Women’s Employment in RENEWABLE ENERGY in the East Asia and Pacific Region

JUNE 2024

DATA AVAILABILITY, DATA GAPS, AND ENTRY POINTS FOR ENERGY OPERATIONS
ACKNOWLEDGEMENTS

This note was produced by Nicolina Angelou, Senior Energy and Gender Consultant, under the guidance of Sophia Georgieva, Senior Social Development Specialist, and Maria Manuela Faria, Social Development Specialist. Valuable comments and suggestions were provided by Giorgia Demarchi, Sama Khan, Nathyeli Acuna Castillo, Nicolas Jean Marie Sans, and Qingyuan Wang. Franklyn Ayensu edited the text, and Veronica Elena Gadea designed the report.

The technical and financial support provided by the Energy Sector Management Assistance Program (ESMAP) for the preparation of this report is gratefully acknowledged.

ESMAP is a partnership between the World Bank and over 20 partners to help low- and middle-income countries reduce poverty and boost growth through sustainable energy solutions. ESMAP’s analytical and advisory services are fully integrated within the World Bank’s country financing and policy dialogue in the energy sector. Through the World Bank (WB), ESMAP works to accelerate the energy transition required to achieve Sustainable Development Goal 7 (SDG 7) to ensure access to affordable, reliable, sustainable, and modern energy for all. It helps to shape WB strategies and programs to achieve the WB Climate Change Action Plan targets.
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EXECUTIVE SUMMARY

In the next few decades, the renewable energy (RE) sector will create millions of jobs and diverse opportunities along the energy value chain. To meet this demand, it is critical that the share of women in the sector increase, especially in technical and leadership positions, to ensure that opportunities and benefits are equally distributed. Yet information on gender equality in the energy sector, and even more so in the RE sector, remains sparse. Data collection and analysis on the gender composition of the workforce form the first step to achieve a just energy transition (IRENA Coalition for Action 2023).

The issue of achieving gender equality in the transition to green and sustainable energy has been raised by many international organizations (ILO 2015; ILO 2022; IRENA 2019; Wang, Kim and Banihani 2013; GGGI 2022; UN Women and UNIDO 2023). The equitable representation of women in green energy sectors is a matter of smart economics. It would ensure social inclusion and make an important contribution toward reaching the United Nations’ sustainable development goals, particularly SDG 5: Gender Equality, and SDG 7: Clean and Affordable Energy. With the share of investments in “green transition” projects increasing in the region, it is necessary not only to assemble reliable, country-level evidence on the status of women’s involvement in growing green sectors of the economy but also to analyze barriers to their participation, gather lessons and entry points on interventions that would enable women to benefit from such investment, and measure progress and results.

This note summarizes the available information on the level of female representation in the RE sector in the EAP region, and highlights entry points through which World Bank energy projects could help increase female representation in the sector, particularly in technical and leadership positions. Alongside greenhouse gas emissions reduction and improved energy security, employment in the RE sector is one of the most important co-benefits of renewable energy adoption, and a key incentive for policymakers to support renewable energy. Applying a gender lens that aims to create equal opportunities for men and women in the job market will support women’s empowerment and access to decent employment.

Data on employment in the RE sector, both total and gender-disaggregated, are typically not available in standard national statistics. The International Labour Organization database, ILOSTAT, compiles data from national labor force surveys, but the International Standard Industrial Classification of All Economic Activities (ISIC) used by ILOSTAT does not disaggregate data by energy generation technology. Instead, it bundles all primary energy sources of electricity generation under the same code. To generate total employment estimates in the RE sector, the International Energy Agency uses the “employment factor approach,” based on the installed capacity of each technology. But gender-disaggregated data cannot be estimated this way because of insufficient data on the proportion of women employed in each technology.

To address the paucity of gender-disaggregated data in the RE sector, the International Renewable Energy Agency (IRENA) conducts surveys
to gather data on female employment in RE organizations at the global level. According to the 2018 survey, women represented 32 percent of the full-time employees of the 285 RE organizations that responded from 144 countries. The sample size, however, does not allow for regional breakdown or country-level representation. In the EAP region, country-level data on RE employment are limited to a few case studies, making trend analysis challenging.

As in the energy sector as a whole, as well as in other male-dominated infrastructure sectors, there are numerous entry points and opportunities for expanding the employment of women in the RE sector. A range of measures can be undertaken to attract more women into the sector, improve their retention within organizations, and facilitate their advancement to management roles. A number of enabling conditions need to be in place for such measures to succeed, including setting targets, monitoring implementation progress, and obtaining the buy-in of leadership to ensure adequate allocation of resources.

To improve gender equality in the sector, RE operations might focus on one or more of the following areas:

1. **Collecting systematic and gender-disaggregated data on employment in the renewables sector.** Although there is growing attention to the need to create employment in RE, there are formidable data constraints (overall as well as specific to women’s employment) on providing baseline data and tracking progress. Supporting the capacity of energy sector institutions and national statistics agencies to collect and maintain such data will enable the formulation of a more evidence-based approach to enhancing women’s employment in the sector.

2. **Ensuring leadership buy-in, identifying gender gaps, and setting targets.** Leadership buy-in can be generated through gender training that compellingly makes the business case for increasing women’s employment, introducing best practices, and highlighting examples of RE organizations in other countries and regions. A gender action plan (GAP) should be adopted and implemented, identifying actions required to establish the right incentives and the necessary support for women to enter the sector, along with an appropriate working environment for them to stay and thrive. Financial and human resources are critical to achieving the intended goals; that makes continuous, high-level support from leadership critical.

3. **Increasing women’s access to STEM education and training.** Organizations can partner with educational institutions to offer opportunities for scholarships, internships, and vocational apprenticeships with targets for female participation in order to attract female talent and build a pipeline of future employees in technical roles. Training local female technicians in the production, installation, operation, and maintenance of RE systems is vital because RE developers may struggle to find trained employees willing to work in rural or hard-to-reach areas.

4. **Addressing cultural norms, discrimination, and sexual harassment.** A simple measure to promote gender equality in recruitment efforts is to adopt inclusive language in job descriptions. Employers can demonstrate their commitment to gender equality by using communication materials and public relations campaigns that depict women as employees doing technical work. Projects may also organize sector-wide open houses, with activities welcoming girls on worksites to experience firsthand jobs done on the field. To reduce implicit bias, companies can consider adopting gender-sensitive approaches to evaluating candidates. Training on gender bias could be carried out in RE companies to help management and employees recognize gender issues and biases, and address gender discrimination. RE employers should adopt anti-
sexual harassment policies and gender-based violence prevention and response measures.

5. Creating workplaces that promote women’s retention. RE organizations could invest in facilities and equipment that make it easier for women to build an inclusive work environment and thereby enhance their retention. To attract and retain the best talent, employers could offer flexible working arrangements, parental leave, and childcare services. Addressing gender wage disparities can help draw women into the RE sector.

6. Supporting women’s career advancement as part of inclusive leadership programs that involve both women and men. RE organizations could initiate mentorship programs in which senior executives commit to supporting high-potential women. Leadership training can prepare women to face the challenges that typically occur in male-dominated sectors. Female role models are essential for such initiatives. Equally important is to acknowledge and assert the view that promoting leadership opportunities for women is not a task for women alone and should include both male and female leaders.

7. Supporting female entrepreneurship in renewable energy. RE companies could leverage their purchasing policies to promote gender equality by increasing sourcing from women-owned businesses and gender-responsive companies, and by encouraging suppliers to focus on gender equality and women’s empowerment. Measures to support gender-responsive procurement range from inclusive language in tendering documents stating that women-owned businesses are encouraged to apply, to preferential scoring systems for women-owned companies. Dedicated funds or credit lines to support RE companies could be established, with long repayment periods, small/frequent installments, and the use of eligible RE equipment as collateral. Non-monetary solutions such as equipment or raw material hand-downs could be considered collateral. Training women in technical, financial, and leadership skills is crucial to the success of female-owned businesses.
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<th>Acronym</th>
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<td>ADB</td>
<td>Asian Development Bank</td>
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<td>Advisory Services and Analytics</td>
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<td>GBV</td>
<td>gender-based violence</td>
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<td>GWNET</td>
<td>Global Women’s Network for the Energy Transition</td>
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<td>EAP</td>
<td>East Asia and Pacific</td>
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<td>EIGE</td>
<td>European Institute for Gender Equality</td>
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<td>EUROSTAT</td>
<td>European Union statistical authority</td>
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<td>IEA</td>
<td>International Energy Agency</td>
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<td>International Labour Organization</td>
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<td>ILO central portal for labor statistics</td>
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<td>IRENA</td>
<td>International Renewable Energy Agency</td>
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<td>ISCO</td>
<td>International Standard Classification of Occupation</td>
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<td>IREC</td>
<td>Interstate Renewable Energy Council (in the United States)</td>
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<td>ISIC</td>
<td>International Standard Industrial Classification of All Economic Activities</td>
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<td>LAC</td>
<td>Latin America and the Caribbean</td>
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<td>LFS</td>
<td>Labor Force Survey</td>
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<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<td>O&amp;M</td>
<td>Operations and Maintenance</td>
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<td>PPA</td>
<td>Pacific Power Association</td>
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<td>QCEW</td>
<td>Quarterly Census of Employment and Wages (United States)</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<td>RE</td>
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<td>Sustainable Development Goals</td>
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<td>SH</td>
<td>sexual harassment</td>
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<td>SPC</td>
<td>Secretariat of the Pacific Community</td>
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<td>STEM</td>
<td>science, technology, engineering, and mathematics</td>
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<td>UN DESA</td>
<td>United Nations Department of Economic and Social Affairs</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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1. INTRODUCTION
INTRODUCTION

Background

In the next few decades, the renewable energy (RE) sector will create millions of jobs and diverse opportunities along the energy value chain. To meet this demand, it is critical that the share of women in the sector increase, especially in technical and leadership positions, to ensure that opportunities and benefits are equally distributed. Greater female participation would bring other benefits as well: a wider talent pool to address the looming skills gap, new perspectives, and better performance and sustainability.

Several recent studies suggest that companies with a more gender-diverse workforce are more successful, perform better financially, and can be more innovative (Dixon-Fyle et al. 2020; EY Americas 2019; Catalyst 2020; USAID 2018; Ernst & Young 2015).

Yet information on gender equality in the energy sector, and even more so in the RE sector, remains sparse. Although a recent International Renewable Energy Agency (IRENA) report estimates the share of women in the global RE workforce at just 32 percent (IRENA 2019)—reflecting the fact that women face numerous entry barriers driven especially by cultural and social norms—regional- and country-level statistics for EAP are lacking, as is the case in other regions. For example, a 2022 assessment of women’s employment in Türkiye’s geothermal energy sector has indicated that a majority of companies do not maintain gender-disaggregated data on their workforce (World Bank 2021a).

The World Bank’s 2024–2030 Gender Strategy urges the view that reducing gender gaps in employment is just smart economics. Reducing gender gaps in employment isn’t simply a matter of social justice—it’s a sound economic decision (World Bank 2023a). This strategy draws on the observation that when women have equal opportunities to participate in the workforce, economies are more likely to thrive (IFC 2017).

Increased female employment raises productivity, creativity, and innovation, which in turn boost overall economic growth. Additionally, studies consistently demonstrate that companies with diverse leadership teams, including a higher representation of women, tend to make more informed and profitable decisions (CSRI 2012; CSRI 2016; USAID 2018; Dickey 2019). Closing the gender gap in employment is not just the right thing to do—it is the smart thing to do for any country seeking to build a robust and sustainable economy.

Women in the EAP region face barriers that prevent them from entering the labor market, especially in technical and leadership positions. In the EAP region, women’s labor force participation, at 58.8 percent, is substantially lower than men’s, at 76.2 percent. This arises from a combination of factors, including gaps in skills and education, and social norms within households, society, and workplaces that create barriers for women to participate in the labor market or to advance in technical and leadership roles (Orlando et al. 2018). As EAP countries strive to propel the green and resilient transformation of their industries, women may not fully benefit from these new green employment opportunities unless the systemic barriers are addressed.

Data collection and analysis on the gender composition of the workforce is important to achieve a just transition in the energy sector (World Bank 2013). To address urgent environmental challenges such as climate change, pollution, and declining biodiversity, governments and societies must transition
their businesses and economies into greener, more resilient, and climate-neutral versions of themselves. A just transition, among other things, entails greening the economy in a way that is as fair and inclusive as possible for all stakeholders, creating decent job opportunities, and leaving no one behind. But ensuring a just transition will require gaining a better understanding of the interventions needed to increase women’s representation in the energy sector, especially in technical and leadership roles.

Objective

The objective of this note is to assess the available information on women’s employment in the RE sector in the EAP region, and second, to inform World Bank investments in RE in the region on entry points and opportunities for expanding the employment of women in the sector. Alongside greenhouse gas reduction emissions and improved energy security, employment in the RE sector is one of the most important co-benefits of RE adoption and a prime incentive for policymakers to support RE. The prospect of additional job creation can help decision makers obtain traction with their constituents and generates socioeconomic benefits. Additionally, the creation of green jobs in sustainable industries is a major policy objective that strongly complements countries’ climate mitigation commitments and for that reason an accurate assessment of job creation in the RE sector is crucial for policymaking. Applying a gender lens that aims to create equal job opportunities for men and women will help empower women and support their access to decent employment. This note summarizes the available information on the extent of female representation in the EAP region’s RE sector, and highlights entry points through which World Bank energy projects can contribute to increasing female representation in the sector, particularly in technical and leadership positions.

Methodology

This note is based on secondary data and research. It aims to synthesize available data on women’s employment in renewables, specific to the EAP region, to provide an efficient frame of reference for investments in the sector, and to consolidate recommendations and lessons on entry points by which energy sector projects in the region can advance gender inclusion. The definitions and scope of this note are based on a review of reports of United Nations (UN) agencies such as the International Renewable Energy Agency (IRENA), the International Energy Agency (IEA), and the International Labour Organization (ILO). A literature review of areas of interest (such as employment in the RE sector, women in Science, Technology, Engineering and Mathematics (STEM), gender equality in the energy sector, and so on) was carried out, including reports from the Asian Development Bank (ADB), ENERGIA, IRENA, the United States Agency for International Development (USAID), and the World Bank, as well as academic articles from the publications website ScienceDirect.

Gathering secondary data on women’s employment in the RE sector proved particularly challenging, especially at the country level. The search started with an examination of the ILO datasets and IEA database:
Women’s Employment in Renewable Energy in the East Asia and Pacific Region

- The ILO’s Global Gender Labor Gap website, and its Women at Work reports, track women’s position in labor markets and examine factors behind the trends, including occupational segregation. The data source is the ILO’s Labor Force Survey (LFS) database, included in ILOSTAT databases. ILO tracks employment by economic activity. The most disaggregated level of economic activity pertaining to energy, according to the International Standard Industrial Classification of All Economic Activities (ISIC), is electric power generation, transmission, and distribution (code 3510) under the D section “Electricity, gas, steam and air conditioning supply” within “Industry.”

- IEA’s Gender and Energy Data Explorer provides detailed data on gender gaps in the energy sector in employment and wages, senior management, entrepreneurship, and innovation for about 30 high-income countries. The energy sector includes three subcategories: “energy distribution and generation”; “important energy consumers”; and “services/goods that are essential to fixed capital investment with implications for energy supply and use.” The data source is the Organization for Economic Cooperation and Development (OECD) Directorate of Employment, Labour and Social Affairs (ELS).

Further, the study reviewed gender data portals of international organizations, featuring databases of gender-disaggregated data, as listed below. Employment data presented by these datasets are sourced from ILOSTAT. No datasets present employment data in the energy or RE sectors.

- The World Bank’s Gender Data Portal reports on the labor force participation rate (by gender), as well as employment in agriculture, services, and industry (by gender), in almost every country. The data source is ILOSTAT.

- The Women Count initiative of UN Women focuses on country-level data needed to monitor the gender equality dimension of the Sustainable Development Goals (SDGs).

- UN Gender Stats focus on the SDGs’ gender indicators.

- The Gender Statistics Database of the European Institute for Gender Equality (EIGE) tracks total employment data by gender as well as for certain specific industries.

- EUROSTAT Gender Statistics tracks total employment rates and the gender employment gap as well as the earnings gap.

- OECD Gender Data Portal tracks several employment indicators, covering member countries and partner economies.

- The UN Department of Economic and Social Affairs’ Gender Statistics report on women’s employment.

- The Pacific Data Hub (PDH) includes gender-related publications and datasets in the region but none relates to employment in the energy sector.


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6. [https://data.unwomen.org/women-count](https://data.unwomen.org/women-count)
12. [https://pacificdata.org/](https://pacificdata.org/)
and Opportunity that includes several employment-related indicators, including the total labor force participation rate. It also uses high-frequency data from LinkedIn in 22 countries that provide a snapshot of women’s representation in leadership in 2022, reporting a rate of 20 percent for the energy sector (WEF 2022).

The above databases all contain employment data sourced from ILOSTAT that are derived from national labor force surveys. Labor force surveys are part of national household surveys conducted by countries, and are designed to generate official national statistics on the labor force, employment trends, and several related indicators. ILOSTAT uses data derived from national labor surveys and processes the data to generate harmonized indicators based on ILO international statistical standards. Such microdata are complemented with the annual ILOSTAT questionnaire for countries with limited data. ILOSTAT contains statistics on employment by gender and by economic activity. In principle, employment data in the energy sector can be extracted from ISIC code 3510 “Electric power generation, transmission and distribution;” in practice, such data are not readily available. Only IEA’s Gender and Energy Data Explorer reports on such data for about 30 high-income countries. ILOSTAT data are also reported by occupation, based on the International Standard Classification of Occupation (ISCO).

Beyond national labor force surveys and ILO’s statistics, the Enterprise Surveys conducted by the World Bank include a workforce module and a gender module. The Enterprise Surveys are administered to a representative sample of firms in the nonagricultural formal private economy, including the entire manufacturing sector, the services sector, and the transportation and construction sectors. Surveys are stratified by business sector, which varies by country. At a minimum, the stratification distinguishes between Manufacturing and Services firms. In larger economies, additional sectors are selected for stratification. The energy sector is seldom featured.

Additional initiatives based on surveys of energy sector organizations and companies have been reviewed, as listed below:

- Ernst & Young, in 2015, launched its Women in Power and Utilities Index, based on the largest 200 global utilities by revenue (EY Americas 2019). The index collects data on the number of men and women on each utility’s board of directors and in senior management teams, and ranks the utilities using a weighted index that favor women in executive positions.

- The WePower network in South Asia conducted rapid baseline assessments for women engineers in the power sector in eight countries, collecting data from over 100 power sector and academic institutions through interviews of male and female power sector professionals and engineers (World Bank 2020a).

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13 https://ilostat.ilo.org/about/data-collection-and-production/
15 https://www.enterprisesurveys.org/en/enterprisesurveys
16 https://collaboration.worldbank.org/content/sites/collaboration-for-development/en/groups/the-wepowernetwork.html
• The Pacific Power Association’s (PPA) Gender Portal tracks female employment in its 25 member utilities.  

• IRENA’s surveys of RE organizations collect gender-disaggregated employment data and report global-level rates of women’s employment in renewable energy and across STEM jobs, non-STEM technical jobs, and administrative jobs (IRENA 2019).

Several international organizations have urged the adoption of greater gender equality in energy, environmental, and climate change policies. For example, Advancing Gender in the Environment (AGENT) advocates gender equality in RE in multiple ways. Many organizations highlight the underrepresentation of women in decision-making roles in energy and RE sectors, but none are tracking women’s employment in those sectors.

Finally, a search for employment data in the energy and RE sectors in EAP countries was conducted, including a review of reports of international and regional organizations such as USAID, the United Nations Development Programme (UNDP), and ADB. In addition, the team used data from a portfolio review of documents of World Bank energy sector projects in the EAP region implemented over the last decade, including Project Appraisal Documents, and Implementation and Completion Reports. Relevant data from this portfolio review at the utility level also informed this note.

18 https://genderandenvironment.org/agent/
19 https://genderandenvironment.org/green/
STATUS OF WOMEN’S EMPLOYMENT IN THE RENEWABLE ENERGY SECTOR
This section discusses measurement approaches and the data issues related to women’s employment in the RE sector, together with the status of women’s employment in the sector worldwide and in the EAP region.

**Measuring employment in the RE sector**

**DEFINING AND DELIMITING THE RE SECTOR**

In this note, RE is defined as “energy derived from natural sources that are replenished at a higher rate than they are consumed.” There are several sources of RE, including solar energy, wind energy, geothermal energy, hydropower, ocean energy, and bioenergy. Other definitions of RE, such as clean energy or low-carbon emissions sector, are also used in the literature. But adopting such definitions could either increase or decrease the number of technologies and value chains considered in any particular employment assessment.

RE is widely used in the electricity sector, but its role is also vital in the transportation and heating sectors, including cooling and cooking services. In the electricity sector, renewables are increasingly important in on-grid electricity generation and also power more and more mini-grids and microgrids. Standalone solar solutions, such as solar home systems and solar lanterns, play a large role in electricity access in remote areas.

The decentralized nature of off-grid RE solutions provides immense opportunities for women’s participation in numerous value chains. Many of the skills required to capitalize on such possibilities can be developed locally, and women are well-positioned to lead and support the delivery of energy solutions because of their role as primary energy users in households and in their social networks, particularly in local communities where RE sources may be adopted (Cecelski 2000; Farhar 1998; Dutta, Kooijman and Cecelski 2017). Biofuels are the main RE source used for transportation, whereas biomass, solar, and geothermal energy are used for heating. RE sources used for cooking include solid biomass, biogas, biofuels, and solar cookers. Women are often actively engaged and employed in the improved cooking industry and its associated value chains, defined next.

Alongside the wide range of services for which renewables are used—electricity, transportation, heating—one or more value chains are associated with each RE source. A value chain includes all the activities necessary for the production, distribution, and consumption of energy. Every technology has a different value chain, but for any given technology, the main segments include the manufacturing of equipment, construction and installation, and operations and maintenance (O&M), along with a range of support services (figure 1). The extent to which each input needed is integrated into the country’s economy (rather than imported) determines the level of employment creation.

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21 Biomass-based cooking can be more or less clean depending on the cookstove used. The use of biomass for cooking is not discussed in this report due to the potential harmful impacts of burning biomass on the environment and women.
MEASURING TOTAL EMPLOYMENT IN THE RE SECTOR

Data on total employment in the RE sector are typically not available in standard national statistics. The ILO, a leading source of labor statistics, reports on employment indicators by economic activity across all countries. ILO’s database, ILOSTAT, compiles data from national sources of employment, most often national labor force surveys. The ILO encourages countries to employ commonly used definitions and classifications to provide a shared framework for international comparability of, and reporting on, statistics. Labor statistics include two main classifications: the International Standard Industrial Classification of All Economic Activities (ISIC),\(^2\) which is the international reference classification of productive activities—for example, the manufacture of electrical equipment—and the International Standard Classification of Occupations (ISCO), which refers to the kind of work performed in a job, for example, Electrical Engineering Technicians. The main difficulty with using ISIC to estimate employment in the RE sector is that the subsection “Electric power generation, transmission and distribution” bundles all primary energy sources of electricity generation into the same code (code 3510) (Johnstone and Silva 2020; IEA 2022). Thus, national statistical offices that use ISIC cannot show disaggregated data by energy generation technology.

\(^2\) [https://ilostat.iilo.org/resources/concepts-and-definitions/classification-economic-activities/](https://ilostat.iilo.org/resources/concepts-and-definitions/classification-economic-activities/)
Jobs in RE are difficult to quantify because they span several economic sectors. Some are in the primary sector (for example, bioenergy feedstock). Others are in construction, utilities, or other industries, and yet others are in the service sector, including installation, maintenance, sales and distribution, project management, and finance. In addition, jobs related to the expansion of RE in the economy may be found in public administration, research and development (R&D), and consulting (IRENA 2013).

Data on employment in the RE sector are estimated using the employment factor approach based on the installed capacity of each technology, but are available only in a few countries. IEA and IRENA estimate annually the number of RE jobs globally and in certain countries that are leaders in some type of RE, based on the installed capacity for each technology (IRENA and ILO 2022). Direct employment data provide information about the number of people working in manufacturing, construction, installation, fuels supply, O&M, or the decommissioning of RE sites. The most commonly used methodology to estimate direct employment in RE is the employment factor approach, which calculates the number of (full-time equivalent) jobs per megawatt of installed capacity or megawatt-hour of energy generation.

The RENEWABLE ENERGY sector has great potential for EMPLOYMENT worldwide

13.7 MILLION workers in 2022

38.2 MILLION by 2030

4.9 MILLION Solar PV
3.6 MILLION Bioenergy
2.5 MILLION Hydropower
1.4 MILLION Wind
0.7 MILLION Solar heating/cooling
0.6 MILLION Other

TWO IN THREE jobs are based in Asia.

CHINA accounts for 41% of the global total
By contrast, indirect employment includes all those who work in the production of intermediary inputs and in related services for assembling a RE system. Indirect jobs include delivering raw or processed commodities, as well as financial and other services. Measuring employment becomes more complex if indirect employment data are included because additional segments of the value chain need to be considered along with support services. Such an assessment requires that the classification of employment (including codification of industries and economic activities) allow for the identification of the number of jobs associated with RE technologies (GGGI 2020).

**MEASURING WOMEN’S EMPLOYMENT IN THE SECTOR**

Gender-disaggregated employment data in the RE sector are generally difficult to obtain. ILOSTAT provides gender-disaggregated data for indicators such as labor force participation, and employment in economic sectors such as
agriculture, industry, and services.\textsuperscript{23} Gender-disaggregated employment data in the energy sector are usually not readily available from the ILO database or national statistics, but could in principle be produced, based on the current ISIC (GGGI 2020) (figure 2). As mentioned above, however, ILOSTAT and national statistics do not track employment in the RE sector separately. Moreover, gender-disaggregated data cannot be estimated based on installed capacity and the employment factor approach because the proportion of women employed in each technology is largely unknown.

\textbf{Figure 2} Share of female employees in the energy sector in the European Union, 2011–2017

To measure employment in the RE sector, national statistical offices would need to modify national surveys to break down RE technologies in the energy sector. Such development necessitates human and financial resources to manipulate additional data. International

\textsuperscript{23} \url{https://databank.worldbank.org/source/gender-statistics}
frameworks, such as the Beijing Declaration and Platform for Action or the Sustainable Development Goals, do not call for gender-disaggregation of data in the RE sector. Thus, national statistical offices have little incentive to improve their existing data collection methods. The lack of readily available data on women’s participation in the RE sector is driven by the limitations of existing data collection tools and poor awareness in national agencies of the value of tracking such data (GGGI 2020).

The United States tracks gender-disaggregated employment data in energy and RE through national statistics using a different classification system, along with enterprise surveys. In the United States, employment data in the energy sector are gathered by the U.S. Department of Energy and rely on two sources: primary data collected through surveys, and secondary data from the U.S. Bureau of Labor’s Statistics Quarterly Census of Employment and Wages (QCEW). The U.S. Census uses the North American Industry Classification System, which includes codes for every source of electricity generation (including renewable sources). In the 2022 edition of the Energy and Employment Report, 33,000 businesses participated in the survey, providing 7,500 full responses (US DOE 2022). Women represented 25 percent of the energy workforce (2021 survey). The share of the female workforce is provided for each energy source in electricity generation (including RE sources such as solar, wind, hydropower, and bioenergy) and each fuel (including RE sources such as corn, ethanol, other biofuels, and woody biomass), as well as in transmission, distribution, and storage workforce. No data was gathered by type or level of position (for example, technical, managerial, and so on). The Interstate Renewable Energy Council (IREC) publishes annually the National Solar Jobs Census, reviewing employment in the U.S. solar energy industry nationwide and by state, and analyzing solar labor market trends in the country. The report disaggregates employment data by gender and category of jobs (table 1). In 2021, women made up just under 30 percent of the solar energy employees and represented 26 percent of management staff (IREC 2022).

Table 1 Share of women employees in the US solar energy sector (2013–2017)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total solar jobs (thousands)</th>
<th>Solar jobs held by women</th>
<th>All solar workers</th>
<th>Installers</th>
<th>Manufacturing workers</th>
<th>Sales and distribution workers</th>
<th>Project development staff</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>142.7</td>
<td>26.7</td>
<td>18.7</td>
<td>14.8</td>
<td>22.4</td>
<td>18.6</td>
<td>19.6</td>
<td>n/a</td>
</tr>
<tr>
<td>2014</td>
<td>173.8</td>
<td>37.5</td>
<td>21.6</td>
<td>17.7</td>
<td>24.4</td>
<td>24.0</td>
<td>24.2</td>
<td>43.7</td>
</tr>
<tr>
<td>2015</td>
<td>208.9</td>
<td>49.8</td>
<td>23.9</td>
<td>21.1</td>
<td>28.5</td>
<td>23.5</td>
<td>24.9</td>
<td>38.9</td>
</tr>
<tr>
<td>2016</td>
<td>260.1</td>
<td>72.8</td>
<td>28.0</td>
<td>25.2</td>
<td>30.9</td>
<td>33.8</td>
<td>25.3</td>
<td>37.7</td>
</tr>
<tr>
<td>2017</td>
<td>250.3</td>
<td>67.3</td>
<td>26.9</td>
<td>24.7</td>
<td>29.5</td>
<td>32.9</td>
<td>25.1</td>
<td>35.4</td>
</tr>
</tbody>
</table>

Source: IRENA (2019)

Gender-disaggregated headcount data may be analyzed from internal human resource records of RE companies, yet even companies do not always systematically track such data. The profile of RE companies may also influence their propensity to maintain gender-disaggregated

https://www.census.gov/naics/?input=22&chart=2022
records on employment. The assessment of women’s employment in the geothermal energy sector in Türkiye referenced above showed that of the 18 companies surveyed, only one (a multinational company) maintained gender-disaggregated data on the workforce, while the majority (smaller, mostly family-owned companies that had transitioned from other industries to the geothermal sector) did not (World Bank 2021a).

Status of employment in the RE sector

TOTAL EMPLOYMENT IN THE RE SECTOR WORLDWIDE

IRENA in collaboration with ILO tracks annually the number of people employed, directly or indirectly, in the RE sector. In 2022, this number reached 13.7 million (IRENA and ILO 2023), with the solar photovoltaic subsector accounting for

Employment estimates in RENEWABLE ENERGY come from DATA SOURCES that do not track the employment of women systematically

National labor force surveys do not track women’s employment in renewable energy because ILOSTAT BUNDLES ALL SOURCES OF ELECTRICITY into the same code

IEA estimates are based on the INSTALLED CAPACITY OF EACH TECHNOLOGY that do not estimate the share of female employment

IRENA conducts AD-HOC SURVEYS of 100 to 300 organizations worldwide

The US COMBINES NATIONAL LABOR FORCE SURVEYS with Renewable Energy COMPANY SURVEYS
over one third of these jobs (4.9 million), followed by bioenergy (3.6 million), hydropower (2.5 million), wind energy (1.4 million), solar heating/cooling (0.7 million) and the remaining sources accounting for 0.6 million (figure 3). Close to two in three jobs are based in Asia, with China accounting for 41 percent of the global total. IRENA estimates the number of jobs in the RE sector to grow to 38.2 million in 2030 (and jobs in the whole energy sector to 139 million).

**Figure 3** Worldwide employment in RE, by technology, 2022

<table>
<thead>
<tr>
<th>Technology</th>
<th>Number of jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar photovoltaic</td>
<td>4,902,000</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>2,490,000</td>
</tr>
<tr>
<td>Hydropower</td>
<td>1,400,000</td>
</tr>
<tr>
<td>Wind energy</td>
<td>779,000</td>
</tr>
<tr>
<td>Solar heating/cooling</td>
<td>712,000</td>
</tr>
<tr>
<td>Biogas</td>
<td>309,000</td>
</tr>
<tr>
<td>Heat pumps</td>
<td>241,000</td>
</tr>
<tr>
<td>Geothermal energy</td>
<td>152,000</td>
</tr>
<tr>
<td>Concentrated solar power</td>
<td>80,000</td>
</tr>
<tr>
<td>Municipal and industrial waste</td>
<td>27,000</td>
</tr>
<tr>
<td>Tide, wave and ocean energy</td>
<td>1,000</td>
</tr>
<tr>
<td>Other</td>
<td>149,000</td>
</tr>
</tbody>
</table>

Source: IRENA and ILO (2023)

**WOMEN'S EMPLOYMENT IN THE RE SECTOR WORLDWIDE**

Despite the poor availability of gender-disaggregated employment data in the RE sector, the available data confirm significant imbalances resulting from gender inequalities. In the US, a 2013 report estimated that women represented less than 30 percent of jobs in the green economy (Hegewisch et al. 2013). A 2011 survey by Women in Wind Energy (WoWE) reported the female share of full-time employees in the wind energy sector at 25 percent (IRENA 2013). In the EU, the share of women in the wind energy sector was estimated to be 22 percent in 2008 (Blanco and Rodrigues 2009). In Spain, a study by the labor union organization reported that women represented 27 percent of the RE workforce of the country in 2008 (Arregui et al. 2010). Most studies confirm that women tend to be employed in lower-paid, non-technical, administrative, and public relations positions.

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25 Includes liquid biofuels, solid biomass, and biogas.
26 Other sources include geothermal power, concentrated solar power, heat pumps, municipal and industrial waste, and ocean energy.
more so than in technical, managerial, or policy-making positions (IRENA 2013).

To address the paucity of gender-disaggregated data in the RE sector, IRENA started conducting surveys to gather data on female employment in RE organizations at the global level. IRENA's initial survey in 2016 was based on 90 participating companies from over 40 countries and indicated that women represented about 35 percent of the workforce in the RE sector. In 2018, IRENA conducted a global online survey including 285 organizations in RE in 144 countries. Participation in the survey was voluntary. Organizations were evenly distributed across regions, although the Asia-Pacific region was underrepresented (26 percent of organizational respondents), as participation was low in China, even though the country is a large actor in the sector.

According to IRENA's 2018 survey, women represented 32 percent of the full-time employees of responding RE organizations (IRENA 2019) — higher than the 22 percent average of the global oil and gas industry, but lower than the 48.5 percent share of women's participation in the global workforce (ILO 2018). Women's representation in STEM jobs in the energy sector was lower at 28 percent, whereas in non-STEM technical jobs the share reached 35 percent, and in administration jobs, 45 percent (figure 4).

Figure 4  Share of women in the global RE sector, 2018

In 2019, IRENA launched a similar survey focusing on the wind energy industry. Data were gathered from 132 organizations in 71 countries (IRENA 2020). About 23 percent of the organizations that participated in this survey were in Asia-Pacific; 31 percent had more than 1,000 employees. The

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27 According to a 2017 study by the World Petroleum Council and Boston Consulting Group (Rick, Martén and Von Lonski 2017).
28 For example, lawyers.
survey found that, globally, women represented 21 percent of the wind energy sector workforce. In Asia-Pacific, the share was 15 percent. Globally, women were underrepresented in all roles. They were less likely to hold STEM jobs and leadership positions, and more likely to hold administration roles. These gender-based variations were less pronounced in Asia-Pacific (figure 5).

**Figure 5** Share of women in the wind energy sector globally and in Asia-Pacific, by role, 2019

In 2021, IRENA conducted a survey in the solar PV sector that included 294 organizations in 123 countries (IRENA 2022). About 26 percent of the organizations were in Asia-Pacific, and 40 percent of organizations had under 20 employees. IRENA’s analysis found that, both globally and in Asia-Pacific, the share of women working full-time in the solar PV industry was 40 percent. Globally, women were overrepresented in administration roles (58 percent), but less well represented in non-STEM jobs (38 percent), other non-technical jobs (35 percent), STEM jobs (32 percent), management positions (30 percent), and senior management (17 percent). Similar trends were found in Asia-Pacific.

The Energy Sector Management Assistance Program (ESMAP) surveyed 65 hydropower companies in 2020-2021. Survey results show that women represented 25 percent of the workforce in the sector (ESMAP 2023). About 21 percent of the women employed in hydropower companies are in technical and engineering roles, while the remaining 79 percent hold non-technical positions, such as administrative, commercial, sales, marketing, human resources, and finance.

29 Non-STEM jobs refer to high-level qualifications in non-STEM fields, such as lawyers.
30 Non-technical jobs are jobs with lower formal skills, such as construction.
WOMEN’S EMPLOYMENT IN THE RE SECTOR IN THE EAP REGION

In the EAP region, the female labor force participation rate is 59 percent, compared to 74 percent for men. Among the Pacific island countries, the gender gap is slightly wider—54 percent for women versus 77 percent for men. There are no official statistics on employment in the energy sector (or the RE sector) in countries in the region. Data on RE employment are typically scarce, and gender-disaggregated data even more so. Information is limited to a few case studies, making trend analysis challenging. Nonetheless, what data are available—mostly at the entity level, for example, a utility or the national energy office—reveal an overall picture of gender inequality in RE jobs.

In the Lower Mekong countries (Cambodia, Lao PDR, Thailand, and Vietnam), the public energy sector is dominated by men, especially in executive and management-level positions (Resurreccion and Boyland 2017). The share of women, nonetheless, is increasing. Women tend to be concentrated in the financial, administrative, human resources (HR), and marketing units of energy organizations. In the private sector, a few prominent companies in the RE sector are led by women, usually highly educated and from wealthy families (Resurreccion and Boyland 2017). These firms were initially construction and appliance firms before diversifying into RE such as solar energy and small hydropower.

Case-specific data on women’s employment in the sector in the East Asia region (table 2) and in the Pacific region (table 3) are gathered and listed below by country.

Table 2 Women’s employment data in the East Asia region, by country

<table>
<thead>
<tr>
<th>Country</th>
<th>Country-level data</th>
<th>Energy sector data</th>
<th>RE sector data</th>
</tr>
</thead>
</table>
| Cambodia  | • Female labor force participation rate: 70% versus 82% for men\(^1\)  
• Female share of STEM graduates: 17%\(^2\) | N/A | • Producers and entrepreneurs in improved clean-energy cookstoves and charcoal production are mostly women\(^3\) |
| China     | • Female labor force participation rate: 61% versus 73% for men\(^1\) | N/A | N/A |
| Indonesia | • Female labor force participation rate: 53% versus 81% for men\(^1\)  
• Female share of STEM graduates: 37%\(^4\) | • Women in the energy workforce: 12%\(^5\)  
• Female staff of PLN (Perusahaan Listrik Negara), or State Electricity Company: 19% (7% of technical staff)\(^5\)  
• Women in decision-making positions in the energy sector: 5%\(^6\)  
• Women energy auditors: 5% (51 out of 1,128)\(^6\)  
• Women energy managers: 3% (34 women)\(^6\) | • Female staff in Upper Cisokan Pumped Storage PIU: 41% (7 women)\(^5\)  
• Female staff in 12 geothermal developers: 14% (202 women) (1% in technical and managerial positions)\(^7\) |
<table>
<thead>
<tr>
<th>Country</th>
<th>Country-level data</th>
<th>Energy sector data</th>
<th>RE sector data</th>
</tr>
</thead>
</table>
| Korea  | • Female labor force participation rate: 55% versus 73% for men
• Female share of STEM graduates: 25%<sup>6</sup> | N/A | N/A |
| Lao PDR | • Female labor force participation rate: 55% versus 62% for men
• Female share of STEM graduates: 29%<sup>4</sup> | N/A | N/A |
| Malaysia | • Female labor force participation rate: 53% versus 79% for men
• Female share of STEM graduates: 34%<sup>4</sup> | N/A | N/A |
| Mongolia | • Female labor force participation rate: 52% versus 67% for men
• Female share of STEM graduates: 34%<sup>4</sup> | • Women in the energy workforce: 25%<sup>5</sup>
• Female employees in the Ministry of Energy: 45% (10% of executives)<sup>10</sup>
• Female employees in the Ulaanbaatar Heating Network: 29%<sup>11</sup>
• Women in the Ulaanbaatar District Heating Company (UBDHC): 17% of technical staff at mid-management levels<sup>12</sup>
• Women in the Ulaanbaatar District Heating Company (UBDHC): 31% of technical staff at the senior management level<sup>12</sup>
• Women in the Ulaanbaatar District Heating Company (UBDHC): 21% of technical staff at the junior level<sup>12</sup>
• Female employees in the National Power Transmission Grid (NPTG): 4%<sup>13</sup>
• Female employees in the National Dispatching Center (NDC): 34%<sup>13</sup> | N/A |
<table>
<thead>
<tr>
<th>Country</th>
<th>Country-level data</th>
<th>Energy sector data</th>
<th>RE sector data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myanmar</td>
<td>• Female labor force participation rate: 45% versus 76% for men¹</td>
<td>• Women in the energy workforce: 28%¹⁵</td>
<td>• Women in the solar sector workforce: between 25% and 50% (mainly employed in design and planning, and sales and marketing)¹⁶ • Solar developers headed by women or with women in management: Earth Renewable Energy Co. Ltd.; Myanmar Solar Power Trading Co. Ltd.; Talent and Technology Co. Ltd.; Techno-Hill Engineering Co. Ltd.¹⁷</td>
</tr>
<tr>
<td></td>
<td>• Female share of STEM graduates: 61%⁴</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>• Female labor force participation rate: 46% versus 48% for men¹</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Philippines</td>
<td>• Female labor force participation rate: 46% versus 71% for men¹</td>
<td>• Women in the workforce of the electricity, gas, STEM, air conditioning supply, water supply, sewerage, and waste management sectors: 20%¹⁹</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>• Female share of STEM graduates: 36%¹⁸</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Female share of engineering graduates: 24%¹⁸</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td>• Female labor force participation rate: 63% versus 77% for men¹</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>• Female share of STEM graduates: 34%¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>• Female labor force participation rate: 59% versus 75% for men¹</td>
<td>• Female staff in EGAT²¹: 23%³</td>
<td>• Female executives in DEDE²²: 12% (2 out of 17)⁷ • Several female-run RE enterprises, particularly solar³</td>
</tr>
<tr>
<td></td>
<td>• Female share of STEM graduates: 30%²⁰</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timor-Leste</td>
<td>• Female labor force participation rate: 61% versus 72% for men¹</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Vietnam</td>
<td>• Female labor force participation rate: 69% versus 78% for men¹</td>
<td>• Women in electricity, gas, steam, and hot water supply: 18%²³</td>
<td>• Among 20 local developers in wind energy and 15 local solar energy developers, a few are led by women³</td>
</tr>
<tr>
<td></td>
<td>• Female share of STEM graduates: 37%²⁰</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ¹World Development Indicators (2022); ²World Development Indicators (2015); ³Resurreccion and Boyland (2017); ⁴World Development Indicators (2018); ⁵World Bank (2021b); ⁶Dewanti (2022); ⁷World Bank (2019); ⁸World Development Indicators (2017); ⁹ADB (2022); ¹⁰2020 HR gender questionnaire administered to the Ministry of Energy by the World Bank energy team; ¹¹2020 HR gender questionnaire administered to the Ulaanbaatar Heating Network by the World Bank energy team; ¹²World Bank (2020b); ¹³World Development Indicators (2020); ¹⁴Based on IFC’s Powered by Women initiative research on 10 energy companies, in USAID (2021); ¹⁵Based on interviews with firms active in the sector, in USAID (2021); ¹⁶Pearce (2020); ¹⁷Belghith, Lavin, and Lapalombara (2021); ¹⁸ADB (2013); ¹⁹World Development Indicators (2016); ²⁰Electricity Generating Authority of Thailand; ²¹Department of Alternative Energy Development and Efficiency in the Ministry of Energy; ²²2014 data in UN Women (2016).
### Table 3  Women’s employment data in the Pacific region, by country

<table>
<thead>
<tr>
<th>Country</th>
<th>Country-level data</th>
<th>Energy sector data</th>
<th>RE sector data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiji</td>
<td>• Female labor force participation rate: 38% versus 75% for men&lt;sup&gt;1&lt;/sup&gt;</td>
<td>• Women in national energy office: 9%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in the electricity utility: 13%&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Kiribati</td>
<td></td>
<td>• Women in national energy office: 27%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in the electricity utility: 23%&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Micronesia</td>
<td>N/A</td>
<td>• Women in the electricity utility CPUC: 12% (10 out of 80)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in the electricity utility PUC: 6% (10 out of 156)&lt;sup&gt;3&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>N/A</td>
<td>• Women in national energy office: 17%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in the electricity utility MEC: 9%&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in the electricity utility KAJUR: 12%&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Palau</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Samoa</td>
<td>• Female labor force participation rate: 41% versus 66% for men&lt;sup&gt;1&lt;/sup&gt;</td>
<td>• Women in the electricity utility: 18%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>• Female labor force participation rate: 82% versus 85% for men&lt;sup&gt;1&lt;/sup&gt;</td>
<td>• Women in national energy office: 22%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in the electricity utility: 16%&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in Solomon Power: 21% (6% in technical positions)&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Tonga</td>
<td>• Female labor force participation rate: 42% versus 65% for men&lt;sup&gt;1&lt;/sup&gt;</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>N/A</td>
<td>• Women in national energy office: 25%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Women in the electricity utility: 5%&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Vanuatu</td>
<td>• Female labor force participation rate: 69% versus 78% for men&lt;sup&gt;1&lt;/sup&gt;</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Notes:** 1<sup>World Development Indicators (2022)</sup>; 2<sup>Matte (2020)</sup>; 3<sup>World Bank (2018a)</sup>; 4<sup>World Bank (2018b)</sup>. 
In 2018, the Pacific Power Association (PPA) launched a gender portal that tracks female employment in its 25 member utilities. In 2020, the share of women in the total staff was 20 percent (among 5,126 employees). Female technical staff accounted for 5 percent (among 2,630 technicians) and female management staff accounted for 26 percent (among 141 employees) (PPA 2021). The Secretariat of the Pacific Community stated in 2022 that women make up 22 percent of the total number of staff, according to data collected from the National Energy Offices (Rakuita 2022). Although they represent only 12 and 15 percent of management and technical positions, they make up 51 percent of the administrative and support staff.

In Asia, INDICATIVE DATA ON WOMEN’S EMPLOYMENT in Renewable Energy is available for a few countries.

**THAILAND**
12% of female executives in the Department of Alternative Energy Development and Efficiency in the Ministry of Energy (2017)

**MYANMAR**
5 solar developers headed or managed by women (2020)

**INDONESIA**
14% of female staff in geothermal – 1% in technical and managerial positions (2019)

EXPANDING OPPORTUNITIES FOR WOMEN IN THE RENEWABLE ENERGY SECTOR
EXPANDING OPPORTUNITIES FOR WOMEN IN THE RENEWABLE ENERGY SECTOR

This section presents actions that renewable energy (RE) organizations and projects can use to expand opportunities for women in the sector, particularly in technical and leadership positions, with the aim of improving attraction and recruitment to the sector, retention within organizations, and advancement to management roles.

As the present note demonstrates, there are persistent gaps in the data on women’s employment in RE operations. Investment in better data collection at the country and company levels is therefore an important prerequisite to constructing a reliable baseline showing evidence of continuous progress in gender equality in the sector. Testing and developing consistent enterprise survey models and databases will help ensure comparability and better sharing of lessons and good practices throughout the region and globally. Such a database, including gender-related indicators, has already been initiated by the ESMAP Gender and Energy program. Individual enterprise surveys are also supported by ESMAP-funded regional initiatives.

In addition to addressing data gaps, EAP energy projects and investments in the region can proactively contribute to improving gender equality indicators in their respective countries. The present section outlines key entry points (areas for investment) through which energy operations could pursue such objectives. The entry points are structured around six themes: (i) eliciting leadership commitment and target setting; (ii) increasing women’s access to STEM education and training; (iii) addressing cultural norms, discrimination and sexual harassment; (iv) creating workplaces that promote women’s employment retention; (v) supporting women’s career advancement; and (vi) supporting female entrepreneurship in RE. There are several toolkits available to help practitioners develop and implement measures to increase female representation in renewable energy, including ESMAP’s recent Women’s Employment in Energy Sector Utilities Toolkit. These tools are also applicable to other sectors.

1. Cultivating leadership commitment and setting targets

Eliciting leadership buy-in. RE organizations could undertake a wide range of actions to lower the entry barriers for women and increase female representation in the sector. Obtaining the sustained support of senior management is crucial to the success of such actions. RE companies need to grasp the far-reaching implications and importance of gender equality in the workforce. Buy-in is essential for leading companies through reform, allocating appropriate resources, and encouraging staff to support gender inclusion. Top management must demonstrate ownership and strong personal commitment to gender equality, and explicitly acknowledge the need to maintain zero tolerance of gender-based harassment and violence. During RE project preparation, donors, financiers, and NGOs, as well as relevant state organizations, could help raise awareness among energy sector counterparts and strengthen the commitment of senior management by providing gender sensitivity training that makes the business case for increasing women’s employment,

introducing best practices, and highlighting examples of model RE organizations in other countries and regions. IFC’s Women on Boards and in Business Leadership (WBBL) program promotes the business case for increased female representation in boardrooms and in senior management positions. The program has three pillars: training and capacity building of female (and male) executives; knowledge generation and thought leadership; and gender mainstreaming in operations. It also includes environmental, social, and governance (ESG) considerations to promote economic growth and the sustainability of the companies (IFC 2024).

Identifying gender gaps and setting targets. Assuming leadership buy-in has been secured, a gender assessment is a necessary next step, preferably during project preparation, to understand the status of female representation in the entities involved, and to identify the barriers women face in entering or remaining in the sector. Several tools are available for conducting gender workforce audits. For example, the World Bank/ESMAP Power Sector Questionnaire on Human Resources, Training, and Gender Practices can be used as a baseline survey to assess gender equality in a company. A gender action plan (GAP) should be adopted to identify the actions required to establish the right incentives for women to enter the sector, the support they will need once there, and an appropriate working environment for them to stay and thrive. Such a gender action plan would also help establish adequate targets and monitoring mechanisms.

To this end, quantitative and qualitative data collection disaggregated by gender is essential to set a baseline but also to track progress toward selected goals in the recruitment, retention, and advancement of women within an organization. The action plan could be developed with the help of external experts and specialized organizations. Local consultants or international consultancy firms could be hired to conduct a gender assessment and develop the GAP in cooperation with relevant stakeholders, such as HR units of companies involved in RE interventions. Appointing gender focal points in the project implementation unit (PIU) and in its counterparts is an excellent practice: it enhances communication, promotes data collection and tracking, and creates consistent, ongoing supervision of gender activities that propels their implementation. The sustained support of senior management is essential throughout the process of identifying gaps and setting targets because an adequate budget and resources are needed to develop the GAP and subsequently implement it, as discussed below.

Allocating resources to achieve gender targets. Closing gender gaps requires time commitment, persistence, and substantial financial and human resources. It is important that RE projects allocate the necessary funds for implementing gender-related actions. Some interventions, such as training, may be funded and run by NGOs and other development organizations. Scholarships for female students or internships for female graduates may also be funded through grants. Hiring gender experts and gender focal points within RE organizations and at the project level is also fundamental to ensuring timely

implementation of the activities and tracking progress toward targets.

**Adopting a gender equality framework and pursuing gender certification.** RE organizations can assess their performance and report progress toward their gender equality goals through a gender certification process such as the EDGE (Equity, Diversity, and Gender Equality) Certification, or the United Nations Development Programme (UNDP) Gender Equality Seal. Such certification requires about 10 days of data collection work and can be obtained in two to three months. Subscribing to such tools may help companies accelerate the rate at which they can attract talent and meet their targets for women’s employment. Similar to the International Standards Organization (ISO) certification, gender certification can be a signal to prospective employees, clients, and investors and an indicator of commitment to ESG. It is, nonetheless, important to note that merely obtaining the certification does not, in and of itself, ensure an equitable work environment. The process needs to be accompanied by the promotion and enforcement of robust policies designed to achieve the goals of the certification process, especially preventing sexual harassment, safeguarding working spaces, and providing inclusive training and leadership opportunities.

### 2. Increasing women’s access to STEM education and training

**Attracting women into STEM fields.** Increasing the exposure of young girls and women to STEM fields through targeted information campaigns in schools and universities can help build a pipeline of future female employees in technical roles. To attract female talent, organizations should consider partnering with educational institutions to offer opportunities for scholarships, internships, and vocational apprenticeships with specified targets for female participation. Along the same lines, companies might also influence the curricula of such educational institutions by providing them with real-world feedback about the knowledge and skills students need to get hired.

For example, in Lao PDR, GE Hydro, in collaboration with the Utility Electricité du Laos (EDL), launched a training program in 2016 to attract and develop the next generation of hydropower engineers. In Indonesia, the Geothermal Resource Risk Mitigation Project (GREM) plans to fund a vocational training program for young women and men at geothermal sites. In the Latin America and Caribbean (LAC) region, such programs targeting women are gaining traction. In Saint Lucia, the Renewable Energy Sector Development Project is offering women educational training and employment opportunities in electrical and mechanical engineering, preparing them to obtain technical jobs in the energy sector. In collaboration with Sir Arthur Lewis Community College (SALCC), a public community college, the project has begun to offer an annual scholarship specifically to women to pursue electrical or mechanical engineering degrees, together with a

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37 [https://edge-cert.org/](https://edge-cert.org/)
3- to 9-month apprenticeship program. To support such graduating students in their job search, outreach programs, and information campaigns are planned in secondary schools, along with annual job fairs.

Soleco Energy, a solar energy developer in the Caribbean, was incentivized through a progressive interest rate reduction to offer an internship to female STEM students and to increase female participation in the construction of projects funded by the private sector arm of the Inter-American Development Bank Group “IDB Invest” (Robberechts and Serrano 2022). Soleco also passed on a set of gender-related requirements to its engineering, procurement and construction (EPC) and O&M contractors. RE projects could partner with organizations such as The Asia Foundation, which runs university scholarship programs for girls and young women (for example, in Vietnam) (The Asia Foundation n.d.), or initiatives such as BUILT-IT in Vietnam, which offers scholarships to female students earning engineering and technical degrees. In Haiti, mini-grid developer EarthSpark trains and employs local women during construction. EarthSpark’s microgrid “ambassadors” are exclusively women. Their role is to promote the mini-grid services, liaise with clients, and troubleshoot grid problems. The Solomon Islands Electricity Access and Renewable Energy Expansion Project plans to design and implement a program employing rural women in the maintenance of solar panels and sites. Hands-on practical skills can be provided to local women, as demonstrated by the Barefoot College, where uneducated village women—known as “solar grandmothers”—receive six months of hands-on training in the installation and maintenance of solar systems.

Training local female technicians. In building local capacity for the production, installation, operation, and maintenance of RE systems, placing an emphasis on women is essential because RE developers may struggle to find trained employees who are willing to relocate to rural areas, and may also struggle to keep well-trained young men from migrating out of rural villages in search of city jobs. This was the case for DESI Power, an independent rural power producer in India. Through DESI_MANTRA, its management training center, the company decided to train not only locally-based men but also locally-based women for management jobs, on the well-reasoned assumption that women would be less likely to migrate once trained.

In Haiti, mini-grid developer EarthSpark trains and employs local women during construction. EarthSpark’s microgrid “ambassadors” are exclusively women. Their role is to promote the mini-grid services, liaise with clients, and troubleshoot grid problems. The Solomon Islands Electricity Access and Renewable Energy Expansion Project plans to design and implement a program employing rural women in the maintenance of solar panels and sites. Hands-on practical skills can be provided to local women, as demonstrated by the Barefoot College, where uneducated village women—known as “solar grandmothers”—receive six months of hands-on training in the installation and maintenance of solar systems.

It has been shown that collaborating with job training and education programs can improve efficiency and results. For example, the Solomon Islands Electricity Access and Renewable Energy Expansion Project is considering partnering with the Community Access and Urban Enhancement Project (CAUSE), which provides job training, employment, and short-term income to workers building essential community infrastructure (World Bank 2023b). Training is most effective when it is tailored to take cultural values into account.
engages closely related stakeholders such as the trainee-woman’s relatives, her husband, or community leaders, and puts in place a range of safety precautions.

Participation and effectiveness are also enhanced when female trainees are provided with basic conveniences such as transportation, childcare services, or programs that do not conflict with their household responsibilities. For example, a solar training program in Malawi was able to promote women’s involvement by redesigning its 3- to 4-month, full-time curriculum into a 16-month, part-time program structured around just 2 days per week and 3 hours each day. In Myanmar, the “Women in Power” program of the World Wildlife Fund (WWF), in cooperation with the Barefoot College, trains rural women to obtain technician jobs in the mini-grid sector (Wordley n.d.). The program covers scholarships and financial aid to overcome financial barriers and encourage women’s participation, and uses training methods that are accessible to women with limited formal education. Companies might also consider conducting trainings for groups composed exclusively of women because, in some contexts, women can feel intimidated in trainings attended predominantly by male coworkers and therefore be discouraged from participating.

3. Addressing cultural norms, discrimination, and sexual harassment

Promoting gender equality in hiring policies. A simple measure to promote gender equality in recruiting is to adopt inclusive language in job descriptions. Including a statement that “women are encouraged to apply” can convey a strong message to potential candidates and significantly increase female applications. For example, a pay-as-you-go solar off-grid provider operating in West Africa states that “PEG is an equal opportunity employer committed to diversity. All qualified candidates regardless of age, gender, ethnicity, race, and religion are encouraged to apply” (Power Africa 2019). Including this statement demonstrates PEG’s commitment to fostering diversity within the company.

There is a growing body of evidence showing that job advertisements and job descriptions, consciously or unconsciously, often use aggressive-sounding, gender-biased phrases typically associated with masculine characteristics. An example would be a “dominant firm” that “boasts a superior track record” and “consistently challenges the status quo and our competition,” looking for a “driven individual” with “strong leadership qualities” and “a decisive analytical mind” who can “aggressively pursue set targets” in a “high-pressure, competitive work environment.” In the brief example above, 13 words—boasts, dominant, challenges, competition, driven, strong, leadership, decisive, analytical, aggressively, pursue, high-pressure, and competitive—all come across as gender-biased in a way that frequently sounds harsh or intimidating to women and discourages many of them from applying to positions they may be qualified for. But many predominantly male organizations, especially in the science, engineering, and technology sectors, are so used to this language that they do not recognize the bias inherent in their everyday vocabulary. The thinking is that women, if they want to succeed, should simply try to be more like men.

By contrast, gender-inclusive job postings use terms that resonate with both men and women; and postings that aim to attract more women candidates should go a step further than that and use feminine-coded words that are more stereotypically associated with female attributes. Some examples might be “committed,”

46 https://www.barefootcollege.org/solution/solar/
“supportive,” and “feel/feeling.” A posting that, for example, looks for candidates who excel at “understanding context” and “sharing responsibility” in “collaborative team settings,” who have experience “connecting interpersonally with” both clients and colleagues, can “engender trust in their subordinates,” and “feel they can contribute” to the organization’s “common goals,” will likely appeal much more strongly to women applicants than the preceding sample job posting (Gaucher, Friesen, and Key 2011; Catalyst 2015). In this example, 11 words—understanding, sharing, responsibility, collaborative, connecting, interpersonally, engender, trust, feel, contribute, and common—come across as either feminine-coded or gender-inclusive.

Additionally, RE projects can support companies by promoting gender-sensitive communication campaigns. Employers may demonstrate their commitment to gender equality by using communication materials and public relations campaigns that depict women as employees doing technical or managerial work—for example, using tools and machinery, wearing protective gear, or leading a discussion.

Reaching out to education institutions and women’s professional networks, through multiple platforms, can help ensure that job advertisements reach potential female applicants. Projects can also organize sector-wide open houses, with activities welcoming girls on worksites to experience firsthand jobs done on the field—similar to Bring-your-Daughter-to-Work Day events. Companies can also require support to adopt gender-sensitive approaches for evaluating candidates to reduce unconscious or implicit bias, including interview panels and hiring committees that are more diverse and gender-balanced, requiring gender-balanced long lists, and using structured interviews and standardized scoring methods that help to eliminate bias (Schomer and Hammond 2020).

Training to address discrimination in the workplace. Training on gender bias could be carried out in RE companies to help management and employees recognize gender issues and biases and address gender discrimination. Tackling bias and creating an inclusive workplace environment is vital for improving the retention of female employees. For example, Women in Geothermal (WING), and its WINGman Special Taskforce, conduct workshops in which men and women in the geothermal sector learn about gender inequality in the industry and are trained to use specific measures to address gender disparities in the workplace. In the LAC region, ESMAP’s Energy and Gender Program has conducted such workshops in El Salvador that have included representatives from geothermal companies and government institutions from several countries in the region. RE projects may also partner with existing country-level initiatives, such as the Leadership for Gender Inclusion program, which is delivered by Griffith University in Lao PDR with funding from the Australian Government.48

47 Women in Geothermal (WING) is a not-for-profit, volunteer-run organization focused on promoting the education, professional development, and advancement of women in the geothermal industry. WING has representation in 57 countries and over 1,300 members, making it the largest geothermal association in the world.

Addressing gender-based violence (GBV) and preventing sexual harassment. RE employers should adopt anti-sexual harassment policies and gender-based violence prevention and response measures. The risk of sexual harassment and violence against women are major deterrents to women’s participation in the sector (Shaw, Hegewisch and Hess 2018). RE projects can assist companies in mitigating and responding to these risks (World Bank 2020c). Measures such as codes of conduct for staff and contractors, and grievance redress mechanisms with detailed protocols for handling cases and reporting procedures, signal that violence and sexual harassment will not be tolerated. Training should be provided to all staff and contractors, focusing on GBV commitments and sanctions for breaching the code of conduct.

In the EAP region, the Solomon Islands Electricity Access and Renewable Energy Expansion Project aims to set up a framework at the state-owned utility Solomon Power to build a productive and respectful workplace culture and implement a workplace response system to domestic violence (World Bank 2018c), building on the Waka Mere Commitment to Action program (IFC 2019), the two-year IFC initiative that Solomon Power signed in 2017 with regard to implementing GBV policies. The Papua New Guinea Energy Utility Performance and Reliability Improvement Project plans to support the utility PPL in developing a workplace response to the threats and impacts of family and sexual violence, and to women’s security and safety concerns in the workplace, mainly through training and by implementing the recommendations from a gender-smart safety audit (World Bank 2021c).

4. Creating workplaces that promote women’s retention

Gender-responsive and safe facilities and equipment. RE organizations can invest in suitable facilities and equipment for women in the workplace and at project sites to create an inclusive work environment and enhance women’s employment retention. Such investments could include adequate lighting, separate toilets and living quarters, uniforms and personal protective equipment suitable for women, and adequate security measures for women during work-related travel, including safe transport and guards on the premises. Effective policies to prevent sexual exploitation, sexual abuse, and sexual harassment are also important, particularly in cases where advancement in technical positions may require women to relocate and work in remote areas.

Flexible work arrangements, parental leave, and childcare services. Employers can offer generous paid parental leave (to both mothers and fathers) and provide childcare benefits to attract and retain the best talent. Larger organizations could establish childcare facilities because the demands of childcare are often a barrier to female workforce participation. Smaller businesses or those that cannot afford such costs might grant their employees childcare allowances, allowing them to send their children to an existing daycare facility in the area or hire an individual childcare provider. Setting standards for flexible working arrangements may be a less expensive strategy than providing childcare to retain female employees and at the same time enhance work-life balance, which benefits both men and women.

Gender pay equity. Reducing gender wage disparities can help increase women’s involvement in the RE sector. Gender pay
Several measures can be implemented to **EXPAND EMPLOYMENT OF WOMEN** in the Renewable Energy sector

**IMPROVING FEMALE EMPLOYMENT**

- Collecting systematic and gender-disaggregated data on employment in Renewable Energy
- Ensuring leadership buy-in, identifying gender gaps, and setting targets
- Increasing women’s access to STEM education and training
- Addressing cultural norms, discrimination, and sexual harassment
- Supporting women’s career advancement through mentoring, leadership skills development, etc.
- Supporting female entrepreneurship in RE
- Creating safe and flexible workplaces that promote women’s retention

Disparities can be caused by both the low number of women in high-paying jobs (such as in senior positions or highly skilled roles) and by gender discrimination—paying women less than men for equal work. RE projects can assist companies in carrying out annual gender pay gap evaluations to identify underlying reasons and formulate appropriate solutions.
5. Supporting women’s career advancement

Mentoring. Mentorship is critical for women’s job progression in the RE sector. RE organizations could initiate mentorship programs in which senior executives commit to supporting high-potential women. Employers can also encourage women employees to join women’s association networks such as the Global Women’s Network for the Energy Transition (GWNET), the Women in Renewable Energy (WIRE) mentor network, and country-level networks. Professional networks can help women’s career advancement and be used for mentoring and sharing information about job opportunities. The Asia Foundation’s Women-in-STEM Network Mapping has identified more than 70 networks in Asia that support women to enter and advance in STEM careers (Boccuzzi and Uniacke 2021). In Vietnam, the utility Vietnam Electricity (EVN) launched in 2017 a new leadership program for women designed to enhance their capacity to advance into senior management positions (World Bank 2017). Also, a pay-as-you-go solar off-grid provider, PEG Africa, conducted a three-month pilot mentorship program in 2018 to promote women leaders in the company by pairing high-performing, mid-level female managers with director-level executives and providing a framework of leadership metrics to follow. As a result, mentorship lasting six months is now available to all of PEG Africa’s high-performing, mid-level managers (PEG Africa 2019).

Leadership training. Women employees in RE companies could greatly benefit from leadership training that better prepares them to face the many challenges of working in male-dominated sectors. In 2021 UNDP, in partnership with Indonesia’s Ministry of Energy and Mineral Resources, hosted a certification training workshop in the country for 25 female RE practitioners to become energy managers and energy auditors, under UNDP’s Market Transformation for Renewable Energy Use and Energy Efficiency (MTRE3) Project (Dewanty 2022). In Ethiopia, Ethiopian Electric Utility (EEU) offers leadership training to female employees to ensure that women are not permanently locked in junior roles (World Bank 2020d).

Many RE organizations could cover part of the cost of leadership training through grants and other financial support from development agencies and NGOs. For example, in Mongolia, in 2015, the NGO Women for Change launched the Women’s Empowerment and Leadership Program to increase the number of Mongolian women employed in leadership and at decision-making levels in the workforce and in government. USAID in Vietnam supports EVN in conducting training on gender equality and best practices, fostering the utility’s gender-supportive policies and practices. In Serbia, the World Bank developed in 2018 a women’s leadership training and mentoring program for the utility Elektroprivreda Srbije (EPS) as part of a Development Policy Loan (Casabonne, Faria and Lukic 2020). The overwhelming majority of the female EPS workers who participated in the training stated that their confidence had increased by the end of the training.

In 2019, the Global Wind Energy Council and GWNET created the Women in Wind Global Leadership Program to accelerate women’s career advancement in the wind energy sector, support their path to senior leadership, and create a knowledge-sharing global network that promotes inclusion and empowerment. The

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50 For example, Indonesia’s Women in Mining & Energy (WIME), and the Association of Mongolian Women Engineers, Technologists, Scientists, and Mathematicians (Mongolian WSTEM).
51 https://w4cblog.wordpress.com/womens-leadership-program/
53 The international trade association for the wind power industry.
54 https://gwec.net/women-in-wind/about-the-program/
program includes mentorship, learning and development, webinars, a study tour, and an online storytelling campaign. GWNET published a report in 2019 on good practices for a more inclusive workplace (GWNET 2019). Leadership skills training should also include soft skills such as communication and negotiation. In addition, companies could provide project management training to women, including procurement, financial management, and so on.

6. Supporting female entrepreneurship in RE

Preferential procurement framework. RE companies could leverage their purchasing policies to promote gender equality by sourcing more often from women-owned businesses and gender-responsive companies, and by encouraging suppliers to pay closer attention to gender equality and women’s empowerment. Several measures can support gender-responsive procurement. These range from inclusive language in tendering documents stating that women-owned businesses are encouraged to apply, to preferential scoring systems for women-owned companies or those that have a high share of female employees. Companies could also limit contract size, loosen capital requirements, and simplify bureaucratic requirements for smaller contracts. They could also host women-only information sessions, hire female procurement officers, and set targets for procurement from women-owned businesses.

Several guidelines and recommendations on gender-responsive procurement are available (Falth 2020; UN Women 2021; Nowakowska-Miller, Sabino, and Weisman 2011). For example, in Indonesia, the Sarulla Geothermal Power Project, financed by the Asian Development Bank, has a preferential procurement framework that favors local businesses. The framework put in place requirements for women to comprise at least 20 percent of technical, laboratory, or administrative positions during operations by 2020, and at least 30 percent of unskilled labor for services provided during construction (2013–17) (ESMAP 2019). Similarly, the Kenya Electricity Generating Company (KenGen) regularly issues tenders for which 30 percent of the budget is reserved for firms owned by disadvantaged groups, including women.

Access to finance. Raising finance is a primary challenge for female entrepreneurs. Female-owned companies are underserved—and in some cases even unserved—by financial institutions (World Bank 2022). Women are less likely to be eligible for loans or other financial services, and they often have poor creditworthiness because they lack collateral such as land and other property. There is therefore a need for innovative financing options that are accessible to women entrepreneurs and women’s cooperatives. For example, microfinance facilities could offer grants, interest-free loans, and subsidies. Dedicated funds or credit lines to support RE companies could be established featuring longer repayment periods, smaller, more frequent installments, and the possibility of using non-monetary assets, such as eligible RE equipment or raw material, as collateral.

Business development services and training. Female-owned companies are less likely to be able to afford and benefit from business development services. Training on technical, financial, and leadership skills is essential to the success of female-owned businesses because it helps them identify sustainable business opportunities, develop networks to expand their business, and develop effective market strategies (IRENA 2019). The Wonder Women initiative in Indonesia trains women to sell standalone energy solutions such as solar lanterns in remote areas. The program trains women to become social entrepreneurs, focusing on technology use and maintenance, sales and marketing, bookkeeping and financial management, and public speaking (IRENA 2019).
Similarly, IFC’s Lighting Myanmar program seeks to involve women entrepreneurs as distributors of solar products (IFC 2018). In Sub-Saharan Africa, Solar Sister, a training and job creation initiative that empowers women entrepreneurs to deliver off-grid RE solutions, has benefitted 8,500 entrepreneurs, of whom 87 percent are women, as of 2022. RE operations could also partner with organizations such as the ILO, which through its Women’s Entrepreneurship Development Program seeks to address gender inequalities in enterprise development and create the conditions to enable women entrepreneurs to start and grow their business.

55 https://solarsister.org/what-we-do/our-impact/
CONCLUSIONS

Global efforts to invest in RE and to expand inclusive employment opportunities in the sector are growing. The present note demonstrates, nevertheless, that there are still significant data constraints on assessing and tracking women’s participation in the RE sector.

To expand the basis of gender-disaggregated employment data in the sector, international and national stakeholders could consider several directions of work, which could also be supported by World Bank investments:

• Updating the classification of economic activities to include categories for each RE technology. This change could be driven both at the international level, by organizations such as the ILO, and at the country level. Some countries, such as the United States, have already created such a classification. Countries may be incentivized by international initiatives such as the SDGs that call for more gender equality in the RE sector, or ESG investment requirements.

• Including RE companies in enterprise surveys such as the ones conducted by the World Bank.

• Conducting regular surveys of RE organizations to gather relevant data through interviews. Private sector consultancies and NGOs could carry out such efforts, but the sample sizes should be large enough to obtain statistically representative data at the regional or country level. Such surveys could also be carried out periodically by country-level actors such as professional associations and/or chambers of commerce.

• Making it a point to request gender-disaggregated employment data from counterparts in the RE sector when developing RE investment projects.

Development agencies are also encouraged to work with public and private sector counterparts in the RE sector to expand the employment of women, particularly in technical and leadership positions, by focusing on one or more of the following areas:

• Eliciting leadership buy-in and target-setting

• Enhancing women’s access to STEM education and training

• Addressing cultural norms that perpetuate discrimination and sexual harassment

• Improving women’s employment retention, career development, and career advancement

• Encouraging female entrepreneurship in RE

The examples provided in this note present an overview of the RE sector in the East Asia and Pacific region. These should be regularly updated and complemented with emerging data from investment operations and technical advisory activities in the region.
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