: Holol Chamssia, NoureSun and Sun Power Coop. NoureSun cooperative produces and commercializes solar ovens or solar cookers. These are well suited for cooking, simmering grilling and reheating the dishes. They now have equipped premises and production workshops, which made it possible to launch the first production of solar equipment, particularly in the South of Morocco. One of the first customers is the Union of Women Cooperatives for Argan Oil. They installed solar cookers as a means of preventing the deforestation of argan trees, avoiding toxic wood fire fumes from traditional cooking and reducing CO₂ emissions. We spoke with Latifa Seroukh and Mariam Es-Sih from SunPowerCoop and, Oumayma Chraa and Houda Dehdi from NoureSun. All mentioned the critical role women play in increasing awareness and generating demand for clean cooking solutions, in part as a result of their networks and community relationships. Technologies that are co-developed by women have a greater chance of being more widely taken up and disseminated and women networks could be leveraged to promote such technologies. They argue that women entrepreneurs have the potential to be powerful job creators. Indeed, Ernest and Young in 2016 conducted a

⁴⁰ Glemarec et al., 2016

⁴¹ ENERGIA, 2022

⁴² ESMAP, 2021

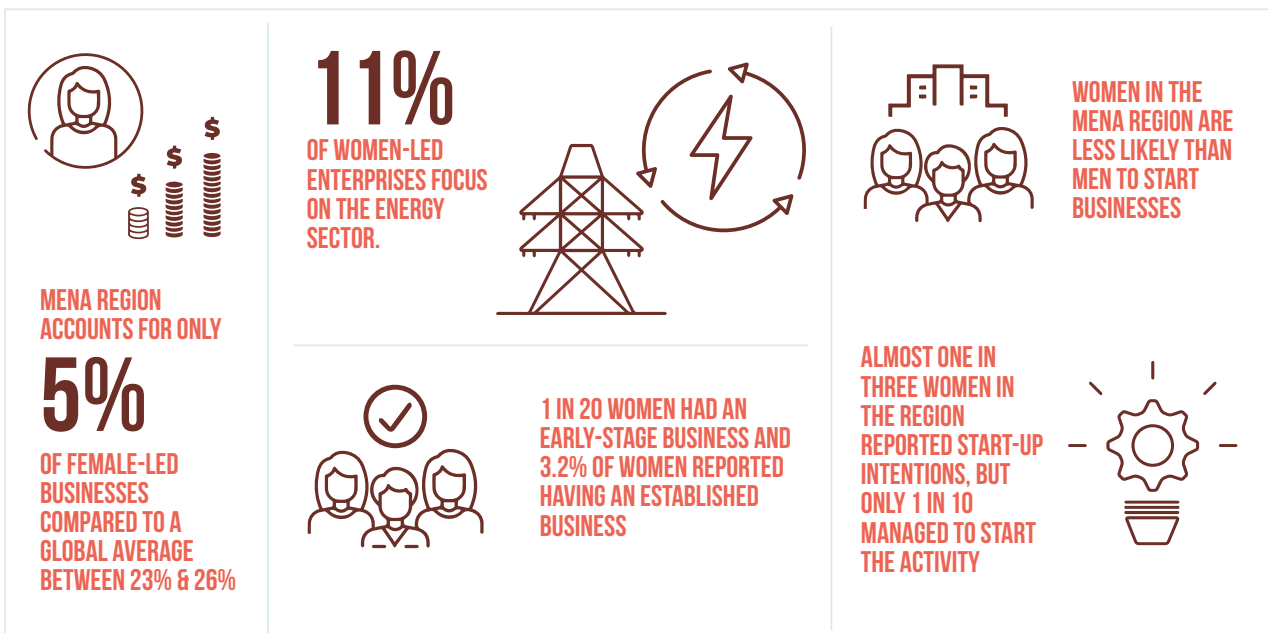
survey on entrepreneurs and found that women entrepreneurs expected an increase in the workforce by almost one third. According to the World Bank survey,⁴³ firms owned or led by women tend to hire more women, including to the top management positions as in Lebanon where 49% are female permanent full-time workers compared to firms led by men (22%).

However, in spite of this recognition, the opportunities surrounding women’s energy enterprises are far from being realised. The entrepreneurial gender disparity in the MENA region remains extreme, as the region only counts 5% of female-led businesses compared to a global average between 23% and 26%.⁴⁴ Only about 11% of women-led enterprises focus on the energy sector.⁴⁵ Moreover, women in the MENA region are less likely than men to start businesses. Almost one in three women in the region reported start-up intentions, but only 1 in 10 managed to start the activity; just 1 in 20 women had an early-stage business and 3.2% of women reported having an established business.



Women entrepreneurs face more barriers to business success than men, namely restricted mobility, social and cultural norms and most important difficulties in accessing both formal and informal credit.

Meriem Houzir



⁴³ World Bank 2023b

⁴⁴ UfM UNIDO, 2023

⁴⁵ IEA, 2023b

According to the 2023 UfM and United Nations Industrial Development Organization (UNIDO) report, women entrepreneurs continue to be confined to historically feminised sectors, such as the service sector, whereas access to sectors with growing importance, such as energy, manufacturing, digital and tech sectors often continue to be hindered. Although these sectors have the capacity to create high added values and jobs, they remain highly male dominated, while women often miss digital and technological skills that would allow them to excel in the field of innovation and industry, particularly in relation to circular economy and artificial intelligence.

Backing women-led businesses

Promoting women as entrepreneurs is difficult, mainly because, as Nouzha Bouchareb states “compared to their male counterparts, they just aren’t on a level playing field. Globally and across sectors, women’s businesses need to overcome greater hurdles than their male peers. These bottlenecks include discriminatory cultural and gender norms, business experience, competing demands of household and family responsibilities, a lack of financing and poor access to productive resources such as land.” In many countries, women’s extremely limited land ownership translates into a lack of collateral for starting a business. Meriem Houzir states that “women entrepreneurs face more barriers to business success than men, namely restricted mobility, social and cultural norms and most important difficulties in accessing both formal and informal credit.”

These barriers are partly due to women’s low asset ownership and lack of access to financial networks, which need to be addressed urgently. Also, Mariam Es-Sih shared the significant challenges herself and the co-founders faced in developing their businesses “due to legal frameworks, cultural norms, and social standards” and that women in the region need to be empowered economically and “specific actions are required to support women entrepreneurs, such as improving access to funding and networks, enhancing digital skills, and changing attitudes towards women in the energy sector and STEM fields.”

Access to funding is the most common challenge reported by the experts. Arwa Temim, Head of North Africa Investments and Operations at Empower New Energy, proposes setting up funding or grants specifically for women as a useful strategy to encourage their productive engagement in the renewable energy sector. Targeted funding for women would be very helpful for encouraging women’s participation in the clean energy sector and for levelling the playing field in entrepreneurship between women and men. Women entrepreneurs are often disadvantaged in debt finance, as they generally have fewer assets to guarantee loans. To support a just transition and encourage innovative business models for clean energy, it is important to ensure that women and men have equal access to finance and consideration in public engagement programs. Temim

says: “to acquire, operate and manage sustainable energy technologies effectively, women’s enterprises and cooperatives need appropriate technology transfer, financing, information and training,” and above all “women need a stronger support system.” The lack of a support system for women and access to affordable finance and productive assets remain a major challenge for women-owned small businesses. According to her, there are initiatives for women to have the opportunity to pitch their enterprise and ask for financing, however, these initiatives are very few. She explains: “when women have an idea that they want to pitch, they need the 3Fs – family, friends and finance. The so-called support system that gives them enough maturity to come in front of an investor and be ready for pitching. The support system is very tolerant with men where family, friends, and financing tools are more ready-steady to help. The support system for women is different, and it is, somehow, weaker.” Around 73% of survey respondents view the lack of the 3Fs as the main hurdle for women’s entrepreneurship in energy, while 25% consider lack of skills and knowledge limit access to financial support whether it comes from private entities (banks and financial institutions) or public support (schemes such as tax incentives or women-related entrepreneurship policies).

Almost all experts (we spoke with) confirmed that having more supportive family or friends would have further encouraged them to start their own business. The social approval or disapproval of different careers by family and friends played a role in the choice of career. The Cherie Blair Foundation’s 2020 report on Women Entrepreneurs Surviving the Pandemic and Beyond, shows that over half of women had been challenged by family members with the stereotype that women are not business-minded and should prioritize domestic duties such as caring for children and elderly.⁴⁶ Temim adds “unfortunately, I think that women crush at this level, before getting the chance to pitch their idea for seed funding.” In addition, compared to the average start-up, clean energy projects are typically technology and capital heavy, thus entailing high initial investment costs and a longer investment-to-profit time required to commercialize these often-complex innovations. Therefore, already existing gender inequalities in access to seed funding and private equity capital,



To acquire, operate and manage sustainable energy technologies effectively, women’s enterprises and cooperatives need appropriate technology transfer, financing, information and training,” and above all “women need a stronger support system [...]. The support system for women is different, and it is, somehow, weaker.

Arwa Temim

⁴⁶ The Cherie Blair Foundation for Women, 2020

in particular due to conscious and unconscious gender bias of early-stage investors are further amplified and result in a significant gender financing and investment gap among start-up and early-stage entrepreneurs. For example, according to several studies, 20% of companies that had a woman founder in 2019 only received 2.8% of investments, with a further decline to 2.3% in 2020, a year heavily affected by the economic repercussions of the COVID-19 pandemic.⁴⁷ According to the International Finance Corporation (IFC),⁴⁸ in emerging markets only 11% of seed funding went to companies with women in their founding team and this gender finance gap further increases in later-stage funding. Still, providing financial capital alone has proven not to be effective if unaccompanied by financial literacy and management skills training.

Training, mentorship can help women develop the skills and confidence needed to succeed as entrepreneurs in the energy sector. When it comes to mentoring, several efforts - led by national governments, international organizations, the UN system, NGOs, and the private sector - are coming together to close gender gaps in sustainable energy entrepreneurship. Initiatives are taking place the High-Level Panel on Women's Economic Empowerment launched by the UN Secretary-General in 2016, Sustainable Energy for All (SE4All) People Centred Accelerator on Advancing Gender Equality, Social Inclusion, and Women's Empowerment in the Sustainable Energy Sector, as well as GWNET and WECF. ENERGIA has supported and trained more than 8000 women entrepreneurs in the clean energy sector since 2020. This has provided almost four million people in last-mile communities in Africa and Asia with access to affordable energy and engendered positive changes in the lives of entrepreneurs' families and communities. The Foundation Mohammed VI in Morocco is also active in training women and kids at schools to assemble and use solar cookers.

Moreover, starting and growing a business can be a challenging journey, especially for women entrepreneurs who often face additional obstacles in a male-dominated energy industry. However, building a strong network can make all the difference. Not only can it provide valuable support and resources, but it can also open doors to new opportunities and help level the playing field. Maria Caterina Mattiolo, Official in the Diplomatic Office to the Ministry of Enterprises and Made in Italy, sheds light on the importance of networking for female entrepreneurs and how it can help drive success. By actively networking and building a strong professional network, women can combat the barriers they face and gain a competitive advantage. Networking allows women to connect with other female entrepreneurs who understand the unique challenges they face and can provide valuable support and guidance, as Mattiolo puts it. She adds

⁴⁷ Ewens and Townsend 2020

⁴⁸ IFC, 2019

that “networking helps to build relationships and break down barriers, allowing women to connect with decision-makers and other key players in their industry and participate in networking events and engaging with others in the industry.”

Networking can open up new opportunities for female entrepreneurs, from potential partnerships to access to funding and investment. Barbara Fischer-Aupperle believes that “in today’s interconnected world, the value of networking cannot be overstated. Whether you’re a professional seeking career growth, an entrepreneur looking for business opportunities, or an individual aiming to expand your knowledge and social circle, networking is a vital tool that can open doors and lead to remarkable personal and professional achievements.” Networking paves the way for collaborative ventures, partnerships, and mutually beneficial relationships. Collaboration could open doors to new markets, customers, and resources that may have been otherwise inaccessible. There are four things’ women could do to nurture and build a strong network, particularly in male-dominated sectors:

- ① Engaging with people from diverse backgrounds and industries can provide fresh insights that can spark innovation to new ideas, perspectives and opportunities;
- ① Exchanging information fosters continuous learning and helps stay up-to-date with industry trends, best practices, and emerging opportunities;
- ① Building a support system of like-minded individuals to exchange ideas, seek advice and fresh perspectives to navigate difficult times; and
- ① Cultivate a strong professional network to increase the chances of landing on new career and business opportunities.

Key recommendations to empower women's entrepreneurs in energy sector





Pre-start-up phase:

-  Provide targeted education and training to women entrepreneurs and women-led sustainable energy businesses to ensure that women are adequately prepared for business creation;
-  Facilitate access to individual guidance, mentoring and practical experience provide the necessary business skills, develop an entrepreneurial spirit and lay the ground for an attitude of lifelong learning and growth;
-  Foster effective networking to achieve business and personal objectives, strengthen collaboration, shared experience and constructive criticism;
-  Family and friends support is paramount particularly during the difficult stage of business creation;
-  Enable local and regional women empowerment initiatives in sustainable energy and the energy transition, through incentives and financing mechanisms; and
-  Look for role models of successful women entrepreneurs.






During start-up phase:

-  Foster 'One-stop-shops' and business incubators to simplify the business creation process and shorten the time needed to launch the business; and
-  Provide training and support to help women develop a sound business plan that will withstand a bank or seed funding scrutiny.



After start-up phase:

-  Link women to networks in the energy sector to further their business objectives;
-  Raise awareness among women-led enterprises of existing knowledge and services for sustainable energy ventures; and
-  Facilitate networking and business opportunities for women sustainable energy entrepreneurs, through dedicated platforms and events.

**Policy
environment:
Getting the right
balance**

Policy environment: Getting the right balance

The policy gap

Government measures have been the primary drivers to promote the advancement of women and attainment of gender equality. Governments can play a decisive role in accelerating progress towards parity through legislation, public finance, programmatic change and public-private partnerships. Experts agree on Morocco's multifaceted approach to promoting gender equality and gender-responsive rights. Over the years, Morocco has undertaken important legal reforms to improve the status of women and promote gender equality and these reforms sought to address inequalities in several areas. Morocco amended the Family Law in 2004 known as the Moudawana reforms and this reform aimed to improve the legal status of women within the family. Another amendment looked at gender equality in property ownership and freedom of movement. Articles 19 and 31 of the 2011 Constitution guarantee freedoms and fundamental rights: Article 19 guarantees that men and women equally enjoy rights and freedoms of a civil, political, economic, social, cultural and environmental, set out in this Title and in the other provisions of the Constitution, as well as in the Conventions and Covenants International Agreements duly ratified by Morocco. Article 31 guarantees that "the State, establishments, public and local authorities work to mobilize all stakeholders to facilitate equal access of citizens to conditions allowing them to enjoy the right to a series of economic rights, social and cultural, including access to water and a healthy environment and sustainable development.

Morocco is a signatory to eight of the nine instruments or international standards relating to human rights, including: the Convention on the Elimination of All Forms of Discrimination against of Women (CEDAW-CEDEF), signed in Washington on December 18, 1979 (as well as its optional protocol adopted by the General Assembly of the Nations United in 1999. This convention was ratified by Morocco on June 21, 1993 and published in the Official Bulletin in 2001, the date of its entry into force; the International Covenant on Economic, Social and Cultural Rights (ICESCR); the International Covenant on Civil and Political Rights (ICCPR) ratified in 1979; three of the four conventions of the International Labour Organization (ILO) devoted to equality, including conventions one hundred and one hundred and eleven relating to equality of opportunity, treatment and remuneration.

At COP28, Morocco has committed to advance women's participation in climate efforts. This locally-led activity, developed by United States Agency for International Development (USAID) in close collaboration with the government (USD 2 million), will promote climate adaptation best practices and strengthen local systems to become resilient to climate change, particularly for women and girls, through economic growth and governance

programming. Also, Morocco shared efforts to attain the objectives of a net-zero economy as an important opportunity to strengthen an inclusive and sustainable future.

One fundamental aspect for inclusivity and sustainability is gender equality. Across our research and analysis, experts highlighted that social perception of gender roles is one of the main barriers to gender equity. Maria Caterina Mattiolo speaks about the need to design dedicated actions that address structural barriers to allow women participate in the energy sector at all levels. This could be done by featuring the role of women in energy access, education, employment, entrepreneurship and at policy level. Examples could include public campaigns, gender-lens educational programs, research initiatives on gender and energy among other measures. These actions could contribute to a widespread understanding of energy and gender considerations, creating an enabling environment that appreciates the importance and contribution of women in the energy transition.

Morocco's efforts reflect the political commitment of harnessing the full potential of women in the power sector, and these initiatives not only contribute to gender equality, but also enhance overall resilience and sustainability of the country's energy landscape. The government of Morocco has taken steps to implement concrete policies and strategies to promote gender equality and women's participation in various sectors, including energy, and this also includes policies aiming at promoting women to leadership positions. Morocco's National Energy Strategy - in addition to the imperatives of strengthening energy security and the use of renewable energy - emphasizes the importance of gender equality and women's participation in the energy sector. Morocco collaborated with United Nation Development Program (UNDP) and UNIDO on projects related to gender inclusion in the energy sector, and with OECD on training and capacity building programs to encourage women to pursue careers in the energy sector equipping them with the skills and knowledge they need to succeed. Also, the government facilitated the emergence of various initiatives and networks - such as Women in Renewable Energy, which aims to support and connect professional women in the renewable energy sector - and participated in 2022 to the first edition of the Women Energize Women initiative organised as part of the SmarterE, one of the largest European platforms for the energy sector. The aim of this edition was to highlight women's role in shaping the global and regional energy transition with strategies focused on gender justice and equal opportunities.



The transversality of gender, combined with the multidimensional nature of energy, has contributed to giving a certain and essential dimension to the development of projects and programmes focused on gender equality in the energy sector.





Hind Abdaoui

Towards gender-responsive policies in energy

Going further, the government could ensure that all energy policies, programs and initiatives, including large energy-planned infrastructures and investments, are non-discriminatory, gender-inclusive, gender-balanced and directed towards addressing inequalities. Half of our survey respondents (54%) believe the current energy policies and laws are not designed with a gender perspective, and around 64% consider women are not mentioned in the energy-related policies, regulations and plans.

Gender mainstreaming could be applied to address this gap and advance the representation of women in the energy sector. It is a tool or a process that aims to correct this imbalance; by ensuring that women's as well as men's concerns and experiences are made integral to the design, implementation, monitoring and evaluation of legislations, policies and programs so that men and women benefit equally and inequality is not perpetuated.⁴⁹ A commitment to gender mainstreaming is one of the most effective ways that governments can do to support and promote gender equality. Gender should be mainstreamed in energy ministries, and energy should be mainstreamed in gender ministries. For instance, once evidence of a given gender gap is identified, it can be used to mainstream gender and energy-linked objectives into five-year national development plans through targeted gender-responsive policy-processes.

Several governments are making efforts to include gender in their national energy policies – for instance the Government of Kenya was the first in Africa to adopt a National Gender and Energy Policy, in 2019. The Economic Community of West African State (ECOWAS) together with Power Africa and National Renewable Energy Laboratory (NREL) developed in 2019 a Policy for Gender Mainstream in Energy Access to provide policy makers with instrument and human right-based indicators and rigorous arguments to align energy interventions with principles of gender equality. Objectives included:

-  Ensuring that all energy policies, programs, and initiatives are non-discriminatory, gender-inclusive, gender-balanced and directed towards addressing energy poverty differentially affecting women and men in the region;
-  Increasing women's public sector participation in energy-related technical fields and decision-making positions to a level of at least 25% in the medium term and 50% in the long term;
-  Ensuring women and men have equal access and opportunities to enter and succeed in energy-related fields in the private sector; and
-  Establishing and maintaining a comprehensive monitoring and accountability framework.

⁴⁹ UN, 2000

Maha Mostafa affirms that “the energy transitions are not merely technical and economic issues; they are also political.” Power dynamics significantly influence the design of energy systems and determine who will bear the costs and reap the benefits of such transitions. It is essential to understand the underlying inequalities and power dynamics. With the energy sector being male dominated, energy policies, programs and projects are often formulated in a gender-neutral manner with lack of gender perspective, even when it is assumed that women and men benefit equally. Women and men benefit from and contribute differently to the energy transition. Women’s different and specific needs, experiences and knowledge are not yet well-represented in energy planning and policymaking, which can lead to energy policies that exacerbate existing inequalities.

Paying attention to women’s needs and their priorities could be mainstreamed in energy policies, programs and projects from definition to design, planning and implementation. For instance, decentralised renewable energy systems offer a great opportunity for women to participate in decision-making,⁵⁰ as these are deployed at the local level where women are more likely to be involved in energy procurement, design, installation, maintenance and consumption. Another example is government subsidies for energy efficiency. Energy efficiency is not only about changing attitudes but also about affordability. However, those who have access to energy efficiency technologies can increase their incomes, bridging a gap between rich and poor. For instance, in Europe many municipalities are providing subsidies and tax benefits for house insulation, only home-owners who have the means to make an investment can benefit from such policies. Considering that women are often economically disadvantaged and that men are over-represented as tenants, such insulation and retrofitting programs might not be inclusive of women. European Bank for Reconstruction and Development (EBRD) in Morocco launched in 2022 a gender baseline study to better understand men’s and women entrepreneurs’ awareness of climate change risks; their differentiated needs, priorities, vulnerabilities to climate change and adaptation strategies; and their access to climate finance for adaptation and mitigation measures. The survey fed the strategy design for women empowerment projects in Morocco.

Having women from the local, regional, national and international sphere present at all policy-making stages will allow designing energy policies and interventions that cater to women needs and foster their paramount role in the energy transition. Government could establish



Specific actions are required to support women entrepreneurs, such as improving access to funding and networks, enhancing digital skills, and changing attitudes towards women in the energy sector and STEM fields.

Mariam Es-Sih

⁵⁰ UN Women, UNDP-UNEP PEI Africa, 2015

and empower gender focal units in the energy ministries, departments and agencies to provide oversight towards the implementation of gender responsive energy interventions; creating a feedback mechanism where the priorities of both male and female citizens can be heard, collected and acted upon. In addition, Houda Dehdi says “if more women are responsible for the development of national strategies, maybe then the latter would voice women in the energy transition.” There is a need to increase women’s public sector participation in energy-related technical fields and decision-making positions. According to the IEA, globally, women make up only 15% of senior management in publicly-listed energy firms and the UNDP figures show that women represent just 6% of ministerial positions responsible for national energy policies and programs. According to International Union for Conservation of Nature (IUCN) and USAID report,⁵¹ the vast majority of national energy policy frameworks are still gender blind. In 2017, only a third of 192 national energy frameworks from 137 countries include some gender considerations and for, renewable energy policies, this share further decreases to less than one in six; women are characterised therein as potential stakeholders or beneficiaries, but rarely as agents of change. Therefore, it is important that policymakers are aware of and skilled to address gender issues in the sustainable energy sector.

Governments need to be aware of the challenges women face and make adjustments that cater to their needs. This can be done through gathering systematic evidence on the linkages between gender and clean energy goals. Greater evaluation and data collection will assist governments in understanding what works and can be implemented more broadly. More and better data related to renewable energy employment and women’s representation must be collected to legitimize more effective policy-evidence towards gender equality and women’s empowerment in the energy sector. Gender specific indicators in energy are fundamental to secure the political will and investments needed.

In 2022, the World Bank created a database⁵² on gender-related indicators relevant to the energy sector to address the lack of comprehensive and up-to-date data and understand the magnitude of gender gaps. The database allows to monitor progress on program implementation and inform future policy decisions. The database includes up-to-date data on energy access, women’s representation in the energy sector, women’s human endowments that impact and are impacted by energy access, gender-responsive policies in the energy sector, among others, for 217 countries. Also in 2022, IEA opened a gender and energy portal to track gender gaps in the energy sector in employment and wages, senior management, entrepreneurship and innovation. A key recommendation - 2022 UN Policy Brief on Addressing Energy’s Interlinkages with other SDGs - made in the SDG7 Technical Advisory Group and submitted in support of the 2022 UN High-level

⁵¹ IUCN, EGI, ENERGIA, USAID, 2017

⁵² <https://energydata.info/dataset/esmap-gender-and-energy-indicators>

Political Forum - considered the establishment of a platform to strengthen collection of gender-responsive energy data to address the lack of data and consistency of data collection. Also, Morocco encouraged efforts at data level: Le Haut Commissariat Au Plan Du Royaume - the statistical organ of Morocco - has opened up a data portal that gathers data on the situation of women in Morocco in the labour force, but also the different discrimination that they may be faced with.

Moreover, the ministry of finance and planning must be convinced to mainstream energy and gender-linked issues into national development and budget processes. Once energy and gender concerns are included and linked in national policy and cross-sector planning processes, sufficient budget allocations for implementing these objectives need to be ensured. Gender responsive budgeting and expenditure reviews on climate, environment and gender are all important tools. For instance, UN Women and UNDP-UNEP PEI developed tools to influence national budget processes to be more gender responsive and promote sustainability.⁵³

It is also critical to support long-term national capacity for the mainstreaming of cross-cutting issues related to the links between gender, energy and climate.



If more women are responsible for the development of national strategies, maybe then the latter would voice women in the energy transition.

Houda Dehdi

Box 7: Gender Responsive Budgeting

An approach to systematically integrate gender equality objectives into government policy, planning, budgeting, monitoring, evaluation, and audit. It aims to highlight the distributive impacts of the budget (revenue and expenditure) on women and men and adjusts (or reallocates) resources to ensure that both benefit equally from government resources. Gender-responsive budgeting is applying gender mainstreaming in budgetary processes. It aims to allocate sufficient resources for the different needs of women and men through distributing resources with the objective that the activities supported by the budget equally benefit women and men and contribute to promote gender equality and equal opportunities for all. The first step is generally an analysis of the current gender-related impact of budgets from which recommendations emerge on how to reprioritize budget priorities and key programs so that they better contribute to advancing gender equality and women empowerment.

Source: UN Women 2022

Finally, donors play a key role in integrating gender equality in aid to energy transition. More actions need to be done to improve women's opportunities to participate in the green transition, notably through ensuring that women benefit from and are equally represented in the workforce and involved in decision-making.

⁵³ UN Women, UNDP-UNEP PEI Africa, 2015

Key recommendations to foster gender-responsive policies in energy



Governments could:

- ① Contribute to a widespread understanding of energy and gender considerations at all levels of society. This is a useful first step for encouraging a change in the perception of women's role in the energy transition;
- ① Mainstream gender at all policy levels ensuring all energy policies, programs and initiatives, including large energy infrastructures and investments, are non-discriminatory, gender-inclusive, gender-balanced and directed towards addressing inequalities, particularly energy poverty, differentially affecting men and women in the country;
- ① Involving women from local communities in the policy-making stages. This will allow policy-makers to design interventions that cater to their needs and foster their role in the energy transition;
- ① Design a country budget and financial plan with a gender attention to address women energy needs in terms of access and affordability. Promote gender-finance to support energy initiatives led by women, training and education, mentorship and empowerment;
- ① Set systems for data-collection and analysis to assist policy makers in understanding women needs, potential and the linkage between energy and women equality. Monitoring of gender-energy indicators will support decision making with evidence on the gaps; and
- ① Increase women representation at the highest management levels of publicly-owned companies and regional and national public entities, and involve them at all levels of decision making from local, regional to national ensuring their insights are voiced.

**Ensuring the energy
transition is Just
– and not *just* a
transition**

Ensuring the energy transition is Just – and not *just* a transition

With less than six years to achieve the 2030 targets, we must work to accelerate gender equality and diversity in clean energy transitions. The transition to a future energy system is not just a climate mitigation change, it's a social and economic transformation where men and women are at the heart of this shift.

Applying a gender lens to the energy transition allows us to ensure that the energy transition is Just – and not just a transition. This approach provides a more nuanced understanding of how the energy transition might distribute benefits, costs and risks unevenly, potentially creating new inequalities or exacerbating existing ones. Ignoring pre-existing injustices and inequalities or failing to address their root causes can heighten feelings of injustice.

Women must have access to sustainable and affordable energy. Energy access investments and plans must voice women's needs in the investment's design. Gender-responsive investments are needed to look at women as customers featuring a paramount role in advancing off-grids solutions. Decentralised renewable energy systems offer a great opportunity for women to participate in decision-making, as these are deployed at the local level where women are more likely to be involved in energy procurement, design, installation, maintenance and consumption.

Access to adequate education and training opportunities must be ensured to allow women to develop their skills and be empowered to seize on opportunities in the energy sector. Training, vocational and educational programs (including on-the-job training and apprenticeships) and other professional development could address the skills shortage and enable women to access the energy workforce.

The energy transition will require individuals with higher-level training in the STEM fields, but also those with generic skill sets and studies. Tailored programs with a gender mainstream lens offer the opportunity to respond to local and national needs as well as achieve diversity and inclusion in the energy sector. Programs must address skills specific to both utility-scale and decentralised solutions; green hydrogen production technology and infrastructure, electric vehicle manufacture and infrastructure, digitalisation, energy storage, innovation and entrepreneurship, among others.

Opportunities must be created to increase the participation of women through targeted actions. If governments, industry, educational institutions collaborate in this context, women's representation in the energy sector is more likely to be successful. Data informed decisions on energy trends and skills must be informed from other actions

towards a circular economy and digitalisation to anticipate the occupations demands in the coming years.

Energy Businesses and organizations can attract and retain women through gender-responsive corporate policies (including gender-blind promotion, equal pay, better workplace practices and gender-neutral recruitment). Networks and systems to support training and mentorship can be an effective tool to ensure women's growth and the gain of new perspectives on career opportunities.

Women's entrepreneurship in energy must be promoted and encouraged. Women are not only consumers, but also producers and promoters of sustainable use of energy. If capitalized, women could play a central role in contributing to a green future and a just economy. In this context, financial support and investments need to be made in women-owned enterprises that use sustainable practices along the supply chain. Donors and climate finance initiatives could support such efforts combined with technical training, networking and mentorship. Also, integrating gender equality in aid could ensure that women benefit equally from development projects focusing on clean technology and renewable energy.

Gender policies and programs need to be proactively planned and mainstreamed in the renewable sectors. In absence, transitioning to clean energy may exacerbate existing gender inequalities. It may also hinder broader human development, poverty alleviation and the employment equity goals identified by the SDGs. Policy makers should take into account the implications of their energy policies on other countries, including how they affect sustainability goals and gender inequality. Adequate public finance is essential to build women capacity and ensure the availability of skills to meet current and future energy demands in the public and private sector. Financial support should be dedicated to supporting women in developing their own-led enterprises.

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