



GENDER EQUALITY IN THE SUSTAINABLE ENERGY TRANSITION



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



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This work is co-published by the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) and the United Nations Industrial Development Organization (UNIDO).

Suggested citation: UN Women and UNIDO, 2023. Gender Equality and the Sustainable Energy Transition. New York and Vienna.

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Acknowledgements:

This Guide is the result of collaboration between the UN Women Economic Empowerment Section, the UNIDO Division of Decarbonisation and Sustainable Energy and the UNIDO Unit for Gender Equality and the Empowerment of Women.

The peer review and valuable suggestions by Elizabeth Cecelski (ENERGIA), Irene Giner-Reichl (GWNET), and Sheila Oparaocha (ENERGIA) are highly appreciated. Grateful thanks are also extended to Vanessa Lopes Janik for preparing the initial draft, Priyanka Teeluck for critical work on subsequent drafts, Haruka Yoshida and Elisabeth Van Holthe Tot Echten for substantive contributions, and Nicolas Schmidt for review and comments.

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New York and Vienna
2023



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



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PREFACE

The landscape of gender and energy has blossomed over the past decade. Effective integration of gender dimensions has been crucial for the implementation and achievement of all the Sustainable Development Goals (SDGs), in particular SDG 7 to ensure access to affordable, reliable, sustainable and modern energy for all. In turn, gender equality and the empowerment of all women and girls (SDG 5) is central in the transition to sustainable energy and ensuring universal energy access as well as progress towards all the SDGs. The sustainable energy transition can create benefits and opportunities for all.

Gender-responsive and women-led initiatives and projects have widely demonstrated that they can be successful in the new energy space, including providing sustainable energy solutions at different levels. Women are also increasingly active in the energy workforce and as entrepreneurs in micro, small and medium enterprises (MSMEs), contributing to economic growth and industrial development. The dialogue on gender and energy has clearly shifted from women being identified only as victims or as a vulnerable group to their recognition as significant agents of change as consumers, producers, innovators, and decision makers across the energy sector.

The United Nations Industrial Development Organization (UNIDO) and the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women)

have joined forces to produce this guide on Gender Equality in the Sustainable Energy Transition, which provides an overview of key and emerging issues in the gender and energy nexus, illustrated by research findings and case studies. This Guide has been drafted with a view to support policymakers and development practitioners in government, the private sector and civil society, as well as in the UN system, who are involved in designing and implementing sustainable energy policies, programmes and projects.

This Guide builds on the recommendations of a previous joint publication from 2013, "[Sustainable Energy for All: The Gender Dimensions](#)," while reflecting global trends and challenges that have taken centre stage in the years since, including the impacts on gender and energy of the COVID-19 pandemic and the war in Ukraine, unsustainable patterns of consumption and production, and one of today's greatest environmental and development challenges: climate change. An unprecedented energy crisis erupted in the second half of 2021, contributing to the largest increase in global CO₂ emissions recorded (up 6 per cent after falling 5 per cent in 2020), with soaring prices exacerbated by the Russian Federation invasion of Ukraine in 2022, and causing severe economic consequences for the more than 136 countries that rely on fossil fuel imports, with the poorest nations – already reeling from pandemic fiscal constraints – suffering most, and women and girls particularly so ([REN21 2022](#), [UN Women 2022](#)).

ACRONYMS

ADB	Asian Development Bank
AfDB	African Development Bank
CSP	Concentrating Solar Power
CTCN	United Nations Climate Technology Centre & Network
DCED	Donor Committee for Enterprise Development
DRR	Disaster Risk Reduction
ECOSOC	United Nations Economic and Social Council
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
ECOWAS	Economic Community of West African States
EERE	Office of Energy Efficiency & Renewable Energy
EESI	Environmental and Energy Study Institute
EIGE	European Institute for Gender Equality
ENERGIA	International Network on Gender and Sustainable Energy
ESMAP	Energy Sector Management Assistance Program
GALI	Global Accelerator Learning Initiative
GCF	Green Climate Fund
GCIP	Global Cleantech Innovation Programme
GEF	Global Environment Facility
GIZ	German Development Cooperation Agency
GRB	Gender-responsive budgeting
GRP	Gender-responsive procurement
GWNET	Global Women's Network for the Energy Transition
FAO	Food and Agriculture Organization of the United Nations
IDB	Inter-American Development Bank
IEA	International Energy Agency
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IPCC	Intergovernmental Panel on Climate Change
ILO	International Labour Organization
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
IRENA	International Renewable Energy Agency
ITC	International Trade Centre
IUCN	International Union for the Conservation of Nature
NDC	National Determined Contribution
NGO	Non-Governmental Organization

NORAD	Norwegian Agency for Development Cooperation
OECD	Organization for Economic Co-operation and Development
OHCHR	Office of the High Commissioner for Human Rights
PFAN	Private Financing Advisory Network
PV	Photovoltaic systems
REN21	Renewable Energy Policy Network for the 21st Century
SACREEE	SADC Centre for Renewable Energy and Energy Efficiency
SDGs	Sustainable Development Goals
SEforALL	UN Secretary General’s Sustainable Energy for All initiative
SIDS	Small Island Developing States
STEM	Science, technology, engineering, and mathematics
UN	United Nations
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
UN WOMEN	United Nations Entity for Gender Equality and the Empowerment of Women
USAID	United States Agency for International Development
WFP	World Food Programme
WHO	World Health Organization
WIEGO	Women in Informal Employment: Globalizing and Organizing
WiRE	Women in Renewable Energy
WRI	World Resources Institute
WWF	World Wildlife Fund

GLOSSARY OF TERMS

Circular Economy | “A circular economy is one based on the principles of designing out waste and pollution, retaining the value of materials and products and keeping them in the economy, while also regenerating natural systems. The objective of establishing a circular economy requires governments, businesses and consumers to look beyond the current “take, make and dispose” extractive industrial model, and to redefine growth, focusing on positive society-wide benefits. The transition to a circular economy entails decoupling economic activity from the consumption of natural resources and designing negative externalities like waste and pollution out of the system. Underpinned by a transition to renewable energy sources and a more sustainable use of biodiversity and ecosystems, the circular model builds economic, natural and social capital simultaneously” (UNEP and UNDP). “The circular economy is a new way of creating value, and ultimately prosperity. It works by extending product lifespan through improved design and servicing, and relocating waste from the end of the supply chain to the beginning—in effect, using resources more efficiently by using them over and over, not only once” (UNIDO).

Energy Efficiency | “Energy efficiency simply means using less energy to perform the same task – that is, eliminating energy waste. Energy efficiency brings a variety of benefits: reducing greenhouse gas emissions, reducing demand for energy imports, and lowering our costs on a household and economy-wide level... There are enormous opportunities for efficiency improvements in every sector of the economy, whether it is buildings, transportation, industry, or energy generation“ (EESI). “Energy efficiency is the use of less energy to perform the same task or produce the same result. Energy-efficient homes and buildings use less energy to heat, cool, and run appliances and electronics, and energy-efficient manufacturing facilities use less energy to produce goods.” (EERE).

Gender Equality | “Gender equality refers to the equal rights, responsibilities and opportunities of women, men, girls and boys. Equality does not imply sameness but that the rights of women and men will not depend on the gender they were born with. Gender equality implies that the interests, needs and priorities of all genders are taken into consideration, recognizing the diversity of different groups. Gender equality is not a women’s issue but should concern and fully engage all genders while recognizing that neither all men nor all women are a homogenous group” (UN Women). “Realizing gender equality and the empowerment of women and girls will make a crucial contribution to progress across all the Goals and targets. The achievement of full human potential and of sustainable development is not possible if one half of humanity continues to be denied its full human rights and opportunities” (2030 Agenda for Sustainable Development).

Gender Mainstreaming | “Gender mainstreaming is the chosen approach of the United Nations system and international community toward realizing progress on women’s and girl’s rights, as a sub-set of human rights to which the United Nations dedicates itself. It is not a goal or objective on its own. It is a strategy for implementing greater equality for women and girls in relation to men and boys. ‘Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in all areas and at all levels. It is a way to make women’s as well as men’s concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programs in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality’ (ECOSOC Agreed Conclusions E/1997/66 of 18 July 1997)” (UN Women).

Green Economy | “A green economy is defined as low carbon, resource efficient and socially inclusive. In a green economy, growth in employment and income are driven by public and private investment into such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services” (UNEP).

Greenhouse Gas | “Greenhouse gases occur naturally and are essential to the survival of humans and millions of other living things, by keeping some of the sun’s warmth from reflecting back into space and making Earth liveable. But after more than a century and a half of industrialization, deforestation, and large-scale agriculture, quantities of greenhouse gases in the atmosphere have risen to record levels not seen in three million years. As populations, economies and standards of living grow, so does the cumulative level of greenhouse gases (GHGs) emissions” (UN).

Just Transition | “In order to tackle pressing environmental challenges like climate change, pollution and plummeting biodiversity, nations and businesses need to transition towards greener, resilient and climate-neutral economies and societies. A Just Transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind. A Just Transition involves maximizing the social and economic opportunities of climate action, while minimizing and carefully managing any challenges – including through effective social dialogue among all groups impacted, and respect for fundamental labour principles and rights. Ensuring a just transition is important for all countries at all levels of development. It is also important for all economic sectors – by no means limited to energy supply – and in urban and rural areas alike” (ILO).

Gender-Responsive Just Transition | “The development of green sectors while ensuring a just transition of the workforce and enterprises, be it in the energy sector or those related to the manufacturing of green products, has a significant potential for addressing gender inequalities if equality of opportunity and treatment of women and men is established as a specific focus and goal from the outset. Such an approach presents an opportunity to ensure that sectoral and occupational segregation is not perpetuated, wage and skills gaps are eradicated, inclusive social dialogue is established, working conditions are improved, and social protection enhanced. At the same time, transformations and redefinition of jobs and workplaces can further improve skills, and reduce health and safety risks, which are often worse for women. Moreover, the creation of new labour market opportunities can facilitate the formalization of the informal economy jobs held by women. While building a low-carbon and sustainable economy, a just transition can ensure that women are not left behind, and their existing and potential contributions essential for stimulating green growth and achieving sustainable development for all, are not undermined” (ILO).

Renewable Energy | “Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us. Fossil fuels - coal, oil and gas - on the other hand, are non-renewable resources that take hundreds of millions of years to form. Fossil fuels, when burned to produce energy, cause harmful greenhouse gas emissions, such as carbon dioxide. Generating renewable energy creates far lower emissions than burning fossil fuels. Transitioning from fossil fuels, which currently account for the lion’s share of emissions, to renewable energy is key to addressing the climate crisis. Renewables are now cheaper in most countries, and generate three times more jobs than fossil fuels” (UN).

Social Inclusion | “The process of improving the terms of participation in society for people who are disadvantaged on the basis of age, sex, disability, race, ethnicity, origin, religion, or economic or other status, through enhanced opportunities, access to resources, voice and respect for rights” (UN).

Sustainable Energy | “Sustainable energy is derived from resources that can maintain current operations without jeopardizing the energy needs or climate of future generations. The most popular sources of sustainable energy, including wind, solar and hydropower, are also renewable” (JHU). “Sustainable energy can be defined as energy sources that are not expected to be depleted in a time frame relevant to the human race and that therefore contribute to the sustainability of all species” (ScienceDirect).

OVERVIEW

In 2013, UN Women and UNIDO issued a guidance note, [Sustainable Energy for All: The Gender Dimensions](#), which provided a status report and recommendations for advancing sustainable energy with gender equality at the core. Since its publication, the guidance note has been widely used as an education and advocacy tool to inform UN programming as well as global and national policy dialogues on integrating gender equality considerations in sustainable energy initiatives. This 2023 update is also intended for a broad audience: governments, policymakers, development practitioners, civil society organizations, gender advocates, the private sector, as well as staff in international organizations interested in working in the gender-energy nexus.

In 2015, the adoption of the [2030 Agenda for Sustainable Development](#) signalled a renewed mandate for achieving gender equality as indispensable to the [Sustainable Development Goals \(SDGs\)](#), both as a stand-alone goal (SDG 5) and as a [cross-cutting imperative](#) across the Agenda, including SDG 7 on affordable, reliable, sustainable and modern energy for all. This reflects the growing recognition that the gender-energy nexus involves more than a focus on the role of women and girls as primary energy managers at the household level; instead attention should be directed to the interaction of gender equality considerations with renewable energy, energy efficiency, and circular economy initiatives more broadly ([UNIDO 2016](#)).

The energy sector has evolved as innovative technologies and approaches emerge, climate change adaptation and mitigation become even more critical, and production and consumption patterns change. SDG 7 targets call for: By 2030, ensure universal access to affordable, reliable and modern energy services, increase substantially the share of renewable energy in the global energy mix and double the global rate of improvement in energy efficiency (UN). With the 2030 Agenda's commitment to leave no one behind, an intersectional approach is necessary to ensure that the transition to a sustainable energy encompasses women and girls in all their diversity. At the same time, sustainable energy has become

BOX 1

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy

Energy is central to nearly every major challenge and opportunity the world faces today. Be it in relation to creating decent jobs and increasing incomes, tackling climate change or ensuring sustainable food production and consumption, among others, access to energy for all is essential. Enabling the transition of the global economy towards clean and sustainable sources and uses of energy is one of our greatest collective objectives, now and in the coming decades. Sustainable energy has the power and potential to transform lives, livelihoods, and economies while protecting the planet for present and future generations.

- Nine per cent of the global population still lacks access to modern electricity – 733 million people in 2020 compared to 1.2 billion in 2010*
- 2.4 billion people relied on wood, coal, charcoal or animal waste for cooking and heating in 2020, down from 3 billion in 2010*
- Household air pollution from using polluting fuels and technologies for cooking caused some 3.2 million deaths in 2019, disproportionately affecting women and children due to higher exposure*
- Energy is the dominant contributor to climate change accounting for more than 75 per cent of total global greenhouse gas emissions**
- The share of renewable energy in total final energy consumption increased slightly to 17.7 per cent as of 2019 from 16.1 per cent in 2010*
- Global financial investment is far from sufficient to achieve energy access for all by 2030***

Sources:

* [Tracking SDG 7. The Energy Progress Report 2022](#)

** [ClimateWatch](#)

*** [Energizing Finance. Understanding the Landscape 2021](#)

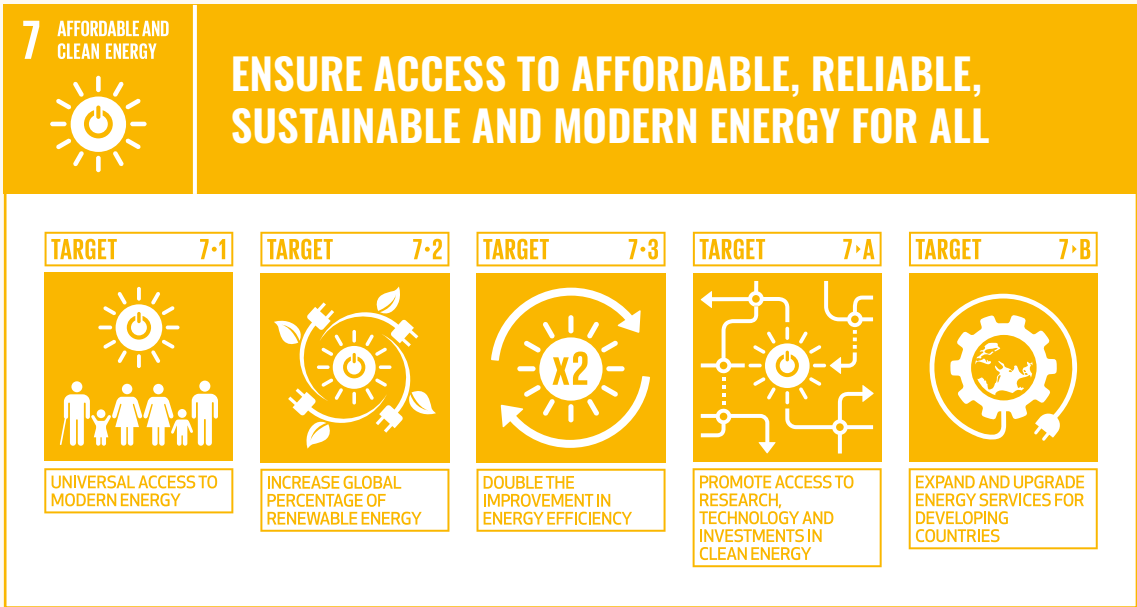
central to conceptions of a gender-responsive just transition to green, inclusive and sustainable economies (UN Women 2021, ILO 2022).

This Guide is intended to contribute to a gender-responsive just transition to a sustainable energy future by identifying entry points for policies and measures that help ensure women can equally lead, participate and benefit from the growing opportunities in the **gender-energy nexus**. The publication explores the areas of **energy infrastructure and access, renewable energy** and **energy efficiency** and sheds light on the **water-energy-food nexus, health and safety** and the **circular economy**. The publication then identifies entry points for gender equality and women’s empowerment through

enhancing **women’s participation and leadership in sustainable energy**, by creating **equal opportunities and outcomes in the sustainable energy workforce; promoting women’s sustainable energy entrepreneurship**; enacting and implementing **gender-responsive sustainable energy laws, policies and institutions**; and providing **financing for a gender-responsive sustainable energy transition**. It offers an overview of pervasive gender inequalities across the energy sector before delving into key issues and project examples for each thematic area to illustrate ongoing efforts and results on the ground. Each thematic section ends with an overview of available resources and relevant research that will allow the reader to explore a specific theme in more depth.

Complementary annexes feature organizations, networks and initiatives working in the gender-energy nexus.

FIGURE 1
SDG 7 Goal and targets



Source: [The Global Goals](#).



1 INTRODUCTION

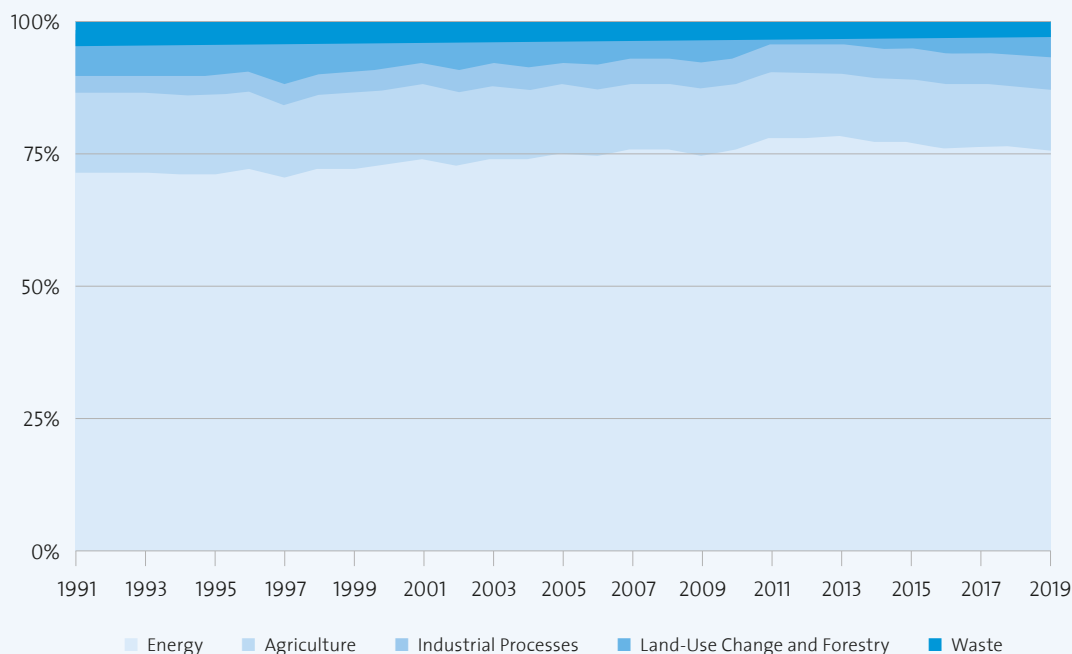
The adoption of the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 has galvanised efforts across all sectors towards decarbonisation as key to achieving the goal of limiting temperature rise to 1.5 degrees Celsius above pre-industrial levels. Of the 194 Parties to the UNFCCC that have submitted national-level plans for reducing emissions (Nationally Determined Contributions, or NDCs), 182 Parties included renewable energy components in their NDCs, but only 144 had quantified renewable energy targets and only 13 committed a percentage of renewables in their overall energy mix (IRENA 2022). These measures for reducing emissions from the energy sector contain pivotal entry points for ensuring that women and girls are not left behind. Yet, gender mainstreaming has made only modest inroads; in a study of NDCs from 120 countries, only 24 per cent identified national gender equality institutions as part of climate change governance and only 27 per cent noted the importance of women’s participation in climate decision making (UNDP 2021). In the context of national-level energy sector frameworks, gender considerations have tended to stall at the household level or fail to consider women and girls as more than simply passive users of energy; few consider their needs and priorities as agents of change for accelerating a just sustainable energy transition (IUCN 2017).

This Guide aims to contribute to a just transition to a sustainable energy future by building on the recommendations of the [previous guidance note](#) and taking into account the global challenges that have taken centre stage in the years since its publication in 2013. The disproportionate impacts of the climate and environmental emergencies on women and girls have been compounded by the consequences of the COVID-19 pandemic and the war in Ukraine, reversing progress on the 2030 Agenda and on gender equality. The economic fallout of COVID-19 caused many in developing countries who had only recently gained energy access to lose it, among them 15 million Sub-Saharan Africans. The pandemic also meant that many people could not pay for modern fuels, including for 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 already unequal access to energy (UN Women 2022). With less than a decade to go, it is unlikely that the world will achieve the SDGs by 2030 (UN 2022).

These global crises require collective action. They present critical opportunities for policymakers to design and implement response and recovery packages to ‘build back better’ in the wake of COVID-19 and the cost-of-living, fuel and food crises exacerbated by the war in Ukraine. The same applies to climate action strategies that are inclusive and gender-responsive to shape a cohesive response and build collective resilience to climate change. This means identifying and addressing key entry points in the gender-energy nexus that yield climate solutions through renewable energy as well as energy efficient, low-carbon technologies, ones that can boost sustainable and inclusive economic growth and industrialization. The energy sector, as the dominant contributor to global emissions, can and should play a pivotal role in ensuring a just transition to a green economy and sustainable energy future. A just transition can only be achieved through the full and equal participation, leadership and decision-making of women and girls.

FIGURE 2

Energy makes up nearly three-quarters of global emissions



Source: [Climate Watch, Global Historical Emissions](#).

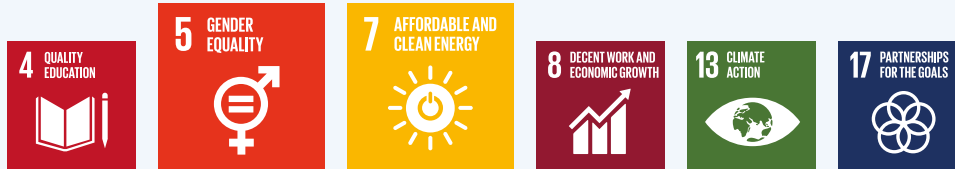
Investments in the energy sector to increase access and reliability can play a significant role in improving the productivity and wellbeing of women in their paid and unpaid work. Reducing women’s unpaid work potentially allows them to pursue income-generating activities that enhance economic autonomy, which can result in a multiplier effect as women reinvest their earnings within households and communities. Evidence shows that women are more sustainable consumers (for example, with regards to eco-labelled products and green procurement practices) and are more willing to improve their energy-related behaviour ([EIGE 2012](#)); and women’s entrepreneurship in energy represents significant potential as women’s organizations are uniquely positioned to reach last-mile markets ([UN 2018](#)).

Growing recognition of the role of women within the energy workforce highlights their representation in leadership and boards and in technical training and mentoring ([IRENA 2019](#)). Increasing gender diversity within workforces and in the leadership of organizations and companies has repeatedly proven to enhance efficiency, innovation and sustainability. In the private sector, the presence of more women corporate directors encourages proactive pursuit of sustainable business practices and opportunities (including in oil and gas and mining sectors), which can be an important stepping stone to lower emissions in the long term. Globally, the growth rate of emissions from companies with more than 30 per cent women board members was only 0.6 per cent, compared to 3.5 per cent for the companies without any women board members ([Sasakawa Peace Foundation 2020](#)).

BOX 2

Gender and Energy Compact

The Gender and Energy Compact is tackling a number of SDGs across the 2030 Agenda:



Ahead of the UN High-Level Dialogue on Energy in September 2021, stakeholders were invited to prepare ‘Energy Compacts’, voluntary commitments to SDG 7: achieving affordable, reliable, sustainable and modern energy for all. Recognizing that SDG 7 is essential for achieving the other SDGs, including SDG 5 on gender equality, and that gender equality and women’s empowerment are fundamental to achieving sustainable energy for all, the Gender and Energy Compact was launched. This Compact is a global multi-stakeholder coalition of like-minded partners that have joined forces to catalyze action towards gender equality and women’s empowerment to accelerate a just, inclusive and sustainable energy transition, with the following goals:

- **Goal 1:** Women have equal opportunity to lead, participate in and benefit from a just, sustainable and inclusive energy transition.
- **Goal 2:** Women have equal access to and control over sustainable energy products and services.

This coalition currently brings together ten governments (Canada, Dominican Republic, Ecuador, Iceland, Kenya, Nepal, Nigeria, Norway, Sweden, USA) and more than 70 stakeholders from the private sector, academia, civil society, youth, and international organizations.



2 THE GENDER-ENERGY NEXUS

The dialogue on gender and energy is shifting from women being identified as part of vulnerable groups to acknowledging them as key agents of change as consumers, producers, distributors, and decision makers across the energy value chain (ESMAP 2018). Alongside this shift in perspective, a much-needed focus on intersectionality is emerging: recognizing multiple and intersecting forms of discrimination by ensuring the voices and participation of young, older, disabled and LGBTQI+ and gender-diverse persons are heeded, both as gender equality advocates and target groups of policies and programmes within the gender-energy nexus (SEforALL 2018, Sheehan and Stone 2020). Emerging research demonstrates how energy poverty can manifest as a facet of environmental injustice, i.e., unequal access to natural resources, distribution of environmental hazards, protection from risks and burdens, as well as underrepresentation in decisions, and unfair treatment in access to benefits (Sovacool and Dworkin 2015). This analysis brings to bear not only gender identities, but also race, class, gender identity and sexual orientation, and other intersectional considerations that reveal how inequities in access to energy and environmental impacts are compounded for groups whose needs, priorities, agency and participation remain underrepresented throughout all stages of the energy value chain. For example, research is emerging on the disproportionately negative socio-economic and environmental impact of large-scale energy infrastructure projects on Indigenous, Black and Afrodescendent populations within the United States (WRI 2020) and worldwide.

Gender statistics and disaggregated data are needed to create a more comprehensive assessment of energy value chains, which not only clarify differences in energy access, but also reveal the often invisible framework of needs and impacts that compound inequities in access for underrepresented groups. These include accounting for historical context, participation by frontline communities in planning and implementation, and ensuring equal distributions of burdens and benefits (WRI 2020).

Existing data and evidence shed light on how gender inequalities and discriminatory social norms and gender roles prevent women and girls from meaningfully participating in, benefitting from, and leading across the energy and related sectors, thereby inhibiting the full realization and enjoyment of their human rights and impeding sustainable development. These barriers converge at various stages throughout the lives of women and girls but are often initially manifested as unequal access to secondary and tertiary education, particularly in the fields that provide the pipeline for entry into the energy sector. Gender disparities are compounded in terms of access to training and skills development, contributing to a correspondingly low percentage of women employed as energy professionals for whom a lack of supportive and enabling environments inhibits

advancement in these sectors. Women accounted for just under 30 per cent of those employed in scientific research and development worldwide (UNESCO 2019). This facet of occupational segregation augments the notion of science, technology, engineering and mathematics (STEM) as “traditionally male-dominated fields,” a harmful perception that has reverberating effects throughout the sector. The invisibility of women’s and girls’ needs and skills in industrial design, for example, means that technology design processes are missing insights from a significant proportion of potential end users whose views are crucial for effective dissemination and uptake.

Disparities continue to build up to the highest levels of governance. In the European Union, for example, women held about 26 per cent of high-level decision-making positions in the environment, transport and energy sectors, with the lowest share of 17 per cent in energy (EIGE 2012) while an analysis of 72 countries showed that only 6 per cent had women in ministerial positions in energy (USAID and IUCN 2014). In January 2023, women globally held 11 per cent of ministerial positions responsible for energy, natural resource fuels and mining based on 190 countries, although it is not possible to discern their share in energy alone (UN Women and IPU 2023).

Evidence of such segregation at all levels of the energy sector can be seen globally, including in countries that have made significant strides towards reducing the gender gap in access to secondary and tertiary education and are now advancing corrective measures targeting recruitment, retention, promotion, advancement and leadership of women (IEA 2021). The global transition to sustainable energy presents a particular opportunity for women to advance in this field: the renewable energy industry is already drawing more women (32 per cent of total workforce) as compared to oil and gas industries (22 per cent of total workforce), although concentrated in administrative rather than technical or managerial jobs (IRENA 2019). The absence of policy and regulatory environments that help women and girls overcome barriers to entry in the energy sector hinders women's entrepreneurship and prevents access to credit, finance, networking and mentoring opportunities, extension services, or other types of knowledge and resources needed. Explicit workplace policies and practices that redress gender discrimination are necessary to transform gender-blind and even hostile work environments that overlook gender-specific safety concerns, decent working conditions, mobility, among others.

To properly contextualize the above barriers, it is vital to consider the disproportionate share of unpaid care and domestic work shouldered by women and girls. Unpaid care and domestic work is the foundation upon which individuals, families, societies and economies survive and thrive and are closely connected to several aspects of sustainable development. As women and girls bear a disproportionate share of that work, it can hamper their access to education and paid work and impede their capacity to escape poverty and accumulate savings, assets or retirement income. In low-income households, the time and effort associated with unpaid care and domestic work differs significantly depending on the availability and quality of basic infrastructure and public services, such as electricity, piped water, on-site sanitation and transport, as well as access to time-saving appliances such as grinders powered by renewable energy and fuel-efficient cooking stoves (UN Women 2019). Target 5.4 of the Sustainable Development Goals explicitly acknowledges the importance of public services, infrastructure and social protection policies for recognizing and valuing unpaid care and domestic work and of the promotion of shared responsibility for that work. Public and private sector policies and practices that support work-life balance are also crucial for enabling women's employment, retention and promotion in the energy sector and beyond.

RESOURCES

Broad Guidance and Policy Briefs on Gender and Energy

- [Sixth Assessment \(AR6\) Synthesis Report: Climate Change 2023 | IPCC](#)
- [Climate Change 2022: Impacts, Adaptation and Vulnerability IPCC Sixth Assessment Report \(AR6\) 2022 | IPCC](#)
- [Tracking SDG 7 – The Energy Progress Report 2022 | IEA, IRENA, UNSD, World Bank, WHO](#)
- [Guide to Gender Analysis and Gender Mainstreaming the Project Cycle 2021 | UNIDO](#)
- [Gender and energy at center stage in COVID-19 battle: Powering a more gender-equal recovery 2020 | ENERGIA et al.](#)
- [The benefits of involving women in energy system supply chains 2020 | ENERGIA et al.](#)
- [Renewable Energy: A Gender Perspective 2019 | IRENA](#)
- [Accelerating SDG 7 Achievement, Policy Brief 12 Energy and Gender 2018 | UN](#)
- [Levers of Change: How Global Trends impact Gender Equality and Social Inclusion in Access to Sustainable Energy 2018 | SEforALL, ENERGIA, UK Aid](#)

- [Gender-Inclusive Approaches in the Energy Sector 2018](#) | ADB
- [Best Practices in Accelerating Access to Clean Household Energy 2018](#) | wPOWER, US Department of State
- [Energy Access and Gender: Getting the Balance Right 2017](#) | World Bank Group, ENERGIA
- [Scaling sustainable access pathways for the most vulnerable and hardest to reach people 2017](#) | SEforALL
- [Gender and Energy 2016](#) | EIGE
- [Mutual Benefits of Sustainable Energy and EmPOWERing Women for Inclusive and Sustainable Industrial Development 2016](#) | UNIDO
- [Focus on Gender in Energy and Extractive Operations – A Source Book for Task Team Leaders 2016](#) | World Bank
- [Empowering Women in Africa through Access to Sustainable Energy 2016](#) | AfDB
- [Situation Analysis of Energy and Gender Issues in ECOWAS Member States 2015](#) | ECREEE, NREL
- [Guide on Gender Mainstreaming Energy and Climate Change Projects 2014](#) | UNIDO
- [Sustainable Energy for All: The Gender Dimensions 2013](#) | UNIDO, UN Women
- [Integrating Gender Considerations into Energy Operations 2013](#) | ESMAP, World Bank Group
- [Gender Tool Kit: Energy – Going Beyond the Meter 2012](#) | ADB
- [Mainstreaming Gender in Energy Projects: A Practical Handbook 2011](#) | ENERGIA

2.1 Energy infrastructure and access

Energy infrastructure is an umbrella term that often relates to the generation, transmission and distribution of large-scale power. Energy can be generated from various sources, such as fossil fuels, water, sun, wind, biomass and geothermal heat. Transmission and distribution projects focus on connecting generated energy (electricity or heat) to energy consumers.¹ Projects can address power storage and substations, energy metering, load capacity, distribution paths of underground and above ground power lines, as well as the environmental and social dimensions of infrastructure required for energy generation, distribution, storage and transmission. This includes pipes for geothermal energy, dams for hydro energy, charging stations for electric vehicles, and expansion of the electric grid. A significant divide in energy access exists between and within countries, where small-scale, off-grid and distributed systems that

harness energy from solar, wind, hydropower and biomass sources can play an important role in bridging gaps in access, in particular in remote and rural regions where the costs and logistics of grid extension are often prohibitive (UNEP 2016).

Increased energy access leads to positive impacts on women’s well-being and economic activity, reducing time poverty and unpaid care and domestic workloads (UN Women 2019). Significant evidence shows that energy interventions that take into account women’s needs and priorities are more likely to have a positive impact on addressing household and community energy poverty and on gender equality more broadly. Such interventions also go further to ensure that women’s equal participation in energy interventions has much higher potential benefits for all (UN Women 2016; Glemarec et al. 2016).

¹ Reference is increasingly being made to “energy prosumers” – energy consumers who also produce, sell, trade, or store energy (Kotilainen 2020).

As women represent half of all energy consumers, utilities have a crucial opportunity to integrate measures to enhance access, reduce connection costs and user fees, and ensure long-term financial viability.

In addition, the spill-over effects of ancillary infrastructure such as the construction of access roads has the potential, if well-planned and environmentally sound, to provide long-term benefits for all, for example through improved connection of remote areas which can lead to higher school attendance, especially among girls (ESMAP 2018). For sustainable energy projects to be gender-responsive, women, men and marginalized groups need to equally benefit – as energy consumers, as producers of energy, and from income opportunities directly and indirectly created by energy projects, which often requires specific and targeted attention and support (IGC 2022).

A. Key Issues

The gender-differentiated impacts of energy infrastructure projects and development are not always immediately apparent and tend to be overlooked, rendering invisible considerations such as women's access to land, health and safety and mobility or issues related to displacement and/or resettlement. Studies show that projects that involve resettlement, compensation or involuntary displacement, and the associated economic, social and environmental risks, often disproportionately affect women. Compensation plans may not take into account the reality of women's limited rights to land and property, which in many cases effectively excludes them (World Bank 2018, UN Women and OHCHR 2020). Moreover, people working in the informal economy, where women are disproportionately represented, risk losing access to important resources without being adequately compensated (CIF 2017).

Taking the needs of women and men into consideration during consultations and project planning can reduce conflicts and make energy infrastructure projects more inclusive and efficient (USAID and IUCN 2018). Yet, women are often not informed about energy projects or consultation opportunities and thus left out of the project planning and design process. Discriminatory gender norms and practices may prohibit women from speaking in public spaces or voicing adverse concerns. Organizing one or more separate consultations with women or women's groups in addition to general community meetings thus constitutes a good practice to

ensure that gender-based differences in needs, challenges and skills are taken into account. It may be difficult to access safe transport for consultations and their timing may conflict with unpaid care and domestic work responsibilities (IDB 2014).

Large-scale energy projects can lead to an increased presence of men migrant or temporary workers in the project community or the introduction of new ancillary infrastructure, such as roads, which change travel patterns and can pose potential safety risks to women (USAID 2015). Both workers and the communities in and around which energy projects take place can be affected by sexual harassment and violence, HIV transmission and other occupational health and safety issues, with women and girls particularly at risk (IUCN 2020). Embedding codes of conduct, policies and practices to prevent and protect against sexual harassment and exploitation within projects can help mitigate these impacts (World Bank 2018).

Gender assessments would inform efforts to increase access to energy, which would in turn help women engage in productive, income-generating activities and improve their educational attainment. Energy access programs can address the affordability of and barriers to obtaining that energy connection, and promote the use of off-grid solutions such as decentralized mini-grids and technologies (solar lanterns, clean cookstoves, etc.) to bridge access to energy services when investments in grid connection and expansion are financially or otherwise infeasible (World Bank 2018, UN Women 2016). Sustainable energy infrastructure has the potential to be transformative by providing much needed energy access and reducing greenhouse gas emissions, whilst also increasing opportunities for women's empowerment, employment and gender equality. Afghanistan, Bhutan and Nepal are examples of countries that have rapidly expanded access to electricity and reduced gaps between rural and urban areas by combining grid and off-grid solutions. Yet, despite the potential of off-grid solar energy to increase access to electricity, in particular in remote and rural areas, basic solar technology remains insufficient for running high-wattage appliances that could significantly reduce women's unpaid care and domestic work burdens or allow women to establish home-based enterprises (UN Women 2019).

This last point is a crucial consideration for informing gender equality initiatives that aim not only to increase women's and girls' wellbeing within their existing roles, but rather empower them to overcome the socio-eco-

conomic limits of such roles. Gender assessments can generate the data needed to contextualize and inform enabling policy and financial environments, for example, social marketing and financing schemes to cover up-front connection costs where access to energy is lacking or capacity- and skill-building measures that support quality, decent work for women in large-scale projects.

The generation and analysis of this data could simultaneously inform energy technology design, development and dissemination. Women play a key role in promoting new technologies² and facilitating their implementation, but remain significantly underrepresented in technical domains, ranging from telecommunications to engineering (UNIDO 2015).

B. Project Examples

Concentrated Solar Power – Empowering Communities and Women, Morocco | The Noor-Ouarzazate complex, one of the largest concentrating solar power (CSP)³ facilities globally, aims to provide power to over one million Moroccans. The solar complex also focuses on creating economic opportunities for local communities and domestic manufacturing for CSP technologies. Women’s labour force participation in Morocco is among the lowest in the world, hovering at around 24 per cent, and in the Ouarzazate province that rate is even lower. Field research carried out in 2015 found that populations in the neighbouring villages see the CSP as an opportunity for employment, including for high-skilled, longer-term jobs. While the project aimed to boost employment opportunities, the study found that women still face challenges in finding jobs because of inadequate qualifications and discriminatory gender norms in rural areas. Women currently represent only 4 per cent of the CSP facility’s workforce. However, without provisions for a safe and positive work environment, their participation in the workforce would be even lower. Women currently hold a range of jobs within the complex, from more feminized occupations such as catering, cleaning, and administration, to technical roles in quality control and the health and safety unit, as well as highly skilled positions such as those of topographer and welder. Instead of cash compensation for the land lost in the construction of the complex, which would have likely

benefited only men landowners, the community opted for investments in basic amenities and social services for all, such as drainage and irrigation channels, drinking water facilities, community centres, and mobile health caravans and initiatives that specifically benefit women and girls, such as the provision of a dormitory for women students and sports and camp programmes for children (ESMAP).

Gender equality and diversity to promote solar access, United States of America | Grid Alternatives is a large non-profit solar installer in the United States that implements programmes to increase the accessibility of renewable energy technologies and careers for underserved communities, with a priority on gender equality and diversity. Grid Alternatives may be unique among energy companies in having a woman CEO and four women out of 10 members of the board of directors, as well as a dedicated programme for involving women in the solar industry. Installation of new renewable energy infrastructure offers community members the opportunity to gain skills in the classroom and the field and to benefit economically. The Grid Alternatives business model provides solar energy at low- or no cost to low-income families while bringing much-needed training and jobs to underserved communities. As a non-profit organization, Grid Alternatives relies on financial support from government programs, corporate sponsors, and personal donations, and on volunteers and trainees for installation, which allows for provision of solar installation at significantly reduced prices (Grid Alternatives, Allen et al. 2019).

Reducing Public Health Risks of Large Hydropower Project in Indonesia | An impact analysis conducted for the Upper Cisokan Pumped Storage Hydro-Electrical Power Project in Indonesia suggested that an influx of workers would likely increase public health risks for both construction workers and the local population and that relocating households during resettlement would have potential health impacts. A gender-mainstreaming and HIV/AIDS strategy was then prepared and included in the Land Acquisition and Resettlement Action Plan. To reduce the risk of the transfer of the HIV virus between and among the contractor’s personnel and the local community, the project made the contractor responsible

2 Technologies can encompass a wide variety of things, such as equipment, methods, practical knowledge and skills, hardware, software and orgware.

3 CSP plants collect solar radiation using reflective or transmissive optical elements that concentrate the radiation to a focal region where it is directly converted into thermal or electrical energy (ScienceDirect 2021).

for conducting a HIV/AIDS awareness program through the local health department. To promote early diagnosis and assist affected individuals, counselling services on transmission and prevention were held once a month, with routine diagnostic examinations provided every two months. Also, condoms were given out once a month through the local health department. This initiative targeted all project employees, as well as the surrounding community (ESMAP 2018).

Training women in remote communities on new opportunities resulting from access to electricity | A project by the Asian Development Bank aimed to increase access of rural poor women to affordable and reliable

clean and renewable energy sources. Actions included community awareness sessions on safe and efficient use of electricity in remote villages; training to women (aspiring) entrepreneurs on topics such as business development, value addition, and new technologies while linking them to market opportunities and finance; and sensitising community stakeholders on the benefits of women's equitable participation in decision making. As a result, the number of women-led energy-based enterprises, their membership in electricity user cooperatives, and the number and frequency of women participating in cooperatives meetings significantly increased. Women also reported an increase in their income and access to finance (ADB 2020).

RESOURCES

Gender and Energy Infrastructure and Access

- [Guidance Note - Gender Analysis in Technical Areas: Energy Infrastructure 2022](#) | UN Women
- [Why energy access and gender equality are inextricably linked 2020](#) | ENERGIA
- [Poor People's Energy Access 2010 – 2019](#) | Practical Action
- [Gender-Responsive Geothermal Generation – Powering Energy and Social Benefits in El Salvador 2019](#) | USAID, IUCN
- [Getting to Gender Equality in Electricity Infrastructure 2018](#) | World Bank Group
- [Gender Equality in the Geothermal Energy Sector. Road to Sustainability 2019](#) | ESMAP
- [Advancing Gender in the Environment: Making the Case for Gender Equality in Large-Scale Renewable Energy Infrastructure Development 2018](#) | USAID, IUCN
- [Beyond Electricity: How Morocco's Solar Plant is benefitting communities and women and shaping the region's future 2018](#) | ESMAP
- [A Snapshot of Gender Opportunities and constraints in large-scale electricity sector 2018](#) | Energy and Economic Growth
- [Results of Collaboration for Social Inclusion in the Trung Son Hydro Power Project, Vietnam 2017](#) | World Bank
- [Developing a Legal Instrument for Gender Assessments in Energy Infrastructure Planning and Development within ECOWAS 2017](#) | ECREEE
- [Building a Safer World: Toolkit for Integrating Gender Based Violence Prevention and Response into USAID Energy and Infrastructure Project 2015](#) | USAID
- [Gender and Renewable Energy: Wind, Solar, Geothermal and Hydroelectric Energy 2014](#) | IDB
- [Gender in Norway's Transmission Sector Cooperation in Uganda – Entry Points, Challenges and Achievements 2013](#) | Norad/ENERGIA

2.2 Renewable energy

Compared to fossil fuel-based energy infrastructure, renewable energy presents significant opportunities to advance socially equitable and gender-responsive initiatives while reducing overall contributions to global greenhouse gas emissions. Modern renewables (hydro-power, biofuels for transport, biomass, geothermal, ocean, solar and wind power) accounted for 12.6 per cent of global energy consumption in 2020, a slight increase from 11.7 per cent in 2019 ([REN21 2022](#)). To speed up the transition to a green energy sector and economy within the short time frame left for limiting temperature rise to 1.5 degrees Celsius, women and girls need to be equally, fully and meaningfully included at all stages and levels as leaders and agents of change, designers, implementers, and end users of renewable energy policies, technologies and practices. Yet, gender disparities continue to characterize the renewable energy sector in terms of education, training and recruitment, retention and advancement in the world of work, which is further explored below. In addition, women and girls are still to benefit fully and equally from the potential of renewables to increase access to energy, clean cooking, and livelihood and income-generation opportunities, as well as from their potential to reduce unpaid care and domestic work as well as morbidity and mortality from household air pollution.

A. Key Issues

Enabling women's economic empowerment in the household and community while reducing women's and girls' unpaid care and domestic work requires enough power to ensure pumped water services, access to medium- and high-power appliances, and electricity for at least half of normal working hours ([ADB 2018](#)). At the same time, sufficient fuel for clean cooking options needs to be available. For communities with insufficient power generation infrastructure, where connection to a central grid network is too expensive or technically not feasible, decentralized renewable off-grid and mini-grid solutions are the most viable option to provide affordable and reliable electricity. Frequently powered by solar, hydro- or wind energy, mini-grids range in size from micro-grids (typically serving 20-100 persons) to full mini-grids (serving well over 500 persons), ranging from individual households and local businesses to community facilities, including schools to health clinics ([World Bank 2017](#)).

BOX 3

Record growth in renewables but world missed historic chance for a clean energy recovery

After two years of the COVID-19 pandemic, the world was hoping for a green recovery to “build back better”. Bright spots in 2021 included: a record increase in global installed renewable power capacity and record investment in renewables; solar and wind power providing more than 10 percent of the world's electricity for the first time ever; more than 135 countries having a target for net zero greenhouse gas emissions; and the International Energy Agency publishing its first net zero scenario mentioning the need to end fossil fuels and offering countries a blueprint to follow. Yet the global energy transition is not happening. Aftershocks from the pandemic and a rise in commodity prices disrupted renewable energy supply chains and delayed projects in 2021. Also, a rebound in economic activity led to a roughly 4 per cent increase in global energy demand, much of which was met by fossil fuels, resulting in record carbon dioxide (CO₂) emissions. The spike in energy prices in the second half of the year, followed by the Russian Federation's invasion of Ukraine in early 2022, contributed to an unprecedented global energy crisis and commodity shock. In response, governments have implemented short-term measures to alleviate price spikes. This situation has exposed the world to ever more pressing climate disasters as well as to geopolitical and economic threats. The year must serve as a turning point for the energy transition. The crisis facing our current fossil fuel-based energy system is alarming, and we urgently need to transition to renewables in all economic and societal activities. Renewable energy needs to be at the heart of the political response to the energy crisis. Only an energy-efficient and renewable-based economy can be a game changer for a more secure, resilient, low-cost – and sustainable – energy system.

Extract from: [REN21's Renewables 2022 Global Status Report](#)

Mini-grids as an energy system model rely on distribution networks, with only a small number of end-users in which each consumer has a significant impact on the economically viable operation of the system. Therefore, it is important that the energy needs and priorities of both women and men are carefully considered. Mini-grid operations should integrate women's needs and requirements into the deployment of the network. The policy and regulatory environment should ensure that energy provided through the mini-grid is available in an affordable, reliable and sustainable manner to both women and men, taking into account considerations of diversity and inclusion, particularly of marginalized groups in vulnerable situations.

Renewable energy projects have substantial gender dimensions, which can be assessed and used to inform the design of projects and related activities in a gender-responsive manner that empowers women and girls. These measures include financial assistance for women project developers or for projects that are gender-responsive; tariff incentives that are available for both women and men; earmarking a certain percentage for women entrepreneurs; and promoting the development of training centres or knowledge hubs at the community level where women can easily access knowledge, training, and capacity-building for enabling the deployment and operations of the network. These measures apply for large-scale projects as well, which have good scope for targeting measures for women's empowerment through financial assistance, skills development and capacity building.

Appropriate caution must be taken regarding the possible contradictory and detrimental economic, social and environmental impacts of large-scale renewable energy development on women and girls, indigenous peoples and other marginalized communities, as well as on ecosystems and habitats. Expansion of biofuel plantations for renewable energy, based on land acquisition on a vast scale, has accelerated deforestation, reduced biodiversity and increased rather than decreased carbon emissions, while displacing local and indigenous communities and depriving women and their households of livelihoods (Borras et al. 2010, Tudge et al. 2021). This particularly applies when projects are designed and implemented without the free, prior and informed consent of those affected, particularly poor and indigenous women (UN Women and OHCHR 2020). Lithium

extraction for batteries to fill spiralling demand for renewable energy and green technologies requires huge quantities of water, often in desert regions. Also, chemical leaks from mines pollute water sources, leading to reproductive health problems and significantly heightened stress on women's time and labour in provisioning clean water and food (Arnott, et al. 2019). No programme, large or small, can be considered sustainable or contributing to resilience if it increases rather than decreases women's and girls' unpaid care and domestic work (UN Women 2014).

B. Project Examples

Solar powering Anganwadi centres pilot project | UN Women partnered with Madhya Pradesh Urja Vikas Nigam Limited, Government of Madhya Pradesh (India), on a co-financed pilot (concluded in 2019) by the government to bring decentralized renewable energy to institutions run and managed by women that were not connected to the grid, such as the Anganwadi rural childcare centres. The pilot enabled access to clean energy for 63 centres that opened up avenues for lighting, cooling and mobile charging facilities, thereby enabling easier access to technology and converting the centres into safe spaces that could be utilised for women's livelihood and community-based activities in the evening hours. The pilot also developed a cadre of trained women Anganwadi workers in the management and maintenance of installed solar systems. The pilot results enabled the Department of Women and Child Development to allocate INR 14.8 Crores (USD 2 million approximately) under Poshan Abhiyaan, to install solar systems in 2500 remote Anganwadi centres in Madhya Pradesh (UN Women).

Earth Spark | A micro-grid operated by Earth Spark, a non-profit, provides electrification services to 449 homes and businesses in Les Anglais, Haiti. The organization integrates gender equality considerations throughout their operations as a source of affordable and reliable services, targeting local women for training and employment in installations and as grid operators as well as ensuring women take part as members of the community management committee. The power generated by the micro-grid from renewable sources, including solar, enables local women entrepreneurs to establish small businesses with support from Earth Spark (World Bank).

Setting Up an E-Cluster in a Social Centre | A project implemented in Bangladesh by the Asian Development Bank (ADB) aims to target the nexus of gender, energy, and livelihoods through the establishment of an e-cluster set up in a social centre promoting social activities. An e-cluster is a container-based autarkic solar photovoltaic (PV) battery, with integrated indoor and outdoor LED lighting, direct current/alternating current (DC/AC) ventilation, PV water pumping and filtration, cold storage (freezers) for preserving fish catch, and internet facility. When located in a social centre, such as a women's co-operative, the e-cluster generates varied energy-based services and enables internet access to livelihood opportunities, including setting up restaurants and handicraft shops. (ADB 2018).

Hydropower - Gender-informed Livelihood, Minority and Resettlement programmes, Vietnam | Hydropower as a renewable energy resource can be a boon for sustainable development, but projects that are not well-designed or managed can have negative impacts on local communi-

ties and the environment, including displacement, land dispossession, loss of livelihoods and environmental degradation, with detrimental consequences for women and girls (UNEP 2016). In Vietnam, the Trung Son Hydropower Project (TSHP) was designed with a strong gender action plan for the implementation of its large livelihood, minority and resettlement programme. The programme focused on five areas: (1) promoting gender equality in access to compensation under the resettlement plan; (2) strengthening the overall monitoring system of the livelihood improvement activities and enhancing the capacities of TSHP staff on gender-aware data collection and reporting; (3) increasing rates of participation by women in livelihood activities; (4) reviewing training content and methods, and coaching district women's union in their use; and (5) developing and successfully piloting cost-effective, appropriate, and innovative solutions to reach out to the most vulnerable ethnic Hmong populations and inform them about project impacts and compensation in their own language (World Bank 2017).

RESOURCES

Gender and Renewable Energy

- [Gender and Renewable Energy \(G-REEN\). Advancing gender equality in renewable energy n/d](#) | IUCN
- [Gender Equality in the Renewable Energy Industry. Call to Action n/d](#) | UN Women
- [Clean Energy for Women, by Women 2022](#) | World Bank
- [Women's full participation in renewables is essential for a fair and green future 2022](#) | *Horizon*, European Union
- [To what extent can renewable energy empower women in rural communities? 2020](#) | World Economic Forum
- [Wind energy: A gender perspective 2020](#) | IRENA
- [Renewable Energy: A Gender Perspective 2019](#) | IRENA
- [Seven Women Entrepreneurs of Solar Energy 2019](#) | IEA
- [Closing the renewable energy gender gap in the United States and Canada: The role of women's professional networking 2019](#) | Energy Research & Social Science
- [Advancing Gender in the Environment: Making the Care for Gender Equality in Large-Scale Renewable Energy Infrastructure Development 2018](#) | USAID, IUCN
- [Gender and Renewable Energy: Entry Points for Women's Livelihoods and Employment 2017](#) | Climate Investment Funds
- [Toward a gender diverse workforce in the renewable energy transition 2016](#) | *Sustainability: Science, Practice and Policy*

2.3 Energy efficiency

Energy efficiency initiatives aim to use methods that require less energy consumption to produce the same function or output. Energy efficiency programmes can help address heating, cooling and thermal issues, both within the household and in buildings, office settings and industrial processes. Often, increasing energy efficiency may entail a change in behaviour or practice rather than the introduction of new technologies (see project examples below). Women are key agents of change to promote the adoption of energy efficient practices and to engage in community outreach. In many contexts, women are more likely to choose low-carbon practices and technologies, and are more willing to make changes in favour of sustainable options than men (EIGE 2017). At the household level, women play an important role in improving the adoption of energy efficient practices, such as temperature settings and heating/cooling techniques. Emerging research indicates that when women make decisions about energy expenditure and consumption in the household, energy consumption tends to be lower (see resources box below).

A. Key Issues

Energy efficiency programmes offer diverse entry points to strengthen gender equality in the energy sphere, both in skills-building measures for energy management and systems optimization in industry at the project level, and by acknowledging women as a significant population of the energy efficiency consumer market at the end user stage. Women's involvement can influence the effectiveness of the distribution and adoption of new energy efficient technologies, such as appliances and improved lighting (Energy and Environment Partnership 2017, IUCN 2018). Where new technologies are introduced to increase gains in energy efficiency, women should be meaningfully included in the design and distribution of such products and services. In addition to being consumers and users of energy-efficient cook stoves and solar lighting products, for example, women have been central to their design, distribution and sale. Assessing gender considerations can improve project planning and implementation by highlighting issues such as: a) women's limited access to finance or collateral to purchase energy efficient technologies, which could

be addressed through collaboration with financing programmes targeting businesses that are owned and/or run by women; or b) the fact that lighting demonstrations for energy efficient lanterns and lighting products are most effectively done at night, therefore informing measures to address childcare and the safety of women traveling to demonstrations (Energy and Environment Partnership 2017).

B. Project examples

Improving access to information and engaging women in the distribution of energy efficient lighting and appliances | A regional project in East and Southern Africa aims to create market and institutional conditions to enable a transformation of the sector to stimulate increased diffusion of efficient lighting products and appliances across all sectors. The project recognizes that the differing roles of women and men in households have a significant impact on the purchase and use of appliances. It therefore includes specific measures to target access to information for women and men to make informed decisions when purchasing products, and aims to improve the accessibility to quality products for both women and men. Capacity building activities also target women to help improve their role within the distribution of the energy efficient products (SACREEE).

Industrial Energy Efficiency Programme - Georgia | The project supported the deployment of state-of-the-art energy management systems, standards and sector-specific technologies as well as energy system optimization. In capacity building measures, special attention was paid to ensuring gender parity among trainees and ensuring that trainings take place in child-friendly facilities. In addition, childcare services were provided and regular breaks for nursing included in training agendas. As a result, 36 per cent of training participants were women, which constitutes a disproportionate share of women participants given the vast predominance of men in Georgia's industrial and energy efficiency labour market. Furthermore, the project partnered with a local educational programme for adolescent girls to raise awareness on opportunities in STEM, highlight career pathways in energy efficiency and connect them with women role models working in this sector (UNIDO).

Women as entrepreneurs in the circular economy - PAC Corporation Co., Ltd. - Thailand | PAC Corporation designs, develops, sells and maintains a commercial water heater that recovers heat from air conditioning systems. Atchara Poomee, founder and managing director, designed this technology to generate hot water for multi-consumption purposes for both commercial and residential buildings. This reduces energy consumption and hence cuts energy costs, while being environmentally friendly due to the reduced emissions. Her company won an award in the Global Cleantech Innovation Programme (GCIP) for SMEs in Thailand in 2017 in the area of energy efficiency ([PAC Corporation, Vienna Energy Forum](#)).

Women drive energy efficiency in buildings - Kyrgyzstan | The project's gender analysis found that children, the elderly and women spent more time than others in poorly insulated and heated buildings constructed during the 1960s-1980s. Most women were unaware of the potential of energy efficient buildings and renewable energy technologies and of the relationships between energy efficiency, savings in public and household budgets, impacts on health and education and women's employment. The project thus focused on outreach to women and improving their capacities through training

as specialist technicians, construction workers and operators. Women formed 40 per cent of the 156 trained experts, and a woman project manager helped develop new energy performance standards for buildings and facilitated construction of the first low-energy school building in Kyrgyzstan ([IUCN 2018](#)).

Energy Clinic, a women-run energy efficiency program - India | Since the early 2000s, the Energy Management Centre (EMC) of Kerala, India, runs a programme called "Energy Clinic". It creates awareness among the population on domestic energy efficiency. At the domestic level, women generally make the decisions on energy use. The aim is to motivate households to switch to clean energy for domestic requirements. Also, energy kits are distributed that contain clean energy appliances for cooking, lighting and other household needs. The volunteers trained for this project are entirely women, mostly young women. For a fixed sum per visit, they visit households, especially poor and rural households, and train teachers and local administrators. Training and implementation of the programme is supported by the All India Women's Conference, a national non-governmental organization (NGO) ([IUCN 2018](#), [Women and Gender Constituency \(UNFCCC\)](#)).

RESOURCES

Gender and Energy Efficiency

- [Review on the Importance of Gender Perspective in Household Energy-Saving Behavior and Energy Transition for Sustainability 2021](#) | *Energies*
- [Gender differences in household energy decision-making and impacts in energy saving to achieve sustainability: A case of Kathmandu 2020](#) | *Sustainable Development*
- [Tracking gender and the clean energy transition 2018](#) | IEA
- [AGENT Energy Webinar - Energy efficiency as a means to improve women's lives 2018](#) | USAID, IUCN
- [Understanding the Role of Women and Girls in Renewable and Energy Efficiency 2017](#) | Energy and Environment Partnership
- [Go ask 'Gladys': Why gender matters in energy consumption 2016](#) | Discover Society
- [Is mom energy efficient? A study of gender, household energy consumption and family decision making in Indonesia 2015](#) | *Energy Research & Social Science*
- [Gender Difference in Environmental Attitude and Behaviors in Adoption of Energy-Efficient Lighting at Home 2013](#) | *Journal of Sustainable Development*

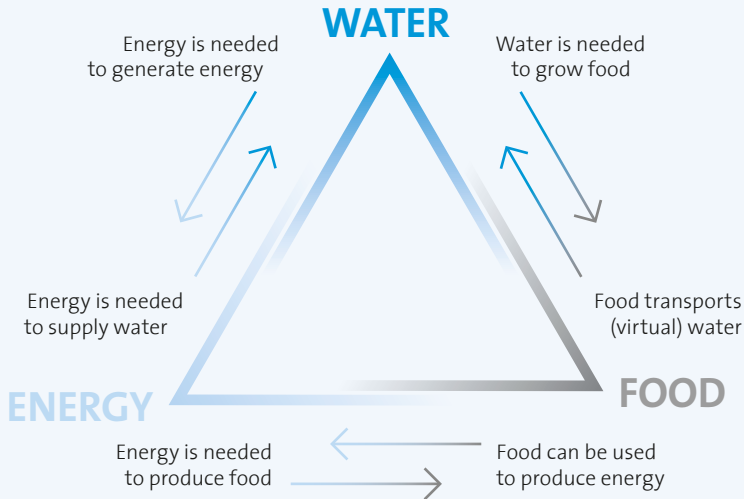
2.4 Water-energy-food nexus

The water-energy-food nexus provides several critical entry points for women’s empowerment and reducing their disproportionate share of unpaid care and domestic work given that women remain primary managers for food and water provisioning in households. Energy access and reliability of access is crucial for carrying out these tasks, particularly as climate change and extreme weather events adversely affect food and water security. The availability of water resources is crucial for sustaining energy operations, which require water at various points during their lifecycle, for example, the extraction of raw materials, cooling in thermal processes, in cleaning processes, cultivation of crops for biofuels, and powering turbines. Energy access and reliability is itself needed to ensure water resources are available for use and consumption, i.e., through pumping, transportation,

treatment, and desalination. Moreover, agriculture is the largest consumer of the world’s freshwater resources (UN Water). More than one-quarter of the energy used globally is expended throughout the agrifood and agri-business value chain.

The linkages between these critical domains require well-informed and integrated approaches that take women’s and girls’ needs and priorities into account in ensuring water and food security and developing sustainable agriculture and energy production worldwide. Globally, a quarter of employed women work in agriculture, including forestry and fishing,⁴ with agriculture remaining the most important employment sector for women in low-income and lower-middle-income countries.

FIGURE 3
The water-energy-food nexus



Source: [WRI 2020](#)

4 World Bank, [Employment in agriculture, female \(% of female employment\)](#), data for 2019, the most recent year available. This constitutes a significant decline from 43 per cent in 1991.

A. Key Issues

The worsening impacts of climate change can be observed and felt most immediately at this nexus in the increased occurrence and severity of droughts globally, putting reliable energy production and food security at risk. An estimated third of all irrigated cropland is facing extremely high water stress, a figure expected to increase to 40 per cent by 2040 due to the impacts of climate change; similar drastic impacts will be observed for rainfed agricultural production (WRI 2020). Any nexus management for food, water and energy will need to include gender considerations throughout, particularly given women's key roles and responsibilities in food, water and energy provisioning, including as smallholder farmers, workers and entrepreneurs in agrifood industries and energy production and distribution. Despite this, women continue to be marginalized in terms of access to water and energy services not only for food production, but also for other productive and domestic tasks as well as health and sanitation.

In 2022, an estimated 345 million people across 82 countries were facing or at high risk of acute food insecurity, an increase of almost 200 million people from pre-pandemic levels. Fifty million people are facing emergency or worse levels of acute food insecurity across 45 countries due to spiralling costs of food, fuel and fertilizer in the wake of the war in Ukraine and accelerating climate change (WFP 2022). Critically, a widening gender gap in food insecurity, which grew from 1.7 per cent in 2019 to more than four per cent in 2021, with 31.9 per cent of women moderately or severely food insecure compared to 27.6 per cent of men, means that globally and across regions, women are more food insecure than men (FAO, IFAD, UNICEF, WFP and WHO 2022).

Improved access to water and energy services would increase women's agricultural productivity and incomes, including through the adoption of sustainable agricultural technologies, such as climate-resilient irrigation approaches, that reduce the intensive use of energy and manual labour. Access to time- and labour-saving technologies can reduce women's unpaid care and domestic work, enhance women's labour productivity, and increase the time that they have available for engaging in productive activities outside the household,

such as education and paid work. These technologies include low-cost domestic appliances that are powered by clean energy, solar-powered water wells, drip irrigation systems and technologies for agricultural production and post-production such as grinding and milling, refrigeration, and packaging (FAO 2022, UNIDO 2014).

Bottom-up or community-level solutions for sustainable water management for agricultural production and domestic use, such as rainwater harvesting and flood control, can have considerable benefits for women farmers and community members (CDKN 2020). Gender-responsive measures to increase efficiency along the agrifood chain can also reduce consumption of water and energy. However, women farmers tend to be marginalized in terms of access to technologies and extension services by planners, engineers, extension staff and decision-makers, leading to gender-blind planning and policy making (FAO 2011, FAO 2021). Further, women's important roles throughout the agrifood chain are undermined due to inequitable access to land and other natural resources, identification, inheritance, credits and productive inputs such as seeds, fertilizers and equipment (UN Women and OHCHR 2020).

Hydropower development schemes have significant impacts on local communities, land use and employment, and can also affect sanitation, hygiene and maternal health for better or worse, as well as the time women spend on water collection and provisioning (UN Water). Hydropower projects with irrigation schemes that fail to recognize women as farmers and water users in their own right may put women at risk of losing access to their land and even the products of their own labour (IFAD 2007, IFPRI 2019). Conversely, well-planned hydropower projects with irrigation schemes that invest in women farmers can have a positive multiplier effect via both electrification and water resources, increasing women's incomes and agricultural productivity. Small hydropower systems, unlike large-scale hydropower, rarely result in large-scale resettlements. However, resettlement of a few households within a community may take place as well as changes in the water stream, water-flow reductions and even dried-up river sections, disrupting fish migration and fishing, agricultural activities and access to domestic or irrigation water, all of which have differential gender impacts (UNIDO 2019; Opperman 2018).

B. Project Examples

Reconciling resource uses in transboundary basins: assessment of the water-food-energy-ecosystems nexus in the Syr Darya River Basin

in the Syr Darya River Basin | The Syr Darya River Basin, shared by Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, is a case study for understanding cross-border and cross-sectoral claims to common resources. This report undertook to assess and make recommendations on the potential for mutually reinforcing cross-border water and energy management and food production (although the government of Uzbekistan did not associate itself with the assessment). Among the recommendations are: improving energy efficiency; reducing dependency on water for energy and diversifying sources; rationalizing water use, especially for agriculture; developing a regional energy market; exploring opportunities for energy-water exchanges; lowering barriers to trading food and agricultural goods in the region as an incentive to make their production and exchange more cost-effective and energy- and water-efficient; developing inter-sectoral coordination at the basin level; and improving basin-wide joint monitoring and forecasting, data verification and exchange, and knowledge-sharing ([UNECE 2015](#)).

Strengthening women's access to improved solar irrigation systems in West Africa

in West Africa | The SISAM project (Solution d'Irrigation Solaire Améliorée) is concerned with an innovative solar irrigation solution (local, affordable, adapted to the constraints of family farming) that meets the needs of 100 market garden farms, mostly managed by women who have little access to water. A local production line and distribution of pumps, known as "minvolanta", have been built, and access to local microfinance and micro leasing options has been facilitated. The project's activities by women include production, financing, distribution, maintenance of pumps and irrigation installations. The development of local solar pumping solutions ensures a 100 per cent renewable response to addressing water needs. The project allows market gardeners to ensure production in the dry sea-

son and provides training in good water management practices aimed at combating further drying-up and degradation of arid zones. The project contributes to the increased income of market gardeners, as well as freeing up women's time ([CTCN 2019](#)).

Solar Water Pumping for Drinking and Irrigation in Mozambique

in Mozambique | In the village of Ndombe, the maintenance and repair of the photovoltaic (solar) water pumping system is managed by the community. Many women are involved in its maintenance and operation, collecting fees from water users and participating in community management. Benefits for women include the creation of productive activities, since the improved irrigation system allows women to sell more vegetables and fruits and increase their income. Early results have shown an alleviation of women's water-related drudgery through increased access to safe drinking water for more than 2,000 people in at least four communities. There are now new and better sources of livelihood for women in seven vulnerable communities through enhanced water supply for agricultural irrigation and livestock ([UNIDO](#)).

Accelerating the energy transition by providing solar mobile services to women farmers in Senegal

in Senegal | E-FAITOU facilitates access to solar energy for women farmers in Senegal through an innovative and inclusive concept of mobile multi-service trucks offering rentals of solar and post-harvest processing equipment such as dryers, mills, refrigerators, charging stations, and digital platforms. Women farmers' chores are alleviated through mechanized processing of their harvest and facilitated access to market information and education. With access to these resources, women's agricultural labour and time are relieved, productivity is increased, and new opportunities for creative income generation are achieved. Access to online services strengthens financial inclusion and access to information and education, thus empowering micro-entrepreneurs and strengthening the rural economy ([Women and Gender Constituency \(UNFCCC\) 2018](#)).

RESOURCES

Water-Energy-Food and Gender Nexus

- [The State of Food and Agriculture 2022](#) | FAO
- [World Small Hydropower Development Report 2022](#) | UNIDO
- [Gender Roles, Implications for Water, Land, and Food Security in a Changing Climate: A Systematic Review 2021](#) | *Frontiers in Sustainable Food Systems*
- [Gender Specific Differences of Smallholder Farm Households Perspective of Food-Energy-Land Nexus Frameworks in Ethiopia 2020](#) | *Frontiers in Sustainable Food Systems*
- [World Employment and Social Outlook 2020](#) | ILO
- [World Small Hydropower Development Report 2019](#) | UNIDO
- [Costs and Benefits of Clean Energy Technologies in the Milk, Vegetable and Rice Value Chains 2018](#) | FAO
- [The Unexpectedly Large Impacts of Small Hydropower 2018](#) | Forbes
- [The Role of Gender in the Energy and Agriculture Nexus 2018](#) | Energypedia
- [The Rising Tide – A New Look at Water and Gender 2017](#) | World Bank Group
- [Gender and Hydropower: Women’s Rights in the Development Discourse 2017](#) | Center for Social Development Studies
- [Lessons learnt from gender impact assessments of hydropower projects in Laos and Vietnam 2017](#) | *Journal of Gender and Development*
- [Gender-responsive planning for the water-energy- food nexus in the context of devolution Reflections and lessons from Laikipia and Machakos in Kenya 2017](#) | CDKN
- [Energy use in informal food enterprises: A gender perspective 2017](#) | *Journal of Energy in Southern Africa*
- [Integrating Gender into the development and deployment of Clean Energy Solutions for the Agriculture Sector – Practical Guides: \[CES Deployment\]\(#\) | \[Product Development\]\(#\) | \[Financial Products\]\(#\) | \[Marketing\]\(#\) | \[Monitoring and Evaluation\]\(#\) | \[Human Resources\]\(#\) 2017](#) | Powering Agriculture: An Energy Grand Challenge for Development (PAEGC)
- [Double Dividend: Power and Agriculture Nexus in Sub-Saharan Africa 2017](#) | World Bank
- [Towards Gender Equality through Sanitation Access 2016](#) | UN Women
- [Gender Integration Summary Report 2016](#) | PAEGC
- [Guide on Gender Mainstreaming Agribusiness Development Projects 2015](#) | UNIDO
- [Addressing the gender differentiated investment risks to climate-smart agriculture 2015](#) | *AIMS Agriculture and Food*
- [Improving Gender Equality and Rural Livelihoods in Senegal through Sustainable and Participatory Energy Management: Senegal’s PROGEDE II Project 2015](#) | World Bank
- [Using Gender Impact Assessments in Hydropower Development 2013](#) | Australian Aid, CGIAR, OXFAM
- [Energy and Agricultural Technologies for Women’s Economic Advancement 2012](#) | International Center for Research on Women (ICRW)
- [At a glance: the role of energy in food security and climate 2012](#) | FAO
- [Gender in Agriculture Sourcebook 2009](#) | World Bank Group

2.5 Health and safety

Energy poverty disproportionately affects the health and safety of women and girls. In low-income and developing countries, their intensive involvement with biomass fuels for heating and cooking, and reliance on other natural resources for food provisioning, means more of their time and energy is consumed by unpaid care and domestic work and subsistence tasks that are often physically depleting and mentally draining (UN Women 2019). Where women and girls are responsible for gathering cooking fuel, they are also vulnerable to gender-based violence during fuel collection and transport, as well as musculoskeletal damage due to carrying such heavy loads (WHO 2022). Household appliances using polluting energy sources also pose health and safety risks.

The lack of energy access impedes delivery of vital services such as healthcare and education or well-lit public spaces and street lighting, which can help mitigate the risk of gender-based violence and sexual harassment. Some one billion people worldwide are served by healthcare facilities without reliable electricity, and more than a quarter of healthcare facilities in Sub-Saharan Africa have no electricity (WHO). Clinics, hospitals, and health workers often lack access to reliable and clean energy, for example relying on inadequate light from kerosene lanterns, candles or cell phones, making the transition to sustainable energy for healthcare facilities a global priority (SEforALL, IRENA).

A. Key Issues

The COVID-19 pandemic has exacerbated many of the existing gender inequalities at the nexus of energy and health and safety, further jeopardizing women's and girls' health and wellbeing. Healthcare facilities, particularly in areas with chronically unreliable access to energy, have undergone even greater strain with the increased demand for services during the pandemic. Energy, in particular electricity, is absolutely vital for delivery of health and medical services, for example, life-saving emergency obstetric care in cases of pregnancy and delivery complications; attention to newborns and premature babies; clinical services after sunset; adequate lighting conditions for childbirth and surgical operations; refrigeration for vaccines and medicines; sterilization of medical equipment and tools; and power for laboratory diagnostic equipment (Practical Action 2013).

BOX 4

Key recommendations for gender and cooling

EVIDENCE: to better understand gender differences and impacts

- Conduct research and sex-disaggregated collection of data to support tracking access to cooling
- Establish gender-differentiated measurement and evaluation of policies and initiatives

POLICIES: supporting workplace safety, community heat planning and personal comfort

- Implement building codes and product standards and labels that support gender equality in achieving access to cooling
- Implement heat action plans that support gender equality in achieving access to cooling in urban heat islands and extreme heat events
- Expand enforceable workplace protections, particularly for women-led occupations and sectors employing vulnerable populations, such as migrant workers
- Address gender equality and access to cooling in multilateral development programming
- Champion employment gender equality to enable opportunities for women to be part of the solution and lead cooling progress locally

INVESTMENT: to finance gender-transformative solutions

- Invest in solutions that remedy disparities considering gender impacts and vulnerabilities
- Finance women-driven solutions, products and business models
- Invest in vaccine distribution and medical services, increase outreach to vulnerable populations, and use non-medical venues to serve patients with access constraints

COMMUNICATIONS: supporting attention and awareness raising

- Use #ThisIsCool to share information on sustainable cooling solutions
- Support education of heat adaptability and communicate information to prevent impacts of extreme heat

Source: SEforALL, *Cooling for All and Gender. Towards Inclusive, Sustainable Cooling Solutions*, March 2021.

Access to clean and efficient cook stoves, renewable lighting technologies, and safe and clean fuels can reduce the time spent for biomass collection, reduce risks of burns from kerosene- or diesel-fuel stoves, and reduce household air pollution through improved cooking technologies and proper venting (WHO 2016). Household air pollution from using inefficient and polluting fuels and technologies for cooking caused some 3.2 million deaths in 2019, disproportionately affecting women and children due to higher exposure (WHO 2022). Given women's central role in managing household energy, it is critical that they have a similarly key role in facilitating the design, widespread adoption and use of clean cooking solutions and other much-needed innovations such as renewable energy solutions to support health and medical care delivery, solar water pumps and purifiers for clean and safe water and sanitation and sustainable cooling, among others.

In a rapidly changing climate, lack of access to energy for cooling is an urgent concern. Currently, over one billion poor people in both rural and urban areas are at the highest risk of heat stress, and nearly 2.5 billion people lack access to clean and efficient cooling. Heat waves kill 12,000 people annually, which could well go up to 255,000 by 2050 if concerted action is not taken (SEforALL 2022). The gendered impacts of heat stress include women's slower thermal recovery time after heat-related illness, including heat rash, exhaustion or stroke, and pregnant women who have less capacity to tolerate heat stress during pregnancy. However, physical differences in body size and constitution, rather than biological sex, can be behind the different reactions to heat illness. While biological sex does not determine risk for heat stress, lived experience can exacerbate gender-based risk. Moreover, the gender division of labour in the household and prevailing social and cultural norms put women at heightened risk for heat stress during widespread, community-level extreme heat events (SEforALL 2021). Cooling for vaccines and medicines is critical for healthcare delivery and an equitable and just global response to COVID-19 and other epidemics and pandemics. Cold chains are crucial for farmers' livelihoods and food security and can support decent work in agrifood processing, as well as reducing emissions from food wastage. Sustainable energy solutions to cool people and goods are necessary, avoiding surges in fossil fuel-based electricity demand, which would jeopardize achievement of SDG 7 and the Paris Agreement (SEforALL 2022).

B. Project Examples

Empowering women through low-cost home cooling solutions | [Mahila Housing Trust \(MHT\)](#) is an Indian not-for-profit organization based in Ahmedabad, which works in 10 cities across India to boost community resilience to heat stress. It provides women with advice on how to cool their homes in ways that are easily implemented and affordable: to date, more than 1,600 women have been educated about climate change and how to deal with some of its effects. The techniques focus on passive cooling methods – preventing heat from building up within people's homes. One of the quickest and easiest to implement is painting roofs and sun-facing walls with solar-reflective paint, which can reduce indoor temperatures. According to the [Global Cool Cities Alliance](#), when sunlight hits a light-coloured roof, 80 per cent of its energy is reflected, compared with 5 per cent for a dark-coloured roof. A second approach is to grow potted plants and creepers on roofs, which can reduce indoor temperatures. Vegetation has been proven to have a [cooling effect](#) through shading and evapotranspiration. MHT also advises on and helps with renovating roofs with recycled materials that let more light in without trapping heat. MHT won the 2021 Ashden Award for Cooling in Informal Settlements, which was presented at COP26.

Renewable energy solutions to meet emergency health needs where the grid doesn't reach | Many health facilities use diesel backup generators or do without power during blackouts. For critical health services like oxygen provision, governments are increasingly turning to renewable energy options. For example, the 2018 installation of a 20 kW solar power and battery array in the Neonatal Intensive Care Unit in Bo General Hospital in Sierra Leone allowed for the uninterrupted operation of oxygen concentrators and baby warmers, causing infant mortality in the facility to plummet. There are a range of "pop-up" and pre-manufactured solar and battery systems that can in principle be deployed more rapidly for emergency response, including quick-deploy mini- or micro-grids that can be designed within weeks and installed within days, containerized solar and storage systems, solar-powered mini multi-use facilities, and minibox solar arrays ([PowerforAll](#)).

Light Every Birth with Solar Suitcase | Launched in Liberia, Uganda, Sierra Leone, and Zimbabwe, the programme aims to target five critical countries with high rates of maternal mortality and inadequate energy access and to reach more than 8,000 centres in the first five years, serving millions of mothers and newborns through the Solar Suitcase. The Solar Suitcase is a robust, easy-to-use solar electric system that provides last-mile health facilities with highly efficient medical lighting and power for mobile communication and small medical devices. The programme partners with ministries of health and energy, UN agencies, NGOs and solar installers with the ultimate goal of ensuring all eligible maternal health centres within a country have reliable power ([We Care Solar](#)).

Access to clean cook stoves | In Burkina Faso, a UNIDO project worked with the traditional beer-brewing sector, which is predominantly led by women. Over 1,600 women in the beer-brewing sector were supported by providing 1,000 fuel-efficient cook stoves with reduced smoke generation. Due to a 40-50 per cent reduction in

the firewood consumed, the women were able to improve production efficiency and increase their profits. The decreased exposure to indoor smoke improved the health of the women and their families, and the higher incomes generated helped to improve the social standing of the women beer brewers. The project was replicated in other countries, including Chad. ([UNIDO](#)).

Women and school children install and use solar cookers to improve health and preserve the Argan forest in Morocco. The Union of Women Cooperatives for Argan Oil and the Foundation Mohammed VI are working to install and disseminate solar cookers in southern Morocco, as a means of preventing the deforestation of argan trees, avoiding toxic wood fire fumes from traditional cooking and reducing CO₂ emissions. They raise awareness among pupils and their mothers about local climate issues and the advantages of using solar energy. Children and women are trained in schools to assemble and use the cookers ([CTCN / Women and Gender Constituency \(UNFCCC\)](#)).

RESOURCES

Health and Safety in the Gender-Energy Nexus

- [Chilling Prospects: Tracking Sustainable Cooling for All 2022](#) 2022 | SEforALL
- [Cooling For All And Gender. Towards Inclusive, Sustainable Cooling Solutions](#) 2021 | SEforALL
- [Achieving universal electrification of rural healthcare facilities in sub-Saharan Africa with decentralized renewable energy technologies](#) 2021 | Joule
- [The Health Nexus – Delivering Health through Sustainable Energy, Transport and Cities n/d](#) | WHO
- [The Humanitarian Impact of Gaza’s Electricity and Fuel Crisis on Gender-based Violence and services](#) 2017 | UNFPA
- [Burning Opportunity: Clean Household Energy for Health, Sustainable Development, and Wellbeing of Women and Children](#) 2016 | WHO
- [Sustainable Energy for All Progress Towards Sustainable Energy 2015: Global Tracking Framework Report](#) 2015 | World Bank, IEA
- [Access to Modern Energy Services for Health Facilities in Resource-Constrained Settings](#) 2015 | WHO
- [Limited electricity access in health facilities of sub-Saharan Africa: a systematic review of data on electricity access, sources, and reliability](#) 2013 | *Global Health: Science and Practice*
- [Gender, Climate Change and Health](#) 2010 | WHO

2.6 Circular economy

The concept of the circular economy is a response to increasing pressures to reduce consumption of scarce resources and minimize waste, including waste-to-energy processes, and has significant implications for renewable energy, energy efficiency and reducing greenhouse gas emissions. It presents an alternative option to the current linear models of production organized by the principles of “take” (extraction of raw materials), “make” (production of goods) and “dispose” (products are disposed of in landfills at the end of the life cycle) (Ghisellini et al. 2018). The circular economy proposes to overhaul the linear production pathway by: (i) extending the life cycle of products by using renewable technologies and materials wherever possible, (ii) employing eco-design to incorporate environmental impacts of the product and (iii) promoting reparability, upgradability and design for disassembly. It is in large part dependent on a revolution in technology design and development, accompanied by rapid diffusion and uptake. The intended result is a transition from the “take-make-dispose” model of production to one that upholds the values of “reduce-reuse-recycle”, thus designing out waste, increasing resource productivity, and most importantly, decoupling economic growth from environmental degradation (Ellen MacArthur Foundation).

Circular economy approaches have long existed in different contexts and settings, for example, in the work of waste pickers worldwide. Five per cent of global emissions are generated from solid waste management, excluding transport, and 90 per cent of waste in low-income countries is openly dumped or burned (World Bank 2018). More than 20 million people, primarily women, children, the elderly, the unemployed, or migrants, work as waste pickers in the informal economy with no access to social protection, living and operating at the margins of survival under precarious conditions and exposed to all manner of hazards and toxic wastes as well as social stigma and discrimination (WIEGO 2017). Waste pickers are the lowest paid, if they are paid at all, in the recycling chain but provide essential sanitation and waste management services across cities and regions. They collect, sort, recycle, repurpose and sell materials considered

waste and discarded by others, thereby contributing to reducing greenhouse gas emissions and a circular economy. However, their efforts are only now becoming recognized as a result of local and global organization and mobilization, efforts that should be remunerated and formalized in service contracts with municipalities and industries. Although waste picker organizations exemplify resource recovery and social inclusion central to a circular economy, greater attention and commitment are needed to ensure that they benefit from a just transition (Gutberlet and Carenzo 2020).

A. Key Issues

The gender and social impacts of the circular economy need to be further explored, but many of the founding principles – collaborative consumption, the notion of a sharing economy, rationing, and building networks for exchange – are also characteristics of women’s cooperatives and how women effectively operate in constrained situations (UN Women 2016). Lower-income contexts are often more ‘circular,’ since much of their economic activity revolves around sorting and reusing what would be considered “waste” elsewhere. The challenge is how to turn this into a development opportunity, particularly as higher-value, employment-generating opportunities for reuse and remanufacturing are not yet fully realized (Chatham House 2017a).

The shift to a green, circular economy must still address pervasive discriminatory gender norms and inequalities, while harnessing potential emerging roles for women (DCED 2012). Studies show that women tend to be more receptive to local and global sustainability concerns – women recycle more, are more likely to support environmental regulations, know more about the scientific aspects of climate change and are more likely to express concern about its effects (Ballew et al. 2018, Pearson et al. 2017). Yet, significant evidence suggests that women’s skills and abilities are constrained to low-cost, low-skilled labour across regions, often losing out as manufacturing sectors upgrade to become more capital-intensive and create higher-skilled jobs.

A transition to the circular economy indicates increased labour intensity of recycling activities and higher-skilled jobs in remanufacturing (OECD 2020). Efforts to tailor capacity and skills building measures towards women's inclusion are key to ensure their access and meaningful participation in this transition. This applies as well to initiatives in the environmentally sustainable industrial and technology design sectors, as key drivers of the system-wide changes necessary for this transition. Policies and programmes should address women's participation in the STEM fields that feed into industrial and technology design. For example, estimates for the United Kingdom suggest women form only 5 to 20 per cent of the workforce in these occupations (Design Council UK 2016). Not only are women losing out a potential source of employment, but the larger repercussion is the risk of [re-]creating a world with technologies that are developed and implemented largely without the conceptual and technical contributions of women and girls, and further perpetuating the invisibility of their particular needs and aspirations. This can lead to reduced uptake of technologies and products by women and girls, or in some instances, the design of technologies that reinforce existing gender inequalities.

B. Project Examples

Potential of sustainable fashion to transform textile and garment production and consumption through recycling and reuse | Globally, an individual on average buys 5kg of clothes every year, a figure that can go up to 16kg in Europe and the USA. The textile and garment industry emits a total of 1.7 billion tonnes of CO₂ annually (WWF 2017), a significant contributor to climate change. Moreover, 63 per cent of fibers used in textile production are derived from fossil fuels (Sandin and Peters 2018) and the industry generates 2.1 billion tonnes of waste in the form of disposed clothing and off-cuts each year, yet

only 20 per cent of it is collected for reuse or recycling. Some 5.8 million tonnes of textiles are discarded into landfills in the EU every year, and only 26 per cent are recycled, while the USA discards 9.5 million tonnes and China 20 million tonnes. Reusing and recycling this textile waste into raw materials could contribute around €4 billion per year in 2030, and a circular model of production and consumption could potentially yield greater economic, social and environmental outcomes (SgT Group 2017). A recent study of consumer attitudes towards sustainable clothing indicates that women, who generally provision most clothing in households and are similarly responsible for disposing of it, tend to hold positive views about sustainable clothing as unique and fashionable, as opposed to men (Vehmas et al. 2018).

Women-led waste management businesses in Indonesia

| The Indonesian Waste Bank Association is a social entrepreneurship initiative on circular economy and waste management. The waste banks process waste to produce secondary raw material, as well as end consumer products by transforming waste to energy (fuel, biodiesel, bioethanol), livestock feed and fertilizer. Through reducing, sorting, using, recycling and upcycling waste, these women-managed associations are integrating traditional knowledge with new technology. Eighty per cent of the more than 8,000 waste banks currently in operation in Indonesia are led by women. Such initiatives are providing economic empowerment and education for local women, especially those who were previously engaged in informal waste picking activities, and have allowed them to become business owners, as well as providing economic benefits for local communities. The initiative's systematic and whole-of-country approach has been endorsed by local communities and the government and has significant upscaling potential (OECD).

RESOURCES

The Green Circular Economy and Gender Equality

- [Why adopting a gender-inclusive approach towards Circular Economy matters 2022](#) | UNIDO
- [Women and SDG 12 – Responsible Consumption and Production: Ensure sustainable consumption and production patterns 2021](#) | OECD
- [Gender-specific consumption patterns, behavioural insights, and circular economy 2020](#) | OECD
- [Introducing Africa’s innovative women eco-preneurs turning environmental challenges into sustainable businesses 2018](#) | Lionesses of Africa
- [Gender Just Climate Solutions 2018](#) | Women and Gender Constituency (UNFCCC)
- [Lack of women in energy ‘holding back fight against climate change’ 2018](#) | The Guardian
- [A Wider Circle? The Circular Economy in Developing Countries 2017](#) | Chatham House
- [Women in Clean Energy – Knowledge, Gaps and Opportunities 2017](#) | IEA, C3E, Clean Energy Ministerial
- [Circular Economy 2017](#) | UNIDO
- [Mainstreaming Gender in Green Climate Fund Projects 2017](#) | UN Women, GCF
- [When Circular Economy works hand in hand with social inclusion n/d](#) | Women and Gender Constituency (UNFCCC)
- [Gender equality in national climate action 2017](#) | UNDP
- [Guidebook: Leveraging co-benefits between gender equality and climate action for sustainable development 2016](#) | UN Women
- [Addressing the gender inequality of risk in a changing climate 2016](#) | UN Women
- [Position Paper: Women and the Green Economy 2016](#) | *Journal of Women’s Entrepreneurship and Education*
- [Empowering women for sustainable energy solutions to address climate change - Experiences from UN Women and UNDP-UNEP PEI Africa 2015](#) | UN Women, UNDP, UNEP
- [Women at the Forefront of the Clean Energy Future 2014](#) | USAID, IUCN
- [Climate Change | Human Health: Impacts, Adaptation and co-benefits 2014](#) | IPCC
- [Women’s Participation in Green Growth – A Potential Fully Realised? 2012](#) | DCED, GIZ



3 WOMEN'S PARTICIPATION AND LEADERSHIP IN SUSTAINABLE ENERGY

A gender-responsive just transition to sustainable energy to reach climate goals requires a global shift from grey to green industry, and to green economies based on principles of circularity, climate neutrality and leaving nobody behind. To ensure that women and gender-diverse people have equal access to and control over sustainable energy and can equally lead, contribute to and benefit from the sustainable energy transition, structural gender inequalities need to be addressed and women's potential as agents of change integrated in all energy endeavours. The approach of mainstreaming gender issues into all actions is reflected in the 2030 Agenda for Sustainable Development, which identifies gender equality and women's empowerment as one of the three universal values on which it is based, in addition to the stand-alone SDG 5 on gender equality and the empowerment of all women and girls.

BOX 5

The concept of gender mainstreaming

Mainstreaming a gender perspective into sustainable energy initiatives requires assessing the implications for women and men of any planned action, including legislation, policies and projects, in all areas and at all levels. This should also include budgetary aspects.

Based on the 'do-no-harm principle', the minimum requirement is to make sure that gender inequalities are not aggravated or perpetuated. Good practice, however, is to apply a gender-responsive approach, i.e., ensuring that any initiative provides gender-equal access, participation and benefits through a two-pronged approach of both mainstreaming gender dimensions into all interventions as well as identifying and implementing gender-specific actions.

During the **design and formulation** stage of a project, programme or initiative, a **gender analysis** identifies and analyses gender issues and gender-specific barriers at individual, household and community levels that are likely to result in unequal access, participation and benefit among genders. To that aim, quantitative data and qualitative information on gender-specific differences in roles, values, power dynamics and behaviours have to be analyzed and shall be considered and addressed in the design of a legislation, policy, project or programme.

Based on the gender analysis, a **gender strategy and action plan** should guide the **implementation** of gender-responsive activities and assure that the planned activities are put into practice both with regard to the intervention itself as well as in horizontal issues such as communication, knowledge management, reporting, and risk mitigation.

Gender-responsive monitoring and evaluation requires that results are also reviewed with a view to their impact on gender equality and the empowerment of women. This also includes identifying good practices and lessons learned.

Source: UN Women, [Handbook on Gender Mainstreaming for Gender Equality Results](#), 2022

The COVID-19 health, economic and social crisis constituted an unprecedented wake-up call to not continue business as usual and to slow the pace of climate change and environmental degradation. Recovery efforts to build economies and societies back better – before approaching the point of no return in terms of climate change – require increased gender-responsive investment

in sustainable energy and incentivizing the public and private sectors to improve energy efficiency for the benefit of all from a gender perspective. The forthcoming OECD/UNDP/UN Women Green Gender Tracker will map existing gender-responsive green recovery measures in more than 200 countries and territories ([UN Women 2022](#)).

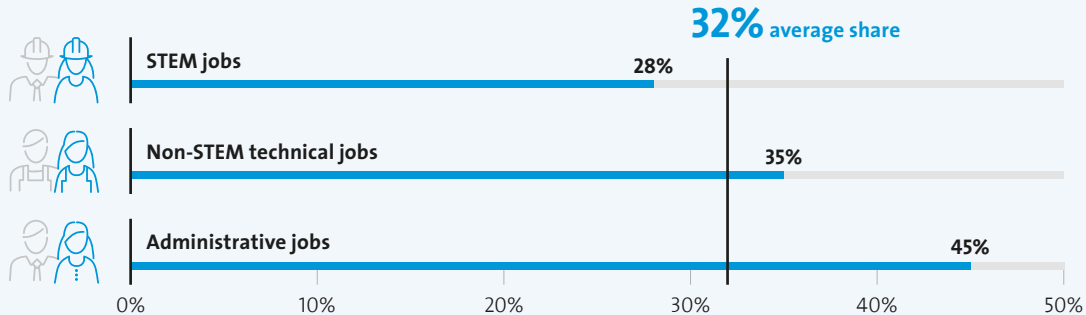
3.1 Equal opportunities and outcomes in the sustainable energy workforce

The unprecedented growth of the sustainable energy sector reflects increasing awareness of the urgent need to address climate change and environmental degradation. This positive development towards increased sustainability constitutes an enormous opportunity for women and men to equally benefit from newly created jobs and gender-responsive sustainable energy investments. It is estimated that the transition to a green global economy with net zero emissions requires an investment of USD 50 trillion by 2050 and that the number of jobs in the renewable energy sector could increase to nearly USD 29 million in 2050 (IRENA 2020a), while ILO estimates that already by 2030 the transition to sustainable energy will create a net number of almost 20 million jobs (ILO 2019). However, the vast majority of these new jobs are likely concentrated among mid-skill occupations and in sectors that are, as of today, men-dominated (ILO 2019). To ensure a just transition towards environmentally sustainable economies and societies that is gender-responsive and creates decent jobs at scale, major investments are required in reskilling the workforce, and these investments need to create equal opportunities for all genders.

A gender-responsive just transition to a sustainable energy future is highly dependent on a skilled and committed workforce. Employment in green energy already accounts for half of global energy employment and is expected to continue to grow rapidly as clean energy transitions accelerate worldwide (IEA 2022). Yet, discriminatory laws, policies and social norms persist in impeding women’s full and equal participation in the economy. Across 190 countries, women count on only three-quarters of the legal rights of men, which means that 2.4 billion working-age women lack equal economic opportunities (World Bank 2022). Women still face legal limitations to entering the workforce, obtaining paid employment or starting a business. Twenty-four countries still impose legal restrictions on women’s employment in the energy sector, particularly in jobs related to electricity (World Bank 2022, ESMAP 2018).

FIGURE 4

Shares of women in STEM, non-STEM and administrative jobs in renewable energy



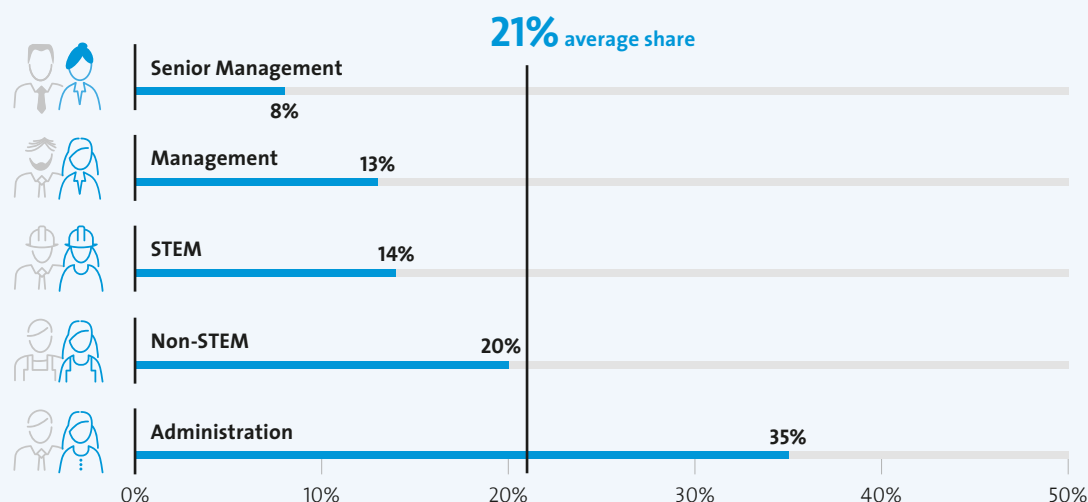
STEM = Science, Technology, Engineering and Mathematics

Source: IRENA online gender survey, 2018.

Note: The vertical line indicates the average share of women in renewable energy jobs among survey respondents.

FIGURE 5

Shares of women by role in the wind energy sector



STEM = Science, Technology, Engineering and Mathematics

Source: IRENA online gender survey, 2018.

Note: The vertical line indicates the average share of women in wind energy jobs among survey respondents.

A. Key Issues

In 2020, about 12 million people were employed in the renewable energy sector (IRENA 2020a). The sector continues to be dominated by men, as is the energy sector more broadly. On the positive side, at 32 per cent, the share of women in the renewable energy sector is higher than that of the fossil fuel sector where only 22 per cent of the workforce are women. Also, energy businesses are increasingly investing in diversity and inclusion as part of their business model. However, much remains to be done to level the playing field between women and men in the sustainable energy sector. In particular, women are underrepresented in technical and STEM jobs as well as in senior management positions (IRENA 2019). This issue is particularly pronounced in energy utilities. The percentage of women in senior management in energy utilities is significantly below average and just slightly higher than that of the coal sector (IEA 2021). In energy sector firms, women make up just under 14 per cent of senior managers and only 5 per cent of top posts such as board chairs, CEOs and presidents (IEA 2021). At the same time, they are overrepresented in low-qualified and administrative jobs (IRENA 2019).

In specific renewable energy sectors, such as wind energy, women represent only 21 per cent of the wind energy workforce, holding 35 per cent of administrative jobs but only 14 per cent of STEM jobs; when it comes to senior management roles, they account for a mere 8 per cent (IRENA 2020b).

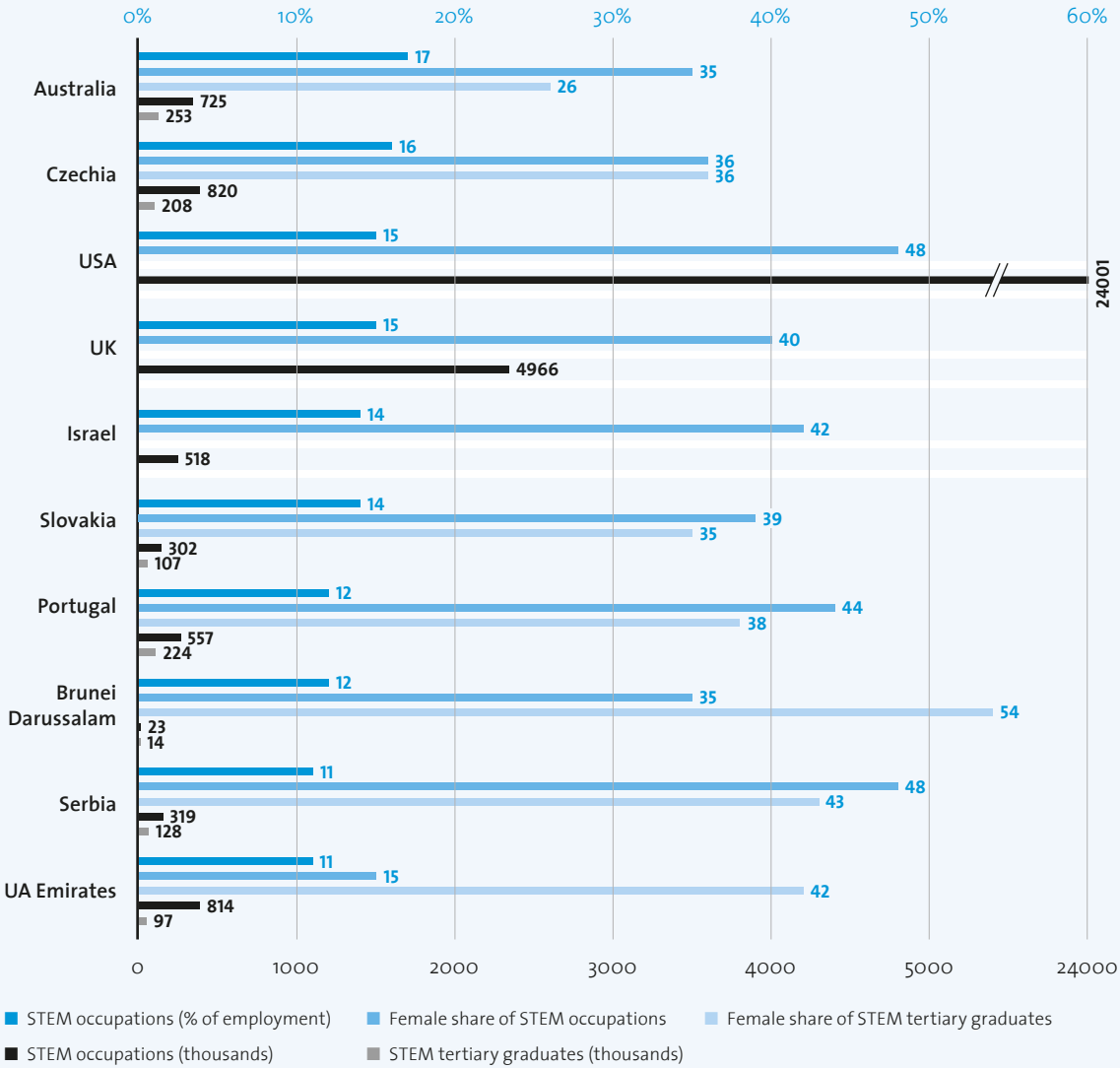
As it is the case across virtually all sectors in the economy, in addition to underrepresentation, women in the energy sector face a gender pay gap. However, perceived inequalities in pay seem to be lower in wind energy (40 per cent) than in the overall economy (68 per cent) (IRENA 2020b).

The low representation of women in the energy workforce, including in sustainable energy, is partially caused by the underrepresentation of women and girls in STEM studies. Discriminatory social norms and exclusionary learning environments shape the extent to which girls and young women participate in STEM fields. Globally, only 35 per cent of students in higher STEM education are women, although with variation across regions. The Middle East and North Africa stand out with a significantly higher share of women STEM students and

graduates than the global average. Differences are also observed within STEM subjects. For example, only 3 per cent of women students in higher education choose information and communication technologies (ICT) studies; only 5 per cent enrol in natural science, mathematics and statistics, and only 8 per cent in engineering,

manufacturing, and construction (UNESCO 2017). This gender disparity in STEM studies, which is evident across rich and poor countries alike, is alarming as STEM careers are often referred to as the jobs of the future, driving innovation, social wellbeing, inclusive growth and sustainable development (UNESCO).

FIGURE 6
Women in STEM occupations and women STEM graduates in selected countries



STEM = Science, Technology, Engineering and Mathematics
 Source: ILO/ILOSTAT 2020

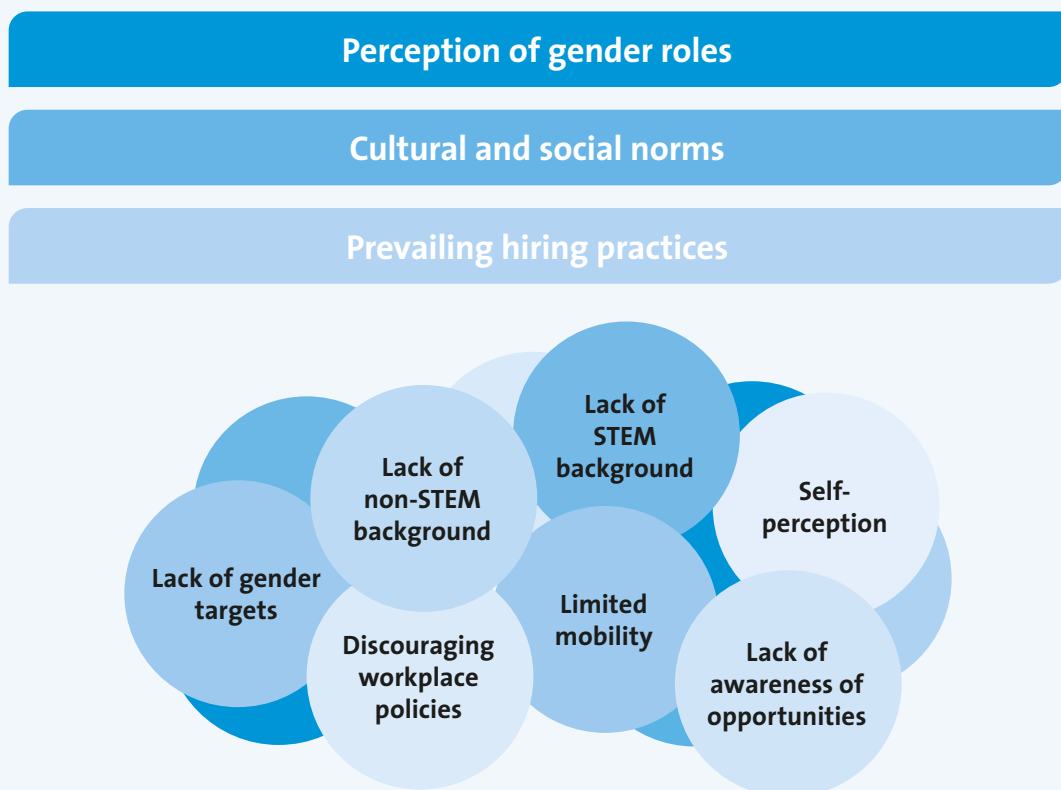
Consequently, occupational segregation and lack of both labour force experience and technical and professional skills impede women from engaging in employment opportunities in the men-dominated sustainable energy sector. In other words, women face barriers to enter the sustainable energy sector, including discriminatory social norms and gender stereotypes about roles, that influence prevailing recruitment, retention and promotion policies (IRENA 2019).

In fact, both companies and the environment would profit from equal participation of women in the energy sector. Numerous studies demonstrate a clear correlation between high levels of gender equality and women's representation in corporate boards, senior roles and

management positions on the one side, and a firm's level of innovation, financial performance and profitability on the other side (Hansra et al. 2019). Going beyond the business case for gender equality, evidence increases for the green business case: Companies that improved gender diversity on their boards from 2013 to 2018 are significantly more likely to reduce energy consumption, water use and greenhouse gas emissions (60, 46 and 39 per cent, respectively) than those who did not (FP Analytics 2019). Also, companies with a higher percentage of women on their boards seem to be more likely to cover their energy needs from renewable energy sources (Atif et al. 2019). Women role models are increasingly visible and breaking down stereotypes (GWNEN 2020).

FIGURE 7

Barriers to entry for women in the renewable energy sector



STEM = Science, Technology, Engineering and Mathematics

Source: IRENA online gender survey, 2018.

BOX 6

Key recommendations for enhancing women's representation in the sustainable energy workforce

Recruitment:

- Draft job descriptions in an inclusive and gender-responsive manner, using language that avoids gender discrimination and stereotypes and includes women, men and gender-diverse people
- Share vacancy announcements with professional and trade networks with significant involvement of women and gender-diverse people
- Prevent and address gender bias and discrimination in job interviews, including by using non-discriminatory interview questions, professionalizing the recruitment process through skill tests, competency-based evaluation methods and standardized interview questions that take into account gender perspectives

Retention and re-entry:

- Establish and scale up care policies and benefits to respond to the care needs and priorities of workers and managers (childcare, elder care, etc.)
- Ensure equal access to company-supported education and training programmes, in particular on technical and ICT subjects as well as leadership programmes designed for women and gender-diverse people
- Institute an enabling workplace environment, including through policies and practices on:
 - > Flexible working hours, remote work, job sharing, including for the senior and executive level
 - > Comprehensive paid parental, maternity and paternity leave
 - > Prevention and protection against sexual harassment in the world of work
 - > "Returnship" programs to encourage seasoned and qualified women who have taken time off to raise young children, or

for other personal reasons, to rejoin the workforce without having to start their career journey all over

Career advancement and leadership:

- Increase women's representation at the senior and executive level and company boards by setting gender quotas: For company boards, a target of no less than 40 per cent representation of one gender
- Provide equal opportunities to women and men for formal and informal networking and mentoring
- Ensure that women have equal access to retraining and reskilling programmes or develop specific programmes for women
- Provide mentors and role models for women and girls

Education and training:

- Ensure approximate gender parity among participants of technical and executive trainings
- Involve women facilitators also as a way to portray role models in energy
- Specifically target women in technical and vocational education and training (TVET) in sustainable energy-related fields
- Encourage women and girls to enter into STEM fields, especially engineering but also ICT, mathematics, manufacturing and construction
- Develop targeted programs for women and girls to enhance their participation in the sustainable energy workforce
- Provide scholarships and grants for young women and girls to study and conduct internships in the sustainable energy field

B. Project Examples

Fostering Women's Leadership in Utilities in Vietnam |

The Vietnam Energy Company (EVN) has focused on improving recruitment of qualified women and emphasizing gender equality at every level of the workforce through targeted actions – putting the company on the path to [EDGE](#) (Economic Dividends for Gender Equality) certification, a leading global assessment methodology and business certification standard for gender equality. Gender targets were established for management training, shortlists for promotions, interview panel composition and the inclusion of gender equality in key performance indicators. Mentoring programs were established, a women in leadership programme was set up, and gender equality training was delivered to senior executives. The company also improved its communication by changing the style and tone of language of job postings to encourage both men and women to apply, posting public commitments on websites and improving outreach through senior management. As a result, the share of women at director level increased from 0 to 10 per cent, and the share of women in management also increased ([ESMAP](#)).

Transforming geothermal residual hot water and steam production waste into women's economic opportunity |

LaGeo, a geothermal electricity generation company in El Salvador, and its affiliated foundation FundaGeo, seeks to use residual hot water and steam production to promote women's economic empowerment and encourage community leadership. LaGeo aims to create a more gender-inclusive workplace through the design of human resources policies that ensure that women are actively recruited and can access career development opportunities, including sponsoring a nursery and day care facility for its employees' children. These initiatives seem to be paying off, as women hold 32 per cent of permanent positions at the company, with close to 30 per cent of them holding technical positions. In addition, women's livelihoods were improved: Women from 15 local communities have benefited from economic opportunities such as using water condensation to cultivate and sell roses and employing heat residuals to dehydrate fruits. Women from the surrounding villages are involved in project community meetings and attend technical workshops to expand their skills and understanding of the project. LaGeo also seeks to hire women on a temporary basis. Each year, the company hires more than 50 local women, who undergo training

in industrial safety and maintenance activities, to support the annual maintenance of the plants ([USAID and IUCN 2019](#)).

Education and Training in Energy Fields | In the manufacturing sector in developing regions, women's participation is primarily associated with export-oriented, labour-intensive manufacturing in specific low-tech sectors as semi-skilled assembly operators. Opportunities for entering higher skilled roles through skills development and career advancement remain limited. To address the high level of gender stratification in technical fields of study and specialized vocational trainings relevant for employment within industrial sectors, UNIDO's Learning and Knowledge Development Facility increased women's participation in industrial skills training in traditionally men-dominated fields by actively seeking to develop curricula particularly suitable for women trainees and targeted outreach through campaigns in academic centres and on social media ([UNIDO 2019](#)).

Leadership training for women in the South Africa water and energy sector |

To address the low representation of women in top and senior management in the water and energy sectors of the country, the South Africa Energy & Water Sector Education Training Authority (EWSETA) funded women with an advanced career trajectory in these sectors to participate in the WITS Business School Women in Leadership Programme, an executive leadership programme of a business school in South Africa that specifically targets women ([EWSETA 2020](#)).

Mentorship for women in clean energy sectors |

Since 2018, GWNET and its partners developed numerous regional and global women mentoring programmes with the goal of advancing the role of women as agents of change in society and promoting best practices within the sustainable energy sector. Tailored to specific clean energy sectors such as energy storage, wind energy or clean cooking, these programmes aim to increase the number of women role models and to advance the role of women as agents of change in these sectors. More than 400 women from over 70 countries have been mentored by more than 300 mentors so far. In addition, the [Women in Energy Expert Platform](#) connects and empowers over 2,000 women from more than 100 countries working in sustainable energy ([GWNET](#)).

The Equal by 30 Campaign | This global campaign, under the joint International Energy Agency and Clean Energy Ministerial's Equality in Energy Transitions Initiative, aims to enable greater diversity in clean energy professions and supports the achievement of equal pay, equal leadership and equal opportunities for women and other marginalized groups in the clean energy sector by 2030. The campaign asks signatories to endorse princi-

ples, set commitments, and take concrete action to build a more equitable, diverse and inclusive low-carbon future. Several international organizations and NGOs, over 125 private sector entities, and all G7 countries, as well as Australia, Austria, Chile, Finland, the Netherlands, Norway and Sweden have joined the campaign ([EqualBy30](#)).

RESOURCES

Equal Opportunities and Outcomes in the Sustainable Energy Workforce

Women in the workforce in general; sectoral or geographic focus

- [Skills Development and Inclusivity for Clean Energy Transitions 2022](#) | IEA
- [World Energy Employment 2022](#) | IEA
- [Beyond COVID-19: A feminist plan for sustainability and social justice 2021](#) | UN Women
- [Women in senior management roles at energy firms remains stubbornly low, but efforts to improve gender diversity are moving apace 2021](#) | IEA
- [Stepping Up Women's STEM Careers in Infrastructure: An Overview of Promising Approaches 2021](#) | World Bank
- [World Development Report 2019. The Changing Nature of Work 2019](#) | World Bank
- [Empowering Women in the Energy Value Chain in ECOWAS 2019](#) | *Current Sustainable Renewable Energy Reports*
- [Women working in the rooftop solar sector - A look at India's transition to clean energy 2019](#) | IEA, CEEW
- [Progress of the world's women 2015–2016: Transforming economies, realizing rights 2015](#) | UN Women

Women's representation in the energy sector workforce and decision-making

- [Gender Equality for an Inclusive Energy Transition: Women Leading the Way in Solar Energy 2021](#) | IRENA
- [Renewable Energy and Jobs - Annual Review 2021 2021](#) | IRENA
- [Wind Energy: A Gender Perspective 2020](#) | IRENA
- [Energy Transition Role Models: Inspiring the Next Generation of Women Entrepreneurs 2020](#) | GWNET
- [Women for Sustainable Energy – Strategies to Foster Women's Talent for Transformational Change 2020](#) | GWNET
- [Women in Power and Utilities – Index 2018 2019](#) | Ernst & Young
- [Renewable Energy: A Gender Perspective 2019](#) | IRENA
- [Women in Clean Energy: Knowledge, Gaps and Opportunities 2017](#) | IEA, C3E

Gender-responsive workplace policies

- [Delivering Gender Equality. A Best Practices Framework for Male-Dominated Industries](#) 2023 | USAID
- [Gender Equality in the Renewable Energy Industry. Call to Action](#) n/d | UN Women
- [Care work and care jobs for the future of decent work](#) 2018 | ILO
- [Promoting gender equity and women's employment in electric utilities](#) 2018 | Oxford Policy Management, UK Aid
- [Women and the Energy Value Chain – Opportunities for a more inclusive renewable energy sector in Africa](#) 2018 | Global Economic Governance
- [Women in Business Leadership boost Environmental, Social and Governance Performance](#) 2018 | IFC
- [Tackling Childcare – The Business Case for Employer-Supported Childcare](#) 2017 | IFC
- [Gender and Renewable Energy: Entry Points for Women's Livelihoods and Employment](#) 2017 | Climate Investment Funds
- [Engendering Utilities: Improving Gender Diversity in Power Sector Utilities](#) 2016 | USAID
- [Gender Equality and Green Jobs](#) 2015 | ILO
- [Women, energy and economic empowerment](#) 2014 | Deloitte

Women and girls in STEM education

- [Cracking the Code: girls' and women's education in science, technology, engineering and mathematics](#) 2017 | UNESCO
- [Breaking the STEM ceiling for girls](#) 2017 | World Bank

3.2 Promoting women's sustainable energy entrepreneurship

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 (SEforALL 2017c, UN 2018). Independent small and micro-power producers are emerging as the backbone of the new energy industry. Across sectors, women-owned enterprises account for one in three MSMEs globally, with ratios ranging from 18 per cent in South Asia to 50 per cent in Latin America and the Caribbean (World Bank 2020). With an enabling policy environment, women in all their diversity can participate in and benefit from energy sector industries (ADB 2018). Technologies that are co-developed by women have a greater chance of being more widely taken up and disseminated, and women's networks could be leveraged to promote such technologies and provide a springboard to distribute energy services and products.

A. Key Issues

Women play critical roles in increasing awareness and generating demand for clean cooking solutions, in part as a result of their networks and community relationships (Clean Cooking Alliance). Women entrepreneurs also have the potential to be powerful job creators. While research suggests that due to discriminatory gender norms and stereotypes, they still lag behind their men peers as regards job creation (Darnihamedani and Terjesen 2022, OECD and EU Commission 2021), there is also evidence to the contrary: A survey of entrepreneurs in 12 major economies found that women entrepreneurs, despite having shown to be more conservative in their estimations than men, expected a higher workforce increase than men-owned firms, notably by almost one third (31 per cent) (Ernst & Young 2016).

Furthermore, studies suggest that greater economic opportunities for women and girls increase their agency, bargaining power and decision-making within the household and in society more broadly (World Bank 2012, Field et al. 2019). However, little quantitative research exists on women's entrepreneurship in sustainable energy, with the exception of clean cooking, an area dominated by women (Osunmuyiwa and Ahlborg 2019) and where

women entrepreneurs tend to have higher sales performance than men when selling clean cookstoves, as one study found in Kenya (Shankar et al. 2015).

The smaller average size of women-owned businesses compared to men's (IFC 2017), together with women's strong relationships within their communities, has put the focus on their potential as last-mile distributors of clean energy products, such as photovoltaic systems and green off-grid energy solutions. Qualitative evidence and programme results suggest that women entrepreneurs, especially at the micro- and small level, tend to be closer to and more knowledgeable about their customers, 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 (Glemarec et al. 2016). 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. 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. However, to acquire, operate and manage sustainable energy technologies effectively, women's enterprises and cooperatives need appropriate technology transfer, financing, information and training (UN 2020).

In particular, women-owned MSMEs and start-ups have higher unmet finance needs than their men counterparts. Only 28 per cent of MSMEs are owned by women, but they account for 32 per cent of the MSME finance gap. This corresponds to about 70 per cent of women-owned MSMEs being un- or underserved in developing countries. This gender finance gap is especially pronounced in developing economies and also increases with the size of the business (IFC 2017, Carranza et al. 2018).

Access to affordable finance and productive assets as well as land and other collateral remains a major challenge for women-owned micro- and small businesses. The gender gap in account ownership has narrowed from nine per cent, where it had stalled for several years, to six per cent (Asli et al. 2022). However, especially at the

grassroots level, providing financial capital alone has proven not to be effective if unaccompanied by financial literacy and management skills training ([ENERGIA 2018](#)).

Compared to the average start-up, clean energy ventures 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 ([Dolun et al. 2021](#)). Therefore, already existing gender inequalities in access to seed funding and private equity capital, in particular due to conscious and unconscious gender bias of early-stage investors ([Ewens and Townsend 2020](#)), are further amplified and result in a significant gender financing and investment gap among start-up and early-stage entrepreneurs. For example, the 20 per cent of companies that had a woman founder in 2019 only received 2.8 per cent of investments, with a further decline to only 2.3 per cent in 2020, a year heavily affected by the economic repercussions of the COVID-19 pandemic ([Teare 2021](#)). Moreover, in emerging markets, only 11 per cent of seed funding went to companies with women in their founding team. In fact, the average funding received by women-led businesses is only 65 per cent of that received by men-led businesses, and this gender finance gap further increases in later-stage funding ([IFC 2019](#)).

Incubators and accelerators are an important tool for supporting entrepreneurs in developing new climate-resilient, renewable energy and low-emission technologies. However, women entrepreneurs are less likely to access and benefit from the support provided by accelerators: A study of ventures from 160 countries found that only 13 per cent of applicants for accelerators are women-led teams ([GALI 2020](#)). Women's needs and priorities tend not to be considered in the design of services offered by incubators and accelerators. For example, while most accelerator programmes target start-ups in more mature stages, women-led start-ups appear to seek support at earlier stages ([Avnimelech & Rechter 2021](#)). In addition, women's unpaid care and domestic work responsibilities often make it difficult for them to commit to such programs. However, investing in women-led start-ups and young enterprises makes economic sense both in the sustainable energy sector and beyond: Studies suggest that when women entrepreneurs do receive support from investors and accelerators, they generate twice as much revenue per dollar invested compared to their male peers ([IFC et al. 2019](#), [BCG 2018](#)).

BOX 7

Key recommendations for promoting women's entrepreneurship in sustainable energy

- Provide targeted education and training to women entrepreneurs and women-led sustainable energy businesses at the community level and beyond, including on business, strategic and financial management
- Facilitate access to affordable finance and investment (see also section on gender lens investing)
- Showcase role models of successful women sustainable energy entrepreneurs
- Raise awareness among women-led enterprises of existing knowledge and services for sustainable energy ventures
- Facilitate networking and business opportunities for women sustainable energy entrepreneurs, e.g., through dedicated platforms and events

B. Project Examples

Fostering rural women's entrepreneurship with solar energy technologies in India | India produces large quantities of fruits and vegetables, but more than 50 per cent of it goes to waste. The All India Women's Conference promotes the commercial viability of solar drying of fruits, vegetables and condiments, and converts them into profitable products on a micro enterprise scale. They also equip rural poor women with solar dryers and train them on proper use. Cereal grains, vegetables, fruits, etc. can be dried in the solar dryers under clean conditions in a reasonably short time. The technology of dehydration gave several benefits such as minimizing food waste and facilitating higher income for rural women ([Women and Gender Constituency \(UNFCCC\) / CTCN](#)).

The Solar Sisters project in sub-Saharan Africa | Solar Sisters is an NGO investing in women's clean energy businesses in off-grid communities in Africa. Women are provided with start-up kits, accompanied by training and mentoring sessions that enable them to set up their businesses in selling solar lights, solar-powered home systems and clean cookstoves in their communities. Studies and evaluations reveal multiple benefits of the

initiative: The solar businesses allow women entrepreneurs to double their household income; the income generated by the entrepreneurs is reinvested 90 per cent back into their families, thus providing benefits for the next generation; and the women who buy the solar lamps can reduce household expenses by 30 per cent when the solar energy replaces expensive kerosene ([Solar Sisters](#)).

Supporting women sustainable entrepreneurs as a means to increase climate-resilient energy infrastructure | As part of a project to strengthen women as agents of change in countering energy poverty and strengthening climate-resilient energy systems in West Africa, the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), supported by the Climate Technology Centre and Network (CTCN) and the Private Financing Advisory Network (PFAN), provided women-led sus-

tainable energy businesses with multi-level support in incubating and accelerating their businesses. Selected based on a call for proposals, twelve start-ups received coaching support from experienced professionals on project development, structuring and financing. Upon completion of the coaching phase, the projects were introduced to interested investors, and received follow-up support and deal-making facilitation. The top four projects with a total investment request of over \$30 million USD were also invited to present their business plans to an international venture capital investment audience. A jury of high-level investors and climate finance experts selected as joint winners a company providing high-quality solar home systems and efficient appliances to off-grid areas in Senegal, and a Nigerian company offering solar power systems to small- and medium-sized enterprises on a rent-to-own basis ([CTCN](#)).



Photo: UN Women/Gaganjit Singh

RESOURCES

Gender and Energy Entrepreneurship

- [Women in cleantech are key levers for an inclusive recovery 2021](#) | UNIDO
- [Women Entrepreneurs as Key Drivers in the Decentralised Renewable Energy Sector: Best Practices and Innovative business Models 2020](#) | ENERGIA
- [Reaching the Last Mile – Women’s Social and Sustainable Energy Entrepreneurship 2018](#) | MIT-CITE, Solar Sister, wPOWER
- [Supporting last-mile women energy entrepreneurs: What works and what does not 2018](#) | ENERGIA
- [Prefeasibility Study on Business Opportunities for Women in a Changing Energy Value Chain in West Africa 2018](#) | ECREEE
- [Fostering Women’s Entrepreneurship in ASEAN \(Association of Southeast Asian Nations\) 2017](#) | ESCAP
- [Removing barriers to women entrepreneurs’ engagement in decentralized sustainable energy solutions for the poor 2016](#) | AIMS Energy
- [Removing barriers to women entrepreneurs’ engagement in decentralized sustainable energy solutions for the poor 2016](#) | UN Women, UNDP
- [Global Programme Document Women’s Entrepreneurship for Sustainable Energy 2016](#) | UN Environment, UN Women
- [Clean Cooking: Empowered Entrepreneur Training Handbook 2015](#) | Global Alliance for Clean Cookstoves

3.3 Gender-responsive sustainable energy laws, policies and institutions

The last decade showed steady progress on sustainable energy policy; however, the pace has slowed down since 2017, with the most significant decline in policies related to renewable energy and energy efficiency (ESMAP 2020). The COVID-19 response and recovery strategies thus constitute an important opportunity to strengthen inclusive, sustainable and gender-responsive energy frameworks that fully use the potential of women as agents of change. However, data from the [UNDP-UN Women COVID-19 Global Gender Response Tracker](#) reveals that COVID-19 response measures were mostly gender blind.

A. Key issues

Gender perspectives are often overlooked in the energy sector in general and in energy policies in particular. 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. In fact, the vast majority of national energy policy frameworks are still gender blind. 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 characterized therein as potential stakeholders or beneficiaries, but rarely as agents of change ([IUCN and USAID 2017](#)). Therefore, from the subnational and national levels to regional and international platforms, it is important that policymakers are aware of and skilled to address gender issues in the sustainable energy sector.

When initiating the planning process, there are many things that should be considered by energy ministries: establishing gender-responsive baselines, using assessments and audits of gender-specific risks and underlying barriers, as well as the use of gender matrices, checklists and guidelines to shape the development of gender-responsive energy policies ([Clancy and Mohlakoana 2020](#)). Accountability frameworks should also monitor and report on the impact of gender targets and the result of energy policies. The percentage of women involved in designing energy plans and policies, including those in decision-making positions, should be assessed, and consultations regarding energy planning should be undertaken with ministries of gender, women's associations

and women entrepreneurs. A cross-sector and integrated approach to policy making is vital, bridging interests across the energy, environmental, gender, finance and industry ministries, amongst others. This can be achieved through the introduction of gender focal points, setting up of cross-sector committees or task forces and inclusion of assessments of compliance with gender-responsive guidelines as part of the performance evaluation of energy sector staff. Training should also be provided to energy officers in order to help them mainstream gender in their energy-related policies.

By amplifying the voices of stakeholders, renewable energy associations can influence energy policies and thus advance the sustainable energy transition. However, women's representation in renewable energy associations is uneven, and women are yet to be systematically included in decision making. In the last decades, many business associations and networks by and for women were founded to counterweight gender imbalances in the energy sector and promote gender-responsive action ([GWNET 2022](#)). These associations often provide training, networking events, accelerator programmes, scholarships and career counselling for their members ([USAID 2021](#)). A non-exhaustive list of organizations and networks operating in the intersection of gender and sustainable energy is included in [Annex 2](#).

Underlying all key policy actions is the need for the generation, collection, and use of gender statistics, including gender-disaggregated quantitative and qualitative data that reflect all aspects of energy production, consumption and development impacts. Efforts are needed to support the generation, collection and use of gender-disaggregated quantitative and qualitative data on energy use, energy sector employment and impacts of energy development.

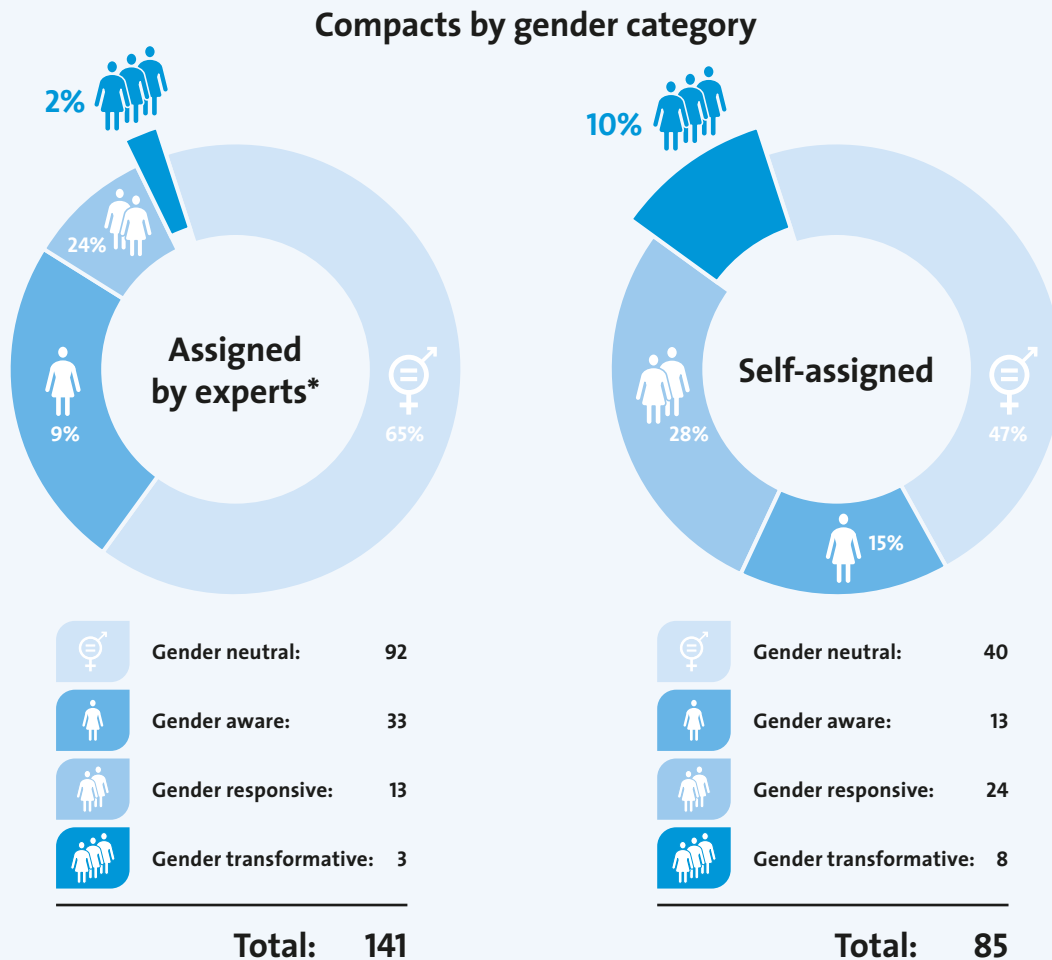
Gender gaps in energy policies and ensuing implementation programmes should, in particular, be measured in four key areas: energy poverty, empowerment and leadership, entrepreneurship, and enabling environments ([UN 2022](#)). This will serve as a baseline for evaluation purposes and be instrumental in defining and monitoring gender-responsive targets and indicators. In this regard, the SDG 7 Technical Advisory Group has proposed a set of indicators that measure interlinkages between SDG 7 and SDG 5 ([UN 2022](#)).

At the same time, multilateral funds that finance sustainable energy initiatives, such as the Global Environmental Facility and the Green Climate Fund, have adopted

comprehensive gender policies that guide their support. While significant space remains for further improvement, these policies have led to incremental advances (GEF 2017).

FIGURE 8
Gender assessment of Energy Compacts

As part of the UN High-Level Dialogue on Energy and the Decade of Action for the SDGs, UN-Energy called on stakeholders to develop and implement ‘Energy Compacts’. Energy Compacts are voluntary commitments to action, with specific targets and timelines to support progress on the achievement of SDG 7 by Member States, civil society, the private sector and others. More than 185 Energy Compacts have been registered. Actions defined in an Energy Compact can also contribute to Nationally Determined Contributions under the Paris Agreement of the UNFCCC and the broader achievement of the 2030 Agenda and the Sustainable Development Goals. In 2022, the Gender and Energy Compact, led by UNIDO, ENERGIA and GWNET, assessed all Energy Compacts registered thus far on their integration of gender dimensions against four categories, using a keyword analysis. In addition, all Energy Compact stakeholders conducted a self-assessment as part of their yearly monitoring report. A comparison of results shows that a higher number of stakeholders self-assess their energy compacts as gender transformative or gender responsive, compared to the independent assessment.



* The experts are from ENERGIA, GWNET and UNIDO, who lead the Gender and Energy Compact.

B. Project examples

Kenya's Gender Policy in Energy | As part of its commitment to achieving the SDGs, Kenya's Ministry of Energy was the first in Africa to launch a gender policy. Released in November 2019, the Gender Policy aims to raise the level of gender awareness, change attitudes and inculcate an engendered work culture among staff in the energy sector, and sets an important milestone in the process towards ensuring affordable, reliable, sustainable and modern energy for all by 2030. ENERGIA and Practical Action Eastern Africa supported the development of this unique policy ([Ministry of Energy Kenya 2019](#), [ENERGIA 2019](#)).

EmPower: Women for Climate-Resilient Societies | UN Women's joint programme with UNEP in Asia and the Pacific (2018-2022) aims to build women's resilience in one of the most vulnerable regions to climate change, with a particular focus on Bangladesh, Cambodia, and Vietnam. The programme is working with government and civil society partners and has:

- Strengthened national and local capacities of women's rights and civil society organizations and facilitated their collective engagement in climate and disaster risk reduction (DRR) decision-making processes
- Increased the commitment and recognition of national statistics offices and relevant ministries to gender statistics for evidence-based decision-making in climate change and DRR
- Enabled gender-responsive climate change, DRR, and renewable energy policy processes, including preparation of Nationally Determined Contributions (NDCs) and National Adaptation Plans
- Supported women's economic empowerment through renewable energy-based livelihood development and creation of an enabling environment for women entrepreneurship
- Improved regional mechanisms through strengthening partnerships and co-developing knowledge on climate change and disaster risk reduction to advance gender equality and human rights

The project aims to achieve impact at scale through the development of a second phase (2023-2027) to promote the leadership of women and other marginalized groups in climate and DRR decision-making, contribute to resilient

recovery and a gender-responsive just transition, and facilitate the implementation and monitoring of gender commitments in climate and DRR policies and actions. The work will leverage innovative methodologies and knowledge produced, including the series of [State of Gender Equality and Climate Change Reports in Cambodia, Viet Nam, and Nepal](#), [Training Manual on Gender and Climate Resilience](#), [e-learning course on Gender Equality and Human Rights in Climate Action and Renewable Energy](#), [mapping of Asia Pacific Progress on Gender-responsive NDCs](#), and [Gender integration in renewable energy policy - A guideline for renewable energy policy and decision makers](#).

Ethiopia – Gender Actions as part of the National Electrification Program | With the support from the World Bank Group and ESMAP, the Government of Ethiopia has launched a major reform of its energy sector to reach universal electrification by 2025, which also ensures equitable institutions and equal benefits for women. Working together with teams from across the World Bank, the program spearheaded a first-of-its-kind programme, [Closing Gender Gaps Across Ethiopia's Energy Sector](#), that looked at gender equality across the entire US\$1.5 billion World Bank energy portfolio in the country, rather than project by project. Stakeholder consultations identified key discrepancies between opportunities for women and men, and shaped national policy by incorporating specific actions in Ethiopia's National Electrification Program. This has leveraged substantial resources for action on women's employment, gender-based violence, childcare and women's entrepreneurship. The country team received the World Bank President's Award for Excellence for its pioneering work to close gender gaps across Ethiopia's electricity sector ([ESMAP](#)).

ECOWAS Directive on Gender Assessments in Energy Projects | In June 2017, Heads of ECOWAS Member States adopted the landmark ECOWAS Directive for Gender Assessments in Energy Projects, with the double aim to identify and mitigate potential adverse and discriminatory impacts on women or men from energy projects, and to promote and increase the participation and capacity of women and men in sustainable energy project development. It requires Member States to adopt, within a transition period of two years, appropriate domestic legal frameworks requiring a gender assessment. It also requires a gender management plan as a prerequisite for approval of projects that are likely to

have significant gender-related impact. Importantly, the Directive clarifies that its provisions directly apply to energy project developers, regardless of whether it has been transposed into national law of Member States. The Directive also stipulates detailed requirements for gender assessments and mitigation of negative gender-related impacts, minimum monitoring and reporting requirements, the need for public participation possibilities in the approval process on energy projects, and enabling national authorities to impose fines and take legal action in case of non-compliance with decisions and recommendations. The implementation of this Directive is informed by the 2017 ECOWAS Policy for Gender Mainstreaming in Energy Access which outlines national obligations and introduces gender dimensions and considerations in energy interventions. Its objectives have been translated into national action plans, e.g., in [Ghana](#) and [Guinea Bissau](#).

Assessing and improving the gender-responsiveness of green industry policies | In Cambodia, Peru, Senegal and South Africa, a joint UN Women-UNIDO programme entitled “Economic Empowerment of Women in Green Industry” supported governments in assessing the gender-responsiveness of green industry policies, as well as follow-up actions emerging from these assessments. As a result, governments have embarked on reformulating existing and formulating new gender-responsive green industry policies. For example, in Senegal, the recommendations of the report were included in the development of a new environmental policy. In South Africa, the Renewable Energy Masterplan is now gender-responsive, and sensitization on opportunities and challenges for women in green industry was increased. This approach was complemented with capacity building of policymakers and women entrepreneurs, as well as with knowledge-creation and -dissemination activities. In South Africa and in Peru, groups of women who attended the trainings started their own business networks ([UNIDO](#)).

RESOURCES

Gender-Responsive Energy Governance

Gender-responsive policies and institutions in the energy sector

- [Addressing Energy’s Interlinkages with other SDGs. Policy Brief in Support of the High-level Political Forum 2022](#) | United Nations
- [How to Set Up a National / Regional Network of Women in Sustainable Energy 2022](#) | GWNET
- [Accelerating SDG 7 Achievement - Policy Brief No. 12: Global Progress of SDG 7 - Energy and Gender 2021](#) | ENERGIA, World Bank ESMAP, UN Women
- [Gender integration in renewable energy policy - a guideline for renewable energy policy and decision-makers 2020](#) | EmPower and UNEP
- [Gender audits: An approach to engendering energy policy in Nepal, Kenya and Senegal 2020](#) | Clancy and Mohlakoana
- [Blueprint Guide for Creating Gender-sensitive Energy Policies 2019](#) | Clean Energy Solutions Center
- [Energizing Equality: sub-Saharan Africa’s integration of gender equality principles in national energy policies and frameworks 2018](#) | IUCN
- [Practical Guide to Women in Energy Regulation 2018](#) | USAID
- [Policy Matters: Regulatory Indicators for Sustainable Energy \(RISE\) 2018](#) | World Bank, ESMAP

- [Evaluating Government and Business Landscapes on Women’s Empowerment in Sustainable Energy 2018](#) | SEforALL
- [Situation Analysis of Gender and Sustainable Energy in the East African Community 2018](#) | ECREEE, Power Africa
- [The enabling power of energy in promoting gender equality: Gender in the SEforALL country action process documents 2017](#) | IUCN and USAID
- [Energizing Equality: the importance of integrating gender equality principles in national energy policies and frameworks 2017](#) | IUCN, ENERGIA and USAID
- [Gender, Energy and Policy – A Review of Energy Policies in East and Southern Africa 2017](#) | UN Women, UNDP, UNEP
- [The Gender and Energy Research Programme: What we know so far and policy considerations 2017](#) | ENERGIA
- [Gender and Fossil Fuel Subsidy Reform: Current status of research 2016](#) | IISD
- [Gender and Energy – Policy 2016](#) | EIGE
- [Women and Power: Overcoming Barriers to Leadership and Influence 2016](#) | Overseas Development Institute
- [SEforALL Global Tracking Framework: Progress Towards Sustainable Energy, Chapter 6 – Cross Cutting Issues of Energy; Gender 2015](#) | World Bank, ESMAP, ENERGIA
- [Situation Analysis of Energy and Gender Issues in ECOWAS Member States 2015](#) | ECREEE, Power Africa

Policy examples and model acts:

- [Green Climate Fund \(GCF\) Gender Policy \(updated\) 2019](#) | GCF
- [National Gender Policy for the Ministry of Energy, Kenya 2019](#) | Ministry of Energy, Kenya
- [Global Environment Facility \(GEF\) Policy on Gender Equality 2017](#) | GEF
- [ECOWAS Policy for Gender Mainstreaming in Energy Access 2017](#) | ECOWAS
- [ECOWAS Model Act/Regulation on Gender Assessment in Energy Projects 2017](#) | ECOWAS

3.4 Financing for a gender-responsive sustainable energy transition

Gender-responsive energy financing is scarce compared to other sectors. In fact, the energy sector is the one with the lowest share of gender-responsive or gender-specific bilateral aid: While overall, 45 per cent of official development assistance (ODA) of the members of the OECD's

Development Assistance Committee (DAC) is gender-responsive or gender-focused, this share is about two thirds lower in the energy sector with only 18 per cent (OECD 2022). The figures available do not distinguish whether this financing is for sustainable energy initiatives.

FIGURE 9

Gender-responsive sustainable energy projects

It is critical that governments and donors increase ODA and other financing to meet their commitments to gender equality and sustainable energy. Towards this end, the means to plan gender-responsive energy initiatives and report on their outcomes should be strengthened. It is also important that governments and donors provide sufficient financial resources and technical capacity such that project managers and implementers understand and report against gender equality markers. This three-step methodology can support financing energy access projects with a gender equality objective:



Source: SEforALL and Climate Policy Initiative, *Energizing Finance: Understanding the Landscape 2020*.

3.4.1 Gender lens investing

The distribution of productive resources between women and men and their equal access to assets and financing are ubiquitous challenges that profoundly affect the sustainable energy sector. Significant gender inequalities remain regarding access to finance for women's enterprises, including accessing contracts and benefiting from sustainable energy policy budgets, public investment programmes and tax subsidies. The fact that women-owned MSMEs and start-ups have higher pro rata unmet finance needs than their men counterparts has particularly negative effects in the capital-heavy sustainable energy sector.

Applying a gender lens to investments would reduce the finance gap between women's and men's enterprises. Gender-responsive energy financing can contribute to realizing human rights, creating gains for gender equality as well as for private investors (Norad 2011). In the public sector, introducing gender-responsive budgeting, public procurement contracts and subsidies can contribute to a more gender-equal distribution of resources. The same applies to financial resources and procurement offered by the private sector, including the provision of financial products, services, loans and investments designed for women.

A. Key Issues

Both public and private sector investment has the potential to contribute to gender equality and the empowerment of women. Investors can request companies to design and practice meaningful activities to promote gender equality, as a funding prerequisite. Moreover, some donor-funded credit lines and financing facilities are explicitly committed to gender mainstreaming in their lending and investment decisions ([USAID](#)).

BOX 8

What is gender lens investing?

Gender lens investing is the deliberate incorporation of gender considerations into investment analysis and decisions in order to improve social and business outcomes. Gender lens investing can have two objectives:

1. Investing with a specific focus on women, which includes three lenses:
 - > investing in women-owned or women-led businesses,
 - > businesses that promote workplace equity, or
 - > businesses that offer products or services that are beneficial to women and girls
2. Mainstreaming gender into investment decisions. This requires gender indicators to be included from pre-investment activities to post-deal monitoring, and potential investee ventures to be assessed on their gender mainstreaming efforts.

Source: Value for Women 2020; Criterion Institute, [The State of the Field of Gender Lens Investing](#), 2015.

Research suggests that gender lens investing is economically beneficial for investors, boosting productivity, efficiency, and return on investment. Positive correlations between gender diversity and performance were identified regarding both the staff composition of investment companies as well as of portfolio companies. For example, gender-diverse senior leadership teams of portfolio companies achieved higher returns than companies with low diversity in their leadership teams ([IFC 2019](#)). While these findings are relevant for investments across all sectors, they are especially relevant for the men-dominated sustainable energy sector.

Despite evidence showing the benefits of gender lens investing ([Value for Women 2018](#)), this knowledge has not yet been sufficiently translated into practice ([CIF 2022](#)). While investments in the sustainable energy sector have increased ([SEforALL 2017](#)), gender lens investment is still limited, with only a relatively low amount of capital being invested using a gender lens, although it is becoming a growing movement ([Drakeman and Biegel 2018](#)). In addition, there is a gap between the perceived importance of gender lens investing and its application in practice in the private sector: While 65 per cent of private investors report they value gender diversity ([IFC 2019](#)), only a quarter of private investors ask about gender diversity in the due diligence phase. Two main reasons have been suggested for this discrepancy. First, gender lens investment is primarily viewed as belonging to public companies and the social impact sphere rather than as a good business practice within the private market. Additionally, investors interested in taking a gender lens perspective to their investments often lack knowledge on the 'how-to' ([Calvert Impact Investing 2018](#)).

BOX 9

Key recommendations for enhancing gender-responsive financing for sustainable energy

Public and private investments should prioritize:

- **Women's enterprises and entrepreneurship:** Invest in women-led or women-owned companies or gender-responsive businesses⁵ that are advancing sustainable energy
- **Women leaders:** Invest in sustainable energy companies or enterprises where the share of women in senior management stands at 20-30 per cent or the share of women on boards of directors is at least 30 per cent
- **Women employees:** Invest in sustainable energy companies or enterprises where the share of women in the workforce amounts to at least 30-50 per cent, and which have established and demonstrate compliance with gender equality policies and practices within their workforce, supply chains and organizational structures, including to recruit, retain and promote women and gender-diverse persons
- **Women consumers:** Invest in gender-responsive companies or enterprises that produce and

deliver sustainable energy technologies, products or services that are designed with a gender perspective and aim to benefit women

In making these investments:

- Ensure that teams and committees deciding on investments are gender diverse and aware of the advantages of promoting gender equality and empowering women, and that investor organizations and firms themselves adopt and adhere to gender equality policies, practices and compliance procedures
- Funds should create funding calls specifically targeting women-owned and women-led start-ups and enterprises
- Accelerators, incubators, platforms for networking and information, and other entrepreneurship support facilities should provide targeted training, mentors, role models and networking opportunities for women energy entrepreneurs

B. Project Examples

Women's Livelihood Bond Series | Impact Investment Exchange, a Singapore-based social impact investment firm, set up the Women's Livelihood Bond Series in 2017, the first social bond with a gender lens to be listed on a stock exchange. It pools together high-impact women-focused enterprises. This multi-country, multi-stakeholder portfolio is sold to private sector investors. By 2021, the Women's Livelihood Bond Series had mobilized over USD 48 million and empowered more than 815,000 women across Asia-Pacific. The portfolio of the most recent bond further increased its focus on sustainability by investing in sustainable SMEs in Asia that empower women to advance climate action (PFAN).

Deetken Impact's gender-smart investing approach / Ilu Women's Empowerment Fund | Deetken Impact is a Canadian impact investing firm focusing on supporting businesses and social enterprises in Latin America and the Caribbean. One of its priorities is supporting women's empowerment and implementing investment management practices that empower women (Deetken Impact). Portfolio investments include financial institution services for low-income women such as financial services and gender-smart investments in renewable energy. 79 per cent of clients and 41 per cent of Deetken Impact's individual investors were women, and 50 per cent of the full-time jobs created through investments were for women (Deetken Impact). Deetken Impact, in

⁵ A gender-responsive business makes gender equality a core objective internally and externally, regardless of the gender identity of the owner(s), in alignment with international norms and standards, either voluntarily or in compliance with national law and policy.

cooperation with the Latin American NGO Pro Mujer, also launched the Ilu Women's Empowerment Fund. This gender-specific fund invests in businesses that promote women in leadership and governance, products and services that meet the needs of women and girls as well as gender-responsive value chains and equity ([Deetken Impact](#)).

UNIDO's Gender Lens Investing Training Programme - Module on Climate Change | It is crucial to include gender dimensions in investment and decision-making processes - not only to ensure more inclusive and sustainable outcomes for investors, but especially to close the gender finance gap experienced by women entrepreneurs around the world, which is also a reflection of systemic challenges and unequal power dynamics. For this purpose, UNIDO, led by its Investment and Technology Promotion Office Germany, PFAN and GCIP, has developed a publicly accessible online training series aimed at sensitizing its participants (from the wider public) about the benefits of gender lens investing. The training provides tools on establishing structures and strategies in a view to support women entrepreneurs, advance gender-responsive products, and promote more diverse and inclusive work environments. The training features a dedicated module on climate financing with a gender lens, covering the importance of women's leadership in climate change mitigation and adaptation and the role of financial advisors in promoting inclusive cleantech accelerators and incubators ([UNIDO](#)).

A gender-responsive approach as a requirement for sustainable energy project financing | The Global Environmental Facility (GEF) is the world's largest funder of biodiversity protection, nature restoration, pollution reduction, and climate change response in developing countries, including renewable energy and energy efficiency initiatives. It funds developing countries to meet the objectives of international environmental agreements as well as global, regional and national initiatives that generate global environmental benefits. Its [2017 Policy on Gender Equality](#) requires a gender-responsive approach to be applied throughout the identification, design, implementation, monitoring and evaluation of GEF-financed activities. This also applies to project budgeting and staffing and requires implementing partners to conduct a gender analysis as a prerequisite for approval. Projects are requested to use gender-responsive Indicators and collect gender-disaggregated data, targets and results. The Green Climate Fund (GCF) was the first climate finance mechanism to mainstream gender perspectives from the outset of its operations, and updated its [Gender Policy](#) and [Gender Action Plan 2020-2023](#) in 2019. The GCF mainstreams gender equality considerations into the entire project cycle of all projects it funds for climate change mitigation and adaptation to ensure that gender co-benefits are obtained, including through engaging women and men of all ages in the design, development and implementation of strategies and activities to be financed. Gender mainstreaming is fundamental to any project intervention and does not necessarily signify additional costs; in fact, mainstreaming gender makes climate interventions more effective and efficient.

RESOURCES

Gender Lens Investing

- [Inclusive gender and climate finance - Centring frontline, underrepresented and underserved communities in investment 2023](#) | 2X Global
- [Donor Agency Engagement in Gender Lens Investing: Approaches and Opportunities 2022](#) | DCED
- [The Business Case for Gender Equality 2022](#) | USAID
- [Regional Briefs 2020-2021](#) | GenderSmart
[Africa](#), [Europe & UK](#), [Latin America and the Caribbean](#), [Southeast Asia & Asia-Pacific](#)
- [Gender Lens Investing: Legal Perspectives 2021](#) | Calvert Impact Capital
- [Energizing Finance. Understanding the Landscape 2021](#) | SEforALL and Climate Policy Initiative
- [Gender & Climate Investment: A Strategy for Unlocking a Sustainable Future 2021](#) | GenderSmart
- [Case Study: Gender Smart Investing Addressing the gender gap in the off-grid energy sector in Sub-Saharan Africa 2021](#) | USAID
- [Moving Toward Gender Balance in Private Equity and Venture Capital 2020](#) | IFC, RockCreek, Oliver Wyman
- [Opening Doors: Mapping the Landscape for Sustainable Energy, Gender Diversity and Social Inclusion 2017](#) | SEforALL
- [Energizing Finance: Scaling and Refining Finance in Countries with Large Energy Access Gaps 2017](#) | SEforALL

Tools:

- [Gender-Smart Green Financing Toolkit 2022](#) | Value for Women
- [Ways to Gender Smart Climate Finance: Climate Change Mitigation 2022](#) | 2X Climate Finance Taskforce
- [Gender-Smart Climate Finance Guide - Sustainable Energy 2021](#) | Data 2X
- [G-SEARCH tested tools & approaches for gender lens investing 2021](#) | G-SEARCH
- [Private Equity and Value Creation: A Fund manager's guide to gender-smart investing 2020](#) | CDC, IFC
- [Gender Lens Investing Tool: Designing an Action Plan n/d](#) | Criterion Institute

3.4.2 Gender-responsive procurement in the sustainable energy sector

A. Key Issues

Public procurement accounts for around 12 per cent of global GDP (Bosio and Djankov 2020), however, women are underrepresented as suppliers. Gender-responsive procurement (GRP) is defined as the selection of services, goods and civil works that considers their impact on gender equality and women's empowerment. The premise of GRP is that the significant financial flows from public and private procurement can be shaped to support positive opportunities and outcomes for women. This can be done through affirmative sourcing from women's enterprises and procurement from gender-responsive enterprises that have positive outcomes for women (UN Women and ILO 2021), and includes building values into procurement systems that benefit society, such as sustainability. Although gender-disaggregated data on public procurement in the sustainable energy sector is limited, it is likely that the share of procurement from women's enterprises is very low. Because sustainability and gender equality within procurement systems is intrinsically linked, they can be leveraged in concert in the sustainable energy sector.

Sustainable and gender-responsive public procurement has been acknowledged as a key driver for innovation, job creation and the development of small and medium-sized enterprises (UNEP 2018). It has also been associated with increased revenue and reduced procurement spend, greater supplier availability and resilience, stronger brand reputation, more innovation and adaptability as well as improved service delivery (UN Women 2022).

However, gender-responsive procurement is only practiced meaningfully in a handful of countries, even though women-owned businesses face considerable barriers to accessing procurement tenders and winning

procurement contracts. The inadequate design of many procurement processes prevents more inclusive gender outcomes (Chatham House 2017b). This is inter alia due to the smaller average size of women-owned businesses and the entailed lack of resources.

Thus, common challenges for smaller businesses in obtaining public contracts tend to have a disproportionate effect on women-owned businesses. This includes lack of information about tender opportunities, overly complex and burdensome tender procedures, unreasonable technical and financial qualification requirements, high advance costs to be borne by the vendor, large contract sizes and insufficient time to assemble tenders (ITC 2014, UN Women 2017, UN Women 2021). Also, excessive finance- and quality-related requirements, such as overemphasis on costly industry standards and certifications, and the need to show a proven and longer track record, are especially difficult to meet for women-owned businesses (ITC 2014).

Several countries and some intergovernmental sustainable energy actors have adopted commitments and measures for gender-responsive procurement. At the same time, the focus on sustainable and energy-efficient public procurement increased during the last decade. The next step would be to combine the application of these considerations and increase the share of public tenders that apply both a gender lens and a sustainability lens.

Gender-responsive procurement is also relevant for the private sector and for development cooperation projects on sustainable energy. While efforts have been made to encourage private sector engagement with gender-responsive procurement, data is lacking to assess the uptake.

BOX 10

Key recommendations for enhancing gender-responsive procurement in the sustainable energy sector

Enable access for women's enterprises

- As a prerequisite, enable vendors to identify as women-owned energy MSMEs, subject to validation/certification, e.g., based on the International Organization for Standardization's definition of women-owned and women-led businesses ([ISO IWA 34:2021](#))
- Include a quota for procurement of energy related products and services to be sourced from women-owned MSMEs
- Reserve certain (types of) contracts to women-owned MSMEs, or restrict competition for these (types of) contracts to MSMEs
- Reduce, as much as possible, the complexity and high barriers for entry of the contracting process
- Reduce, as much as possible, the size of tenders and allow for collaboration
- Ensure prompt payments and avoid high advance costs to be borne by the bidder, since sustainable energy systems are usually connected to high upfront costs
- Provide feedback for unsuccessful bidders
- Institute mandatory reporting requirements for businesses of certain sizes about key gender-equality metrics

Support capacity development for women-owned and gender-responsive suppliers

- Disseminate calls for tenders on platforms and networks frequently used by women-owned

businesses and women's business organizations or specific women in energy networks such as GWNET or WiRE, and specify in the call for tender that women-owned businesses are specifically encouraged to apply

- Organize networking and capacity-building programmes targeting women-owned energy businesses and women's business associations and networks on bidding procedures and related topics

Support capacity development for procurement organizations

- Improve buyers' understanding of gender equality and sustainability standards
- Provide capacity development for buyers to implement strategies to improve sourcing from gender-responsive and sustainable enterprises
- Put in place tools and systems to reduce transaction costs of identifying women's enterprises and gender-responsive enterprises that meet relevant criteria

Generating sex-disaggregated data on procurement access

- Monitoring and tracking of metrics related to gender equality and sustainability and making it publicly available
- Conduct impact evaluations of specific procurement policy interventions

Adapted from: UN Women, [Building Gender-Responsive Procurement, lessons from research and practice](#), 2022.

B. Project Examples

UN Women's Stimulating Equal Opportunities for Women Entrepreneurs Flagship Programme Initiative

| With the support of UN Women, South Africa began mobilizing stakeholders to advocate for preferential procurement in policy frameworks in 2018. This resulted in: 1) The public commitment of H.E. Cyril Ramaphosa, President of the Republic of South Africa, to earmark 40 per cent of preferential procurement for women-owned businesses in both the public and private sectors; and 2) the integration of gender-responsive procurement into the National Strategic Plan on Gender-based Violence and Femicide. To operationalize these commitments, and with a focus on galvanizing the private sector, UN Women worked with the National Task Team on Preferential Procurement, the Women Economic Assembly (WECONA) and others. As a result, WECONA has established and launched 12 different sector streams to operationalize the 40 per cent preferential procurement quota in the private sector, including in key sectors such as energy, waste management, transport and finance. Women and industry associations documented and created a database of 304 women-owned businesses that were fully compliant and ready to do business with the Government. The database was then shared with the Department of Energy ([UN Women](#)).

Kenya | Kenya's [Public Procurement and Asset Disposal Act 2015](#) requires all State organs and public entities to set aside at least thirty per cent of its procurement value in every financial year for enterprises owned by women, youth, persons with disabilities and other disadvantaged groups. Procurement processes of tenders reserved for this group of enterprises are also exempt from the requirement for the successful tenderer to provide a security deposit for the due delivery of the public contract. State organs and public entities are also required to report every six months to the Parliament on their compliance

with these requirements. The definition of public entities includes state corporations in the energy sector such as the Rural Electrification Authority. A specific [website](#) has been set up for this type of tenders which provides guidance on the process and eligibility criteria. Despite initial challenges in the implementation of these provisions, the proportion of Kenya's public procurement spending to women-owned businesses and other disadvantaged groups has gradually increased, inter alia, due to targeted training of women entrepreneurs ([UN Women 2021](#)).

Dominican Republic | The Dominican Republic's General Directorate of Public Contracts adopted an inclusive and sustainable public procurement strategy in 2012. Since then, the country employed gender-responsive procurement to improve the inclusion of women-owned and women-led businesses. Specific actions towards reducing entry barriers for companies owned and led by women include: improving the supplier data system, collecting and analyzing information from different stages of procurement processes, sensitization and capacity building of procuring entities and women-led businesses, and introducing a quota (5 per cent) for women-owned MSMEs. As a result, contracts awarded to smaller businesses owned and led by women increased by 16 percentage points between 2012 and 2019, and the spending value of these contracts more than tripled during that period ([Colman 2020](#)).

The Energy Community | In 2021, the Energy Community, an international organization, announced its commitment to advancing gender equality and gender-responsive policies in its procedures for the procurement of services and works. Information on the ratio of women in the applicant's workforce will be systematically requested and considered in technical specifications, selection criteria and contractual terms ([Energy Community 2021](#)).

RESOURCES

Gender-Responsive Procurement

- [Procurement's Strategic Value: Why gender-responsive procurement makes business sense 2022](#) | UN Women
- [Empowering Women through Public Procurement & Enabling Inclusive Growth 2021](#) | UN Women
- [Rethinking gender-responsive procurement: Enabling an ecosystem for women's economic empowerment 2021](#) | UN Women and ILO
- [Building Gender-Responsive Procurement, lessons from research and practice 2021](#) | UN Women
- [Women Empowerment Principles' Guide to Gender-Responsive Procurement 2020](#) | UN Women and Global Compact
- [How to empower women-led businesses and make public procurement more inclusive 2020](#) | Value for Women and Open Contracting Partnership
- [Building Circularity into our Economies through Sustainable Procurement 2018](#) | UNEP
- [The Power of Procurement: How to Source from Women-Owned Businesses. Corporate Guide to Gender-Responsive Procurement 2017](#) | UN Women
- [Empowering women through public procurement 2014](#) | ITC

3.4.3 Gender-responsive budgeting in the sustainable energy sector

A. Key Issues

Gender-responsive budgeting arose as an instrument for mainstreaming gender considerations into policies and budgets and to monitor and assess their gendered impacts (Budlender and Hewitt 2003). Government budgets, in particular those for energy planning, are often gender blind and perpetuate structural gender inequalities (ENERGIA 2008). This applies to both revenue and expenditure. Around 80 countries have applied some variant of gender-responsive budgeting, but the efforts vary significantly. While prominent gender-responsive budgeting initiatives have mainly focused on sectors such as education and health, efforts have also addressed physical infrastructure such as energy, transport, water and electricity (IMF 2016).

B. Project Examples

Gender-responsive budgeting (GRB) is not yet used widely in the energy sector. However, several countries prioritize the application of GRB to expenditures related to sustainable energy: In Mongolia, public funds allocated for the energy efficient refurbishment of buildings integrate gender considerations into the decision-making process (GIZ). Uganda developed a [Gender and Equity Compact](#) in 2017 to support gender and equity planning and budgeting in the energy and mineral sector. In Mexico, gender perspectives are considered in public budgets at state and municipal levels (UN Women 2015), including for energy and climate change (Patel et al. 2021). Mexico is also one of the few countries to regularly conduct sectoral analyses of government expenditures on gender equality - which show that the energy sector is among the sectors with the lowest expenditure for gender-targeted activities (CEFP Mexico 2020).

ENERGIA has developed a complementary approach: gender audits of energy policy, as a means of strengthening the integration of gender considerations into energy policies and their implementation, which have been applied in some 20 countries (Clancy and Mohlakoana 2020). These gender audits aim to identify and analyse the factors that hinder efforts to mainstream gender in policy. A multidisciplinary team of stakeholders

and researchers identify whether and how gender issues are addressed in existing energy policy formulation and implementation and highlight possible gaps. In stakeholder workshops, findings are validated and recommendations made on creating a more gender-aware policy. The key objective is to build the capacity of energy ministries and local authorities to institutionalize and implement gender-responsive policies and strategies.

BOX 11

What is 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 (UN Women 2022).

Gender-responsive budgeting (GRB) 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 programmes so that they better contribute to advancing gender equality and women empowerment (Council of Europe 2005).

The purpose of GRB is threefold:

- to promote accountability and transparency in fiscal planning;
- to increase gender-responsive participation in the budget process, for example by undertaking steps to involve women and men equally in budget preparation;
- to advance gender equality and women's rights.

TABLE 1

Gender audits of energy policy

Step	Process	Output
1	Background review of national gender and energy enabling framework	Gender situational analysis: identification of gender organizations and of government directives, mandates, policies, and legislation on gender. Inventory of energy production/ supply by source, energy demand and consumption by sector, the access and affordability of energy services; energy sector organizations including employment profiles; energy policy formulation and implementation processes
2	Energy Policy Review	Gender awareness of energy policy based on quick-scan document analysis using keywords. Energy statistics, data and indicators - extent of sex-disaggregation
3	Gender Budget Analysis	Extent of budget allocation to energy programmes which recognise the differentiated benefits for women and men
4	Gender Organizational Assessment	Capacity assessment of the Ministry of Energy to mainstream gender. Capacity assessment of gender institutions to support gender mainstreaming in the energy sector
5	Key Stakeholders Analysis	Analysing perceptions about gender and the national energy policy by key stakeholders in the energy sector. Identifying the types of support that key stakeholders could provide to support gender mainstreaming in energy policy
6	Re-validation - SWOT Analysis	Identifying strengths, weaknesses, opportunities and threats of gender mainstreaming in energy policy
7	Gender and Energy Action Plan (GAP)	Agreeing on goals, outcomes, indicators, outputs, activities and responsibilities
8	Validation and Dissemination	Ownership and endorsement of the GAP by the Ministry of Energy and key stakeholders

Source: [Clancy and Mohlakoana 2020](#).

RESOURCES

Gender-Responsive Budgeting in the Sustainable Energy Sector

- [COVID-19 and Fiscal Policy: Applying Gender-Responsive Budgeting in Support and Recovery Measures 2021](#) | UN Women
- [Gender Responsive Budgeting In Viet Nam: Gender Equality In Transport 2019](#) | ADB and UN Women
- [A Guide to Gender-Responsive Budgeting 2018](#) | Oxfam
- [Gender-Responsive Budgeting in Asia and the Pacific: Key Concepts and Good Practices 2017](#) | ESCAP
- [Handbook on Costing Gender Equality 2015](#) | UN Women
- [Gender responsive budgeting in practice: A training manual 2010](#) | UN Women



4 ANNEXES



4.1 Databases with information on the gender-energy nexus

Databases	
FAO – Gender Land Rights Database	WHO - Gender Data Portal
ILO Statistics and Databases	World Bank Enterprise Surveys
SDG Global Database	World Bank – Gender Data Portal
SEforALL Heatmaps	World Bank/ESMAP – Tracking SDG 7
UN Data	World Bank Women, Business and the Law
UNIDO Statistics Data Portal	

4.2 Selected organizations and networks active in the gender-energy nexus

Organizations	
African Development Bank (AfDB)	Millennium Challenge Corporation
Asian Development Bank (ADB)	Oxfam
Barefoot College	Practical Action
Clean Energy Ministerial (CEM)	Solar Sister
Climate Investment Funds	Sustainable Energy for All (SEforALL)
ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)	United Nations Entity for Gender Equality and the Empowerment of Women (UN Women)
Energy Sector Management Assistance Program (ESMAP)	United Nations Development Programme (UNDP)
Global Alliance for Clean Cookstoves	United Nations Environment Programme (UNEP)
Inter-American Development Bank	United Nations Industrial Development Organization (UNIDO)
International Energy Agency (IEA)	Value for Women
International Union for Conservation of Nature (IUCN)	World Bank

Networks	
Catalyst	Red Mujeres en Energía Renovable y Eficiencia Energética
Council on Women in Energy & Environmental Leadership	Self-Employed Women's Association (SEWA)
ENERGIA	Spanish Association of Women for Energy
Global Network for Sustainable Energy Centres (GN-SEC)	Women and Gender Constituency (UNFCCC)
Global Women's Network for the Energy Transition (GWNET)	Women in Cleantech & Sustainability
Island Women Open Network (IWON) for Sustainable Energy and Climate Resilience in Island Nations	Women in Green Hydrogen
Lean In Energy	Women in Solar Energy (WISE)
Male Champions of Change	Women in Renewable Energy (WiRE)
Nordic Energy Equality Network	Women of Renewable Industries and Sustainable Energy (WRISE)
Pink Petro	Women in Sustainability (WiS)
Private Financing Advisory Network (PFAN)	Women in Sustainability, Environment and Renewable Energy (WiSER)

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