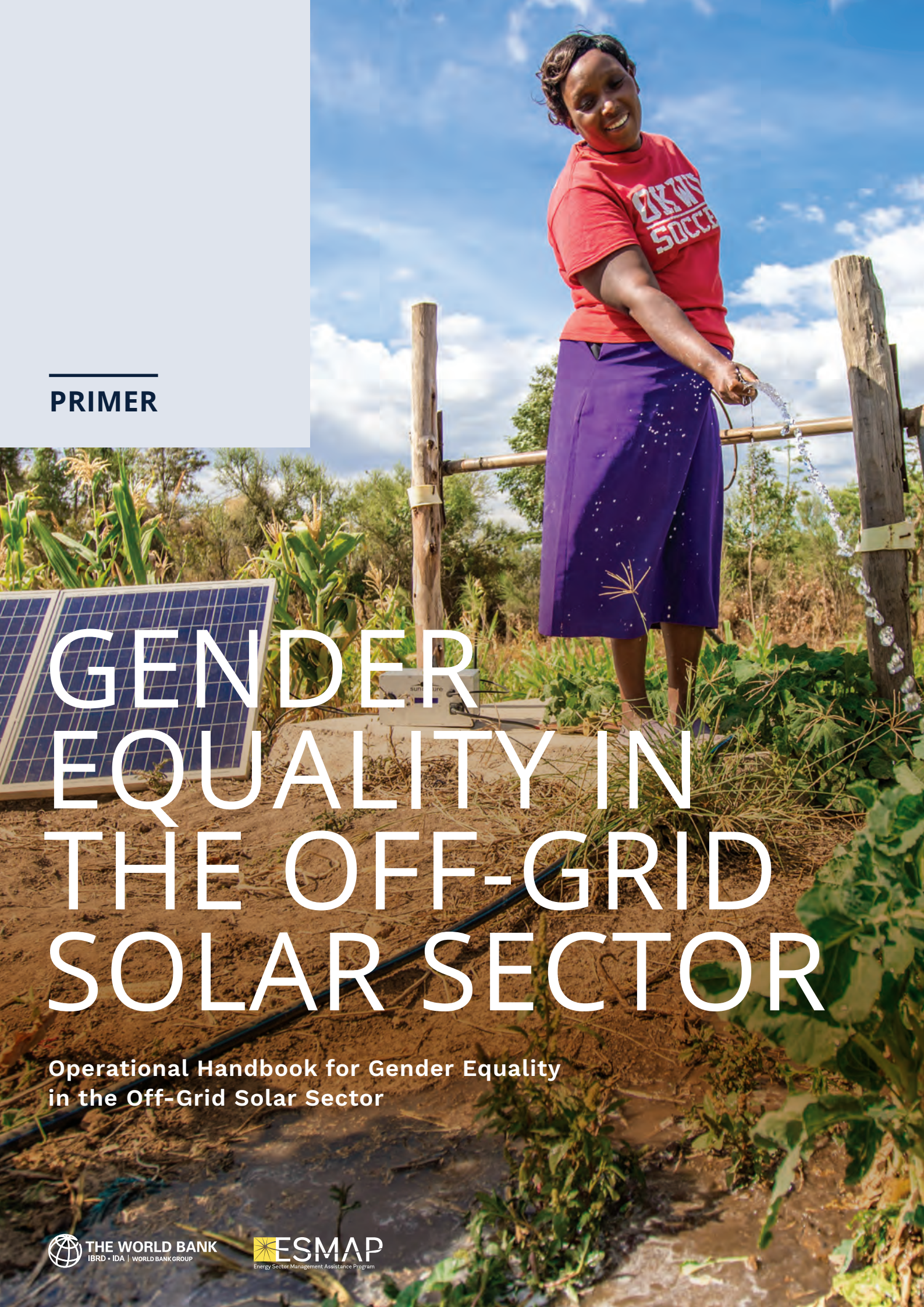
PRIMER



GENDER EQUALITY IN THE OFF-GRID SOLAR SECTOR

Operational Handbook for Gender Equality in the Off-Grid Solar Sector

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

ESMAP
Energy Sector Management Assistance Program

1818 H Street NW | Washington DC 20433

202-473-1000 | www.worldbank.org

GENDER EQUALITY IN THE OFF-GRID SOLAR SECTOR

Operational Handbook for Gender Equality in the Off-Grid Solar Sector

ESMAP is a partnership between the World Bank and 24 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 Group (WBG), ESMAP works to accelerate the energy transition required to achieve Sustainable Development Goal 7 (SDG7) to ensure access to affordable, reliable, sustainable, and modern energy for all. It helps to shape WBG strategies and programs to achieve the WBG Climate Change Action Plan targets.

E Co. is a London-based consultancy uniquely specialized in designingthat designs low-carbon, climate-resilient projects and programs. For over more than 20 years, E Co. has been providing technical expertise to help its clients solve climate adaptation and mitigation challenges, and access project funding from global climate funds, including: GCF the Adaptation Fund, Global Environment Facility Green Climate Fund, GEF, the and NAMA Facility. E Co. assesses markets, develops strategies, and formulates projects to provide long-lasting solutions for vulnerable populations worldwide.

ACKNOWLEDGMENTS

The Task Team Leaders for this study are Barbara Ungari (Operations Analyst), Inka Ivette Schomer (Senior Gender and Infractructure Specialist), and Dana Rysankova (LEAD energy specialist). Special thanks to Gabriela Elizondo Azuela (Practice Manager, ESMAP), Rohit Khanna (previous Practice Manager, ESMAP) and Sheoli Pargal (Lead Energy Economist, ESMAP) for their guidance and feedback throughout the process of preparing this report. The content of this report was developed by the Task Team in partnership with Dr. Silvia Emili, Alexandra Milano, Dr. Margaret Matinga, and Dr. Grant Ballard-Tremeer from E Co. The study benefited from content development and technical advice from Nisha Singh (Senior Gender and Financial Inclusion Specialists); and overall input and feedback from Maria Alejandra Arango, Lindsay Caldwell Umalla, Umul Awan, Leo Joseph Blyth, Nathyeli Yethzi Acuna Castillo, Richard Claudet, Rwaida Gharib, Charles Miller, Meskerem Mulatu Legesse, Sheoli Pargal, and Gloriana Sojo Lara. Peer reviewers were Elisabeth Maier, Lara Born, Joern Thorsten Huenteler, Rahul Kitchlu, and Susie Wheeldon. The ESMAP team would like to thank the numerous stakeholders (appendix A) consulted for this study: Katharine Tengtio (CDC Group), Kat Harrison and Nilah Mitchell (60 Decibels), Ash Sharma and Sabera Khan (Beyond the Grid/NEFCO), Mayada El Zoghabi (Center for Financial Inclusion), Makena Ireri and Nyamolo Abagi (CLASP), Nayab Jan (Community Support Concern), Shazia Khan (EcoEnergy), Sheila Oparaocha (ENERGIA), Mathieu Dalle (Energy 4 Impact), Inez Murray (Financial Alliance for Women), Emma Colenbrander (Practical Action/ Global Distributors Collective), Susie Wheeldon (Global Off-Grid Lighting Association), Melissa Olga Basque (International Finance Corporation), Anjali Garg and Shalaka Joshi (International Finance Corporation and Lighting Asia), Allie McGonagle Glinski and Shelley Martin (International Center for Research on Women), Laura Sundblad (Pawame), Alexie Seller and Sujatha Ramani (Pollinate Energy), Denise Mortimer and Karen Stefiszyn (Power Africa/U.S. Agency for International Development), Ruchi Soni and Hannah Girardeau (People Centered Accelerator/SEforALL), Mariama Kamara (Smiling Through Light), Katherine Lucey (Solar Sister), Habiba Ali (Sosai Renewable Energies), Fariel Salahuddin (Uptrade), Stephanie Finigan (Value For Women), and Cherilyn Vossberg and Chris Würdemann (Zola Electric).

©LIGHTING GLOBAL

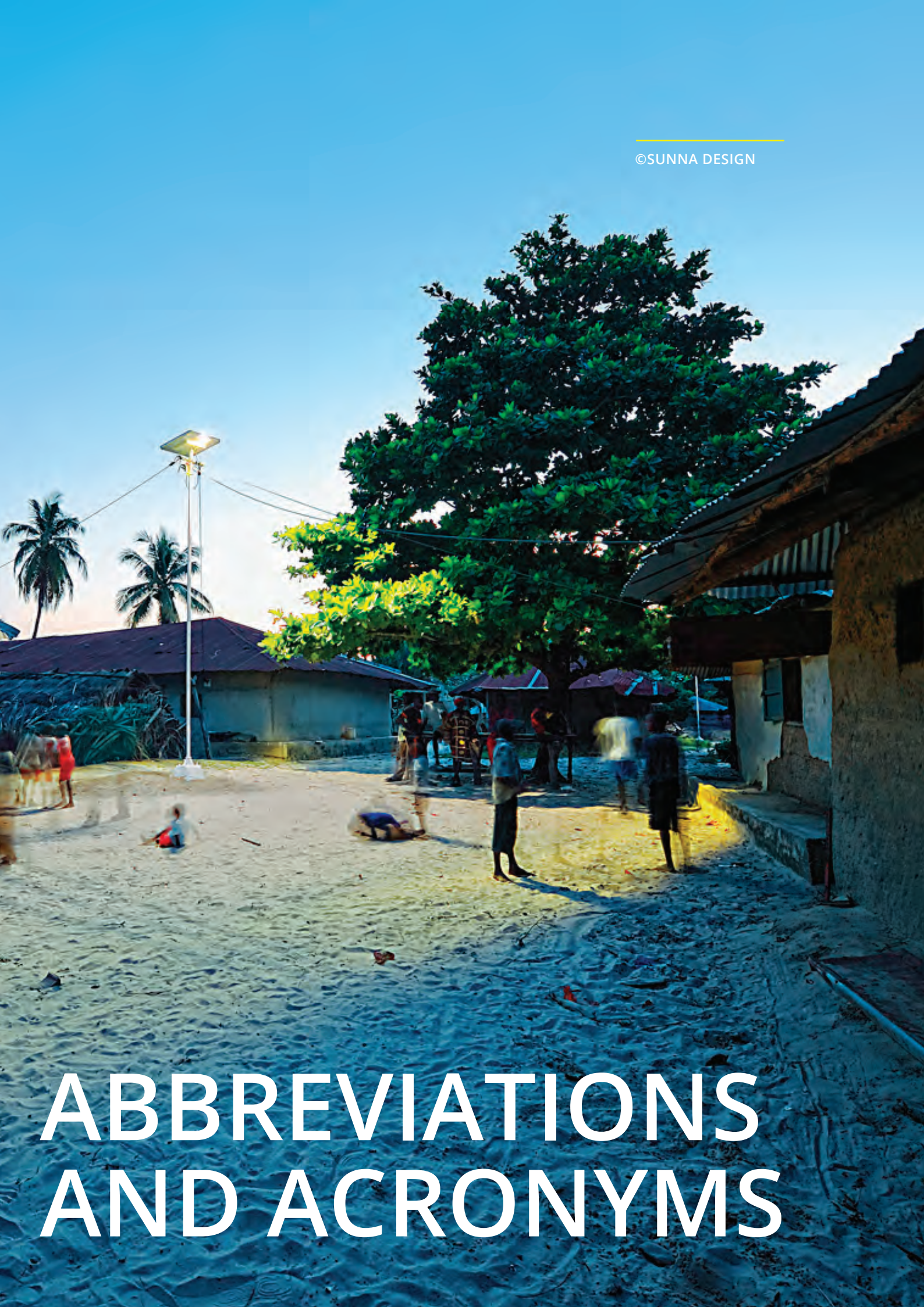
Table of Contents

Figures, Boxes, Tables

List of Figures

List of Boxes

List of Tables



©SUNNA DESIGN

ABBREVIATIONS AND ACRONYMS

AFAWA	Affirmative Finance Action for Women in Africa
ADELE	Access to Distributed Electricity and Lighting in Ethiopia
AFR	Africa region
B2B	Business-to-business
CDC	CDC Group Plc.
CEIP	Clean Energy Innovation Partnership
CEO	Chief Executive Officer
CGAP	Consultative Group to Assist the Poor
DBE	Development Bank of Ethiopia
DFI	Development Finance Institution
DRC	Democratic Republic of Congo
E4I	Energy 4 Impact
EAP	East Asia and Pacific
ECA	Europe and Central Asia
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EEP	Energy and Environment Partnership Trust Fund
EEU	Ethiopian Electric Utility
ELEAP	Ethiopia Electrification Program
ENREP	Electricity Network Reinforcement and Expansion Project
EPC	Engineering, procurement, and construction
EPC	Electric Pressure Cookers
ESN	Energy Safety Nets
ESIA	Environment and Social Impact Assessment
ESMAP	Energy Sector Management Assistance Program
FAO	Food and Agriculture Organization
FAW	Financial Alliance for Women
FCDO	Foreign, Commonwealth & Development Office
FHH	Female-Headed Household
FINCA	FINCA International, Inc.
FINCOOP	Savings and Credit Cooperative Limited
Fintech	Financial technology
FI	Financial Intermediary
FSP	Financial service providers
G7	Group of 7
GAP	Gender Action Plan
GBA	Global Banking Alliance

GBV	Gender-Based Violence
GE	Gender Equality
GEM	Gender Entrepreneurship Markets
GES	Gender Equality Seal
GIIN	Global Impact Investing Network
GIL	Gender Innovation Lab
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GLI	Gender Lens Investment
GOGLA	Global Off-Grid Lighting Association
GPs	Global Practices
GSMA	Global System for Mobile Communications Association
GWNET	Global Women's Network for the Energy Transition
HR	Human Resources
ICRW	International Center for Research on Women
ICT	Information and Communications Technology
IDB	Inter-American Development Bank
IFC	International Finance Corporation
KAGIDER	Turkish Women Entrepreneurs Association
KDA	Kenya Rural Enterprise Program (K-Rep) Development Agency
KWFT	Kenya Women Microfinance Bank
KYC	Know-Your-Customer
LAC	Latin America and Caribbean
LED	Light-Emitting Diode
M&E	Monitoring & Evaluation
MFI	Microfinance institution
MINHEM	Burundi Ministère de l'Hydraulique, de l'Energie et des Mines
MNA	Middle East and North Africa
MSME	Micro, Small and Medium Enterprises
MTF	Multi-Tier Framework for Energy Access
MTN	Mobile Telecommunications Network
NGOs	Non-Governmental organization
NPS	Net Promoter Scores
OGS	Off-grid solar
PAD	Project Appraisal Document
PAYGo	Pay-As-You-Go
PCA	People-Centered Accelerator
PDO	Project Development Objective

PEG	PEG Africa
PID	Project Information Document
PUE	Productive Uses of Energy
PV	Photo Voltaic
RBF	Results-Based Financing
RE	Renewable Energy
REPP	Renewable Energy Performance Platform
RfPs	Request for Proposals
SAR	South Asia Region
SDG	Sustainable Development Goals
SE4ALL	Sustainable Energy for All
SEWA	Self-Employed Women's Association
SIGI	Social Inclusion and Gender Index
SMEs	Small and Medium-sized Enterprises
SOLEIL	Solar Energy in Local Communities
STEM	Science, Technology, Engineering, and Mathematics
STL	Smiling Through Lights
TVET	Technical and Vocational Education and Training
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
V4W	Value for Women
VSLA	Village savings and loan association
WBG	World Bank Group
WDR	World Development Report
WE	Women's Empowerment
WEE	Women's Economic Empowerment
WEF	World Economic Forum
WEDP	Women Entrepreneurship Development Program

All currency is in United States dollars (US$, USD), unless otherwise indicated.

DEFINITIONS

AGENCY	Capacity to make decisions about one's own life and act on them to achieve a desired outcome free of violence, retribution, or fear (World Bank 2014). This includes, for example, women's control over assets and decisions about family formation, freedom from domestic violence, freedom of physical mobility, and bridging social capital—from community networks to family support and friends (World Bank 2012).
ENERGY ACCESS	Ability to obtain energy that is adequate, available when needed, reliable, of good quality, convenient, affordable, legal, healthy, and safe for all required energy services. Can include access to lighting, cooking, and electricity (Bhatia and Angelou 2015).
GENDER AND SEX	Gender refers to the social attributes and opportunities associated with being male and female and the relationships between women and men and girls and boys, as well as relations between women and relations between men. These attributes, opportunities, and relationships are socially constructed and are learned through socialization processes. They are context and time specific and changeable. Gender determines what is expected, allowed, and valued in a woman or a man in a given context. In most societies, there are differences and inequalities between women and men in the kinds of responsibilities assigned, activities undertaken, access to and control over resources, and decision-making opportunities. Gender is part of the broader sociocultural context (UN Women 2001). Sex refers to the biological characteristics that generally define humans as female or male, although they are not mutually exclusive, because there are individuals who possess both (WHO 2006).
GENDER EQUALITY	Equal rights and responsibilities of and opportunities for women, girls, men, and boys. Gender equality means that the interests, needs, and priorities of women and men are taken into consideration and that responsibilities and opportunities do not depend on whether one is born male or female (UN Women 2001).
GENDER EQUITY	Provision of fairness and justice in distribution of benefits and responsibilities between women and men (Desprez-Bouanchaud et al. 1999).
GENDER NORMS	Accepted attributes and characteristics of male- and female-gendered identity at a particular point in time for a specific society or community. Standards and expectations to which gender identity generally conforms, within a range that defines a particular society, culture, and community at that point in time. Ideas about how men and women should be and act. Internalized early in life, gender norms can establish a life cycle of gender socialization and stereotyping (APA 2008).

GENDER POLICY	Policies that seek to transform gender relations to achieve gender equity.
OFF-GRID ELECTRICITY AND OFF-GRID SOLAR TECHNOLOGIES	Electricity supply that is not connected to a central grid system. Includes mini-grid systems and stand-alone technologies. Off-grid solar (OGS) stand-alone technologies for households can be classified into three major categories: pico (compact, light-weight solar photovoltaic panels to generate just a few watts of power in a wide range of small and portable applications), solar home systems, and appliances (WBG and GOGLA 2020).
PRODUCTIVE USES OF ENERGY	Use of electric and nonelectric energy in the form of heat or mechanical energy for activities that enhance income and welfare. These activities are typically in the sectors of agriculture, rural enterprise, health, and education. Examples include pumping water for agriculture, agroprocessing, lighting, information and communications, and vaccine refrigeration (Kapadia 2004).
SEX-DISAGGREGATED DATA	Data grouped based on whether a person is male or female. Data are disaggregated according to sex, not gender, because the biological differences (the sex) of a person are recorded (UN 2015).
SOLAR-POWERED APPLIANCES	Solar-powered energy-efficient products for household (e.g., televisions, refrigerators) and productive use (e.g., water pumps, cold storage), designed to be powered by direct current (CLASP 2016, GOGLA 2018).
MICRO, SMALL, AND MEDIUM-SIZED ENTERPRISES	Enterprises can be differentiated according to size based on three criteria: number of employees, total assets, and annual sales. Micro enterprises have fewer than 10 employees, total assets of less than $100,000, and annual sales of less than $100,000. Small enterprises have 10 to 49 employees, total assets up to $3 million, and annual sales up to $3 million. Medium-sized enterprises have 50 to 300 employees, $3 million to $15 million in total assets, and up to $15 million in annual sales (IFC n.d.).
SOCIAL INCLUSION	Process of improving terms upon which individuals and groups take part in society—improving the ability, opportunity, and dignity of those who are disadvantaged based on their identity (World Bank n.d.).
WOMEN'S EMPOWERMENT	A woman is economically empowered when she has the ability to succeed and advance economically and to make and act on economic decisions. To succeed and advance economically, women need skills and resources to compete in markets, as well as fair and equal access to economic institutions. To have power and agency to benefit from economic activities, women must have the ability to make and act on decisions and control resources and profits (ICRW 2011).

About This Operational Handbook

The off-grid solar (OGS) sector has the potential to increase universal access to energy, alleviate poverty, support economic development, and increase gender equality. Nevertheless, although considerable advances have been made in closing gaps in access to energy, women's presence in the sector as consumers and active participants in OGS value chains remains limited. By adopting inclusive practices, governments, businesses, stakeholders, and market actors can unleash significant economic opportunities and hasten progress toward empowerment and equality, and given the concessional investments that have been made in the sector, appropriate projects are an opportunity to pioneer dynamic, innovative ways to approach gender equality.

This Gender Equality and Off-Grid Solar Operational Handbook responds to sectoral needs by providing operational guidance based on case studies demonstrating promising approaches to closing gender gaps in the OGS sector. The primary objective of the operational handbook is to increase the focus on off-grid energy and women's role in it at the consumer and enterprise levels. It seeks to increase productive uses of energy with a focus on women as workers in the sector, as farmers, and as business owners. It provides a practical overview of the OGS sector observed through an inclusive lens and highlights flagship projects, promising practices, and lessons learned from practitioners worldwide.

The primary target audience for this operational handbook is World Bank Task Teams, who will use it while designing OGS projects; Bank clients (governments); and broader stakeholders designing projects in the sector. The operational handbook is also relevant for development institutions, financial intermediaries, multilateral financial institutions, and the private sector.

How to Use This Operational Handbook

The operational handbook focuses on entry points at the project level and provides guidance on operationalizing promising approaches demonstrated in the case studies, yielding a set of recommended actions for World Bank project teams and market actors, OGS businesses, and other stakeholders.

The operational handbook is divided into three parts. This first part focuses on the case for gender equality and the barriers to it that remain in the OGS sector. Part 2 provides an in-depth look at entry points at the supply,[1] demand,[2] and ecosystem[3] levels. Part 3 provides a succinct list of action points and project design ideas for translating these entry points into tangible actions in the project cycle.

Approach

This operational handbook was developed based on a review of the literature on inclusive business and programming approaches and guidance and reports received from the off-grid energy sector, as well as best practices from similar sectors such as financial inclusion, agriculture, and entrepreneurship for women.

The approach adopted thus involved mixed-methods research that combines a desk-based literature review with data collected through consultations with stakeholders. The literature review resulted in a global stocktaking exercise organized around several thematic areas such as women's empowerment, financial inclusion, access to energy, and entrepreneurship. During this phase, the team also reviewed World Bank project appraisal documents from the OGS sector.

The team conducted a stakeholder mapping exercise to identify key players, programs, and initiatives on the intersections between gender, solar energy, finance, and women's empowerment. This activity resulted in development of a database of key stakeholders involved in the sector. Interviews were organized in two phases. First, there was an exploratory phase aimed at capturing "what is known" about advancing gender equality in the off-grid sector. The second phase aimed at closing knowledge gaps and exploring promising approaches to develop the case studies.

The team conducted 26 interviews with organizations leading gender initiatives in the sector (Appendix A).

NOTES

1. Supply side focuses on existing and potential OGS firms and how companies make choices about technology products, financial products, employment, and leadership.
2. Demand side focuses on aspects of customers, including opportunities that may be available to enhance their optimal use of OGS products.
3. Ecosystem level refers to overall energy policy and the legal, institutional, and regulatory framework, which influences the OGS sector as it relates to gender.

©LIGHTING GLOBAL

EXECUTIVE SUMMARY

Focusing on Gender Equality in the Off-Grid Solar (OGS) Sector: How This Operational Handbook Can Help

There are roughly 733 million people living without access to electricity, and more than 1 billion who are connected to an unreliable grid. Although considerable advances have been made in closing the gaps in access to energy, women still participate sparsely in the sector. Women's overall participation in the energy sector is below that of their participation in the broader economy. Despite making up 48 percent of the global labor force, women account for only 22 percent of the labor force in the oil and gas sector and 32 percent in renewables, of which off-grid solar (OGS) is a subset. According to the Global Off-Grid Lighting Association, only 27 percent of employees of OGS companies are women.

Evidence and experience show that increasing women's participation in the OGS sector has many benefits. The limited data available demonstrate that increasing women's participation in the sector as entrepreneurs, employees, and customers can lead to market growth, better product uptake, and greater consumer satisfaction.

The aim of this operational handbook is to help achieve this. It describes a variety of ways to close gaps within the OGS sector in terms of women's participation in entrepreneurship and employment and as consumers. It distills findings from an extensive literature review, a global stocktaking exercise, key informant interviews, and reviews of case studies.

It also provides World Bank Group project teams and their clients, as well as other actors working in the sector, with recommendations to support progress on gender equality at each stage of the project cycle. It can help answer a variety of practical questions: What sex-disaggregated market data are needed? How can we estimate the size of a potential market for women-owned businesses? What financing mechanisms are necessary to reach women customers? How can we encourage women's employment at the company level? How can benefits that are of great importance for women—such as time savings—be monitored?

Making progress in the energy sector in general, and the OGS sector in particular, will require additional funding. Private and public financing on the order of $7 billion to $11 billion (pre-COVID-19 estimate) must be mobilized to provide access to affordable, reliable, sustainable, modern energy for all, as envisaged in Sustainable Development Goal 7. The OGS sector has the potential to contribute to universal access to energy, poverty alleviation, economic development, and gender equality, but to do so, governments, businesses, stakeholders, and market actors must all adopt more-inclusive practices. This will unleash economic opportunities while empowering women's empowerment and

achieving equality goals. Additionally, given the concessional investments in the OGS sector, the opportunity calls for pioneering interventions in gender equality in projects.

The expectation is that World Bank teams and their public-sector clients and partners will continue to test and refine these approaches in the OGS sector, deepening knowledge of how best to address gender inequality, especially in low- and middle-income countries. This operational handbook is also intended to underpin and expand existing knowledge on gender equality in the context of the World Bank Energy Sector Management Assistance Program (ESMAP).

Key Findings: Barriers to Women's Inclusion in the OGS Sector

Although this operational handbook focuses on recommending steps to close gaps in the sector, it first discusses barriers to women's participation in it.

Multiple barriers limit women's ability to access energy technologies and participate in OGS projects and programs. A variety of pervasive factors interact at the individual, institutional, and societal levels that directly limit women's inclusion in the sector, including:

- **Gender and social norms.** Gender norms and intrahousehold dynamics inhibit women's access to energy technologies. In addition, men are the main purchasers of energy products,[4] even when women are the primary end users; this results in skewed consumer data and products that do not always reflect the needs or preferences of women. As in other sectors, gender norms and bias, as well as broader systemic barriers, limit women's ability to enter the workforce and obtain funding. For instance, one experimental study showed that men were 60 percent more likely to receive funding than women who delivered identical pitches.
- **Lack of market data and knowledge about women's inclusion in the sector.** Sex-disaggregated data for the OGS energy sector and knowledge about how to make the sector more gender equal are limited. The lack of sex-disaggregated data about customer segments and demand for products leads to missed opportunities to reach women customers. In addition, lack of data on women-owned enterprises and potential for productive uses of energy prevents increasing the number of women customers and the chance to design business strategies and projects that could transform their economic opportunities. At the company level, evidence on gender-inclusive business practices is limited, and companies often lack awareness of the business case for investing in gender equality.
- **Inequity in ownership and assets.** Historically, female-headed households have tended to be poorer because long-term assets are unequally distributed. Despite recent research showing that female-headed households have seen more rapid reductions in poverty compared to male-headed households, affordability of assets and services, including energy services, remains a challenge. What's more, discriminatory

property and tenure laws restrict women's ownership of land and other assets that could be used as collateral for loans from formal financial institutions.

- **Lack of business and technical skills.** Women have less exposure to formal business training than their male counterparts and tend to be less confident about their financial abilities. They also tend to own informal businesses with little or no record keeping, making it difficult for them to demonstrate viability or due diligence when seeking financing using traditional assessment methods. For these and other reasons, women are also likely to face higher borrowing costs and may be required to provide collateral for a higher share of their loans. They also usually secure shorter-term loans than men (IFC 2019).
- **Lack of appropriate financing for women-owned and -led businesses.** Little is known about the kinds of financial services and products women prefer. Although financial institutions increasingly design gender-neutral policies and services, these tend to reflect the preferences of men. Research shows that women's businesses may, for example, need a combination of financial and nonfinancial products and services, including training, mentoring, networking, and other advisory services. Specifically, for early-stage off-grid energy enterprises, financing for women to grow and sustain their businesses is limited. Microfinance and traditional rural village savings and loan associations and cooperatives are the most common financing options available to women, but they are not suitable for women who want to operate beyond the level of individual enterprises, such as installing rooftop solar and operating mini-grids.
- **Lack of training and mentorship opportunities to close skill gaps.** Across the OGS sector, women lack access to dedicated mentorship opportunities, because they tend to be excluded from male-dominated familial, social, and professional networks. When these opportunities exist, they tend to disregard the needs and realities of women. Moreover, because of gender norms and unequal access to education or subject streaming,[5] women may lack the skills to seek employment in the sector. When they find jobs in the sector, numerous barriers prevent their career advancement, among them inflexible work policies, unwelcoming work environments, coworker biases, unaccommodating workplace facilities, and sexual harassment.
- **Lack of policies that address gender inequality in the OGS sector.** Gender discrimination in laws, policies, and regulations prohibit and inhibit women from accessing the benefits of energy services and from actively participating in the sector. The 2021 Women, Business and the Law (World Bank 2021) reports that 75 countries limit women's property rights in some form, and various legal barriers prevent women from working in specific sectors and occupations. Renewable energy policies and frameworks can be catalytic in introducing labor conditions that are conducive to women's active participation in the sector, although even when energy frameworks include some gender considerations, women are mostly characterized as potential beneficiaries rather than as agents of change. At the company level, practices and policies, beginning with recruitment, rarely address gender equality.

Key Recommendations: Entry Points for Gender Equality in the Off-Grid Sector

Considering the whole market system and the aforementioned barriers, this operational handbook identifies opportunities to close gender gaps at the supply, demand, and ecosystem levels, with implications for various OGS stakeholders, including financial institutions, nongovernmental organizations, education and training providers, and policy makers. At each of these three levels, it provides a framework that maps interventions and features successful case studies to achieve the following objectives: increasing women's ownership and control over assets, their economic opportunities, and their voice and agency.

Supply Side

The suggested supply-side entry points are mostly focused on OGS firms and how companies make choices about technology products, financial products, employment, and leadership. These include actions to enable access to finance for women-led OGS businesses; encourage OGS companies to recruit, retain, and advance women at all levels, including in distribution networks; support companies in creating sales and after-sales processes and policies to build trust and customer loyalty among female customers; intentionally address norms and other constraints that limit women's participation in OGS value chains; and build women's capacity to enter and advance in the OGS sector.

Demand Side

Demand-side entry points focus on customers and opportunities to maximize the use of OGS products. These include steps to design and provide products that women want at the household and enterprise levels, provide financing to increase women's access to OGS products, support economic opportunities for women entrepreneurs to foster a productive use of energy, and address gender norms that limit women's access to OGS products and finance.

Ecosystem

Ecosystem entry points refer to entry points that might exist beyond the OGS sector but can still affect such areas as policy, education, and finance that influence the sector. This operational handbook provides examples and recommendations to encourage investors and fund managers to make investment decisions that address gender inequality and measure their returns, collaborate with other sectors to reduce barriers for women-owned businesses, address barriers that limit women's abilities to benefit economically from the OGS sector, and support women entrepreneurs in the OGS sector.

Key Recommendations: Actions for Projects

From the perspective of a project cycle, this operational handbook distills concrete actions teams can adopt, mainly at the project design phase, based on the above framework.

Assessing Gender Inequality in OGS

Often the first steps in identifying gender inequality are collecting sex-disaggregated data, conducting an assessment, and developing an evidence base relevant to the specific project. These steps can also lay the foundation for making the business case for teams, companies, and other stakeholders to invest in gender equality. These data will provide insight into key gender gaps and the most promising areas for intervention. Teams should hire experts in the specific topic to collect and analyze data. They can also benefit from using secondary sources of information to better understand specific problems related to gender inequality in OGS. National development strategies can also provide useful information during the project design phase.

Building Momentum: Securing Active Support for Gender Equality from Leaders and Counterparts

Because high-level buy-in is critical for any organizational or institutional change process, teams should make explicit efforts to secure such support. As a first step, the project team can leverage some of the initial data collected to engage the company or counterpart in the business case for gender equality and discuss some of the challenges the organization is facing. Although senior leaders or department heads may be able to make institutional commitments, employees will be crucial in driving the change process. Thus, it is critical to hold regular discussions and enable feedback processes to ensure that employees agree with the ideas being proposed. Staff trainings may also be necessary to provide all concerned with a foundational understanding of gender equality.

Developing a Strategy and Action Plan

To ensure broad implementation of gender equality objectives, the commitment of senior leadership to these goals should be translated into concrete, specific actions that are clearly spelled out in an institutional plan or strategy under a project or at the company (or institutional) level. Although evidence should inform these plans, project teams should also take the local context into account to ensure that the actions being taken are pertinent and relevant and that they can help ensure success during project implementation. The strategy should include specific measurable goals and targets, engage champions (including men) to strengthen its implementation and overall buy-in, and include a plan to capture results through monitoring and evaluation procedures.

Mobilizing Budget and Technical Experts

Some of the activities outlined in this operational handbook require allocation of budget and experts if implementation is to be effective and sustained, but given concerns about confidentiality and lack of budgets allocated to gender equality in OGS, little information is generally made available on specific costs of initiatives. Thus, to ensure sustainability, project teams and counterparts should make concrete efforts to determine what each activity and initiative will cost over time.

Navigating Challenges

Project teams and counterparts can encounter numerous challenges that should be addressed proactively to prevent them from stalling project implementation and progress toward gender equality. For instance, many actions to further women's participation in the OGS sector require upfront investments, and results can take time; this can subvert the case to invest in women in the sector and potentially reduce buy-in. Moreover, some project actions and solutions to challenges might not be sensitive to local realities, further limiting progress. It thus becomes crucial to understand the context and engage local experts to help navigate these challenges as they arise.

Considering market and project-cycle perspectives, this operational handbook includes flagship programs, effective practices, case studies, references, lists of relevant stakeholders, and lessons learned from global practices to identify barriers and leverage opportunities to increase women's inclusion in the OGS sector. The hope is that all actors involved will improve the approach to gender equality across the sector while continuing to test and refine these tools (Appendix C).

NOTES

4. In this context energy products refers to off-grid solar products.
5. Educational streaming is evident, with women overrepresented in health and education and men dominating in the engineering and technology fields. For more information see Schomer and Hammond (2020).

©CHAD TREMEAU

ONE
THE CASE FOR GENDER EQUALITY

1.1 The Case for Gender Equality

The global potential of the OGS market is substantial—733 million people lack access to electricity (World Bank and ESMAP 2020), more than 1 billion are connected to an unreliable grid, and more than 70 million farmers could use solar to power productive activities (WBG and GOGLA 2020). Although energy poverty is a problem for everyone who experiences it, it affects men and women differently; gender inequalities significantly reduce women's ability to access energy solutions or use them to improve their lives, especially by accumulating resources through value-added economic activities.

Notwithstanding the obstacles women face, their inclusion in the OGS sector as consumers, employees, and entrepreneurs yields significant benefits. These are apparent in several areas of entrepreneurship, including sales and marketing, after-sales services, lending (as lenders and as borrowers), and adoption of technology as assets and goods. A growing body of literature supports the business case for gender equality in the workplace. The following potential benefits are relevant for OGS companies and market actors.

- ***Financial performance:*** Firms with one or more women on their executive committee have delivered higher returns on equity than those without women (McKinsey and Company 2013). Gender-balanced leadership teams are also associated with higher returns on private equity and venture capital investments (IFC 2019). A recent example from an OGS company in Ghana showed that increasing gender equality in the workforce coincided with 60 percent greater growth in revenue (Power Africa 2020). Interventions aimed at increasing women's participation in the energy utilities workforce show that with a higher rate of women's employment there are less revenue losses (USAID 2021). Within the Energy and Environment Partnership Program portfolio, 34 percent of project developers reported that gender actions had a positive impact on financial performance (EEP 2017).
- ***Employee retention:*** Companies that invest in attracting and retaining female talent reported 64 percent greater employee productivity and retention (McKinsey and Company 2010). Energy utilities that improved gender equality policies and practices saw greater women's job satisfaction, greater employee motivation, and less turnover of female employees (USAID 2021).
- ***Service delivery:*** OGS companies that employed women in sales and distribution reached more female customers (IFC 2011). Gender diversity in sales and marketing helped an OGS company achieve quicker sales, cultivate a more reliable customer base, and attract investments (Calvert Impact Capital 2018).
- ***Innovation:*** Companies with more women introduce more innovations in the market. Women do as well as or better than men at championing change and taking key initiatives (Díaz-García et al. 2013).

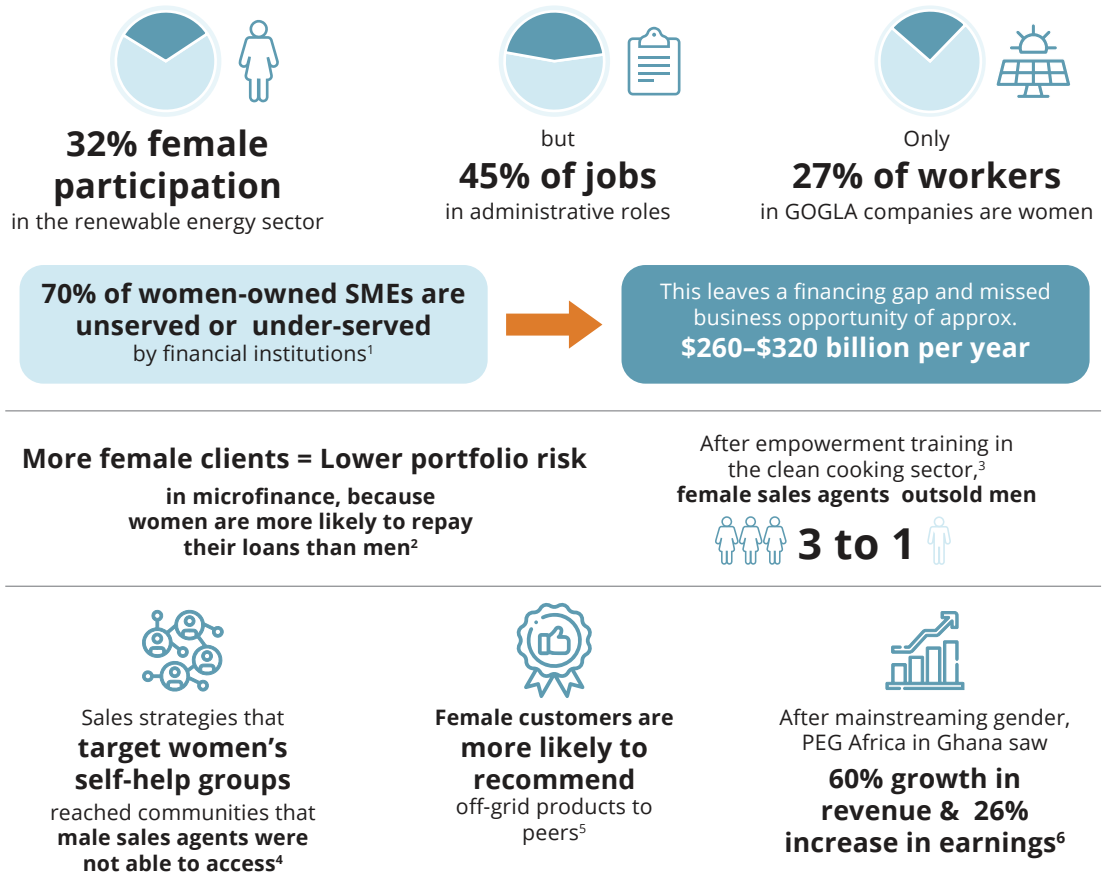
There are vital—yet untapped—opportunities to close these gender gaps in the OGS sector and thereby hasten attainment of Sustainable Development Goals 5 (achieve gender equality and empower all women and girls) and 7 (ensure access to affordable, reliable,

sustainable, and modern energy for all). These highlight the economic empowerment of women and the growth of the sector. In other words, closing these gaps not only unlocks business opportunities and market growth, but also supports women's economic advancement and empowerment.

Interventions designed to close gender gaps in the OGS sector have the potential to reorient businesses toward inclusive practice and unleash significant economic opportunities for women and men while realizing empowerment and equality objectives. Furthermore, engagement of women in supplying OGS energy services is a path for transforming gender norms by challenging traditional, discriminatory standards. Projects that promote women's inclusion in the OGS value chain positively affect men's beliefs about what women can do. For example, women can act as role models for diverse career paths for girls by taking on roles as sales agents, solar technicians, and business owners. In this sense, women's involvement in the supply of energy will challenge existing gender norms and present a functional model of empowerment accessible to all women and girls living in those communities (Figure 1.1).

FIGURE 1.1

The Business Case for Investing in Women in the Off-Grid Energy Sector



Sources: 1. IFC 2017a; 2. D'Espallier et al. 2009; 3. Shankar et al. 2015; 4. IFC 2016; 5. 60 Decibels 2020; 6. Power Africa 2019

1.2 Gaps and Opportunities for Women's Inclusion

Multiple barriers limit women's ability to access energy technologies and participate in OGS projects and programs. Pervasive factors interact at the individual (limiting self-confidence), institutional (through workplace policies), and societal (as a result of laws and gender norms) levels, all of which directly affect women's inclusion in the sector. This section provides an overview of some of the key barriers and gaps and discusses opportunities for ensuring a focused approach to gender equality in OGS project design (Box 1.1).

1.2.1 Gender and Social Norms

Gender norms and intrahousehold dynamics limit women's access to energy technologies. Intrahousehold dynamics strongly influence the benefits of access to energy. In many countries, discriminatory gender norms mean that decision-making power lies with men, with women having less influence over decisions about purchasing energy products. One study found that, in 58 percent of OGS customer households, the man in the family first heard about energy products (60 Decibels 2020). Men are also the main purchasers of energy products, even when women are the primary users (GWNET 2020). This results in skewed consumer data, products and purchases that do not reflect the needs and preferences of women. Mobility is also a barrier for potential female customers. Cultural norms and limited access to household assets may restrict women's movement to and from their homes or communities, making it difficult (and sometimes impossible) to visit shops that sell energy products. For this reason, women may not be aware of the existence or availability of some energy alternatives.[6, 7] Also, men hold most formal sales agent jobs. Owing to gender and cultural norms, male sales agents have been found to be less effective at reaching women than their female counterparts, who better understand gender-specific benefits of energy products (Power for All 2019). All of this means that promotional campaigns and consumer data are skewed toward men.

Gender norms and broader systemic barriers to education or advancement may limit women's ability to enter the workforce and become leaders. Gender norms may restrict the ability of women to find employment in the OGS sector and to operate as sales agents. Worldwide, women hold roughly 32 percent of jobs in the renewable energy sector (IRENA 2019b). Depending on the local context, women may be discouraged from seeking employment outside the home, and patriarchal norms may make it difficult for them to travel outside their homes or villages. In some countries, working as a sales agent may not be considered a suitable profession for women, because they are discouraged from taking jobs that require interactions with men. Conscious and unconscious bias across entire sectors can influence job advertisements, interviews, and promotion. Other barriers include laws and regulations that limit where women can work. In Pakistan, for example, women are precluded from jobs in plant operations and maintenance (Pearl-Martinez 2014). In other cases, the perception that women cannot handle technical or physical work or that they need protection excludes them from many jobs, limiting them to

administrative roles. The process is not necessarily overtly acknowledged, and unconscious bias can subtly dictate how job advertisements and postings are phrased and how recruitment panels and recruiters make their candidate choices.

Gender bias on the part of lenders or investors can derail women's applications for financing. Research shows that unconscious bias results in women's applications being less favorably received than those of men and in smaller loans being offered, if any. One experimental study showed that men were 60 percent more likely to receive funding than women who delivered identical pitches (Brooks et al. 2014). This is attributed to social norms and the dominance of men as investors. The gender bias extends to all parts of the supply and financing value chain. A World Bank study examining loan officer bias in Turkey found that 35 percent of loan officers (male and female) were biased against female applicants, with women receiving loans of $4,000 less on average than men. (World Bank 2020b). These results suggest that loan officers may be biased regarding who they view as creditworthy. Women are also at greater risk of being exposed to quid pro quo sexual harassment whereby a person of authority (including lenders and investors) suggests that they will give something in exchange for sexual favors.

1.2.2 Lack of Market Data and Sectoral Knowledge About Women Customers

One critical challenge is related to market information about female customers, their needs, and the characteristics of their energy demands. Only limited sex-disaggregated data are available for the OGS energy sector, and knowledge about how to make the sector more gender equal is limited (IRENA 2019a). Lack of sex-disaggregated data about customer segments and demand for products leads to missed opportunities to reach key women customers. In addition, lack of data on women-owned enterprises and potential for productive uses of energy makes it difficult to attract women customers and design business strategies and projects that could transform economic opportunities for women (SE4ALL 2017). Where sex-disaggregated data are available, companies, aid agencies, and investors are often unsure about how to use it. Even companies that routinely collect such data may not know how to act on it to reach women customers or make their businesses more inclusive. There are some exceptions; for example, Bidhaa Sasa in Kenya, which delivers household goods to clients in rural areas on monthly payment plans, collects gender-sensitive data that includes not just disaggregated sales and default-rate data for men and women, but also key insights into how their products have influenced women's lives. This has allowed the company to learn more about what drives women to buy its products and therefore fine-tune its sales pitches (ICRW 2018a).

At the company level, there is limited information concerning gender-inclusive business practices, and companies are often unaware of the business case for investing in gender equality. Limited evidence regarding gender-equitable business practices in the sector means that OGS companies have a limited understanding of its impact on business performance, barriers to adoption, and how best to overcome those barriers. Companies may not strive to reach women customers or hire women because they are

unaware of the business case for doing so, and they may overlook the influence of women end-users if most of their sales are to men (ICRW n.d.). Elsewhere, the business case might appear less compelling and thus only practicable with external support. For young companies, a focus on gender equality in hiring may be seen as an extra cost rather than a strategy to increase profitability and success. These companies may not see the need to reform their hiring policy or working conditions and will be reluctant to spend additional resources on investigating what they perceive to be commercially irrelevant gendered preferences for products and services (Shell Foundation 2017).

1.2.3 Inequity in Ownership and Assets

Unequal access to assets and limited control over them directly affect women's ability to purchase OGS products. Historically, female-headed households tended to be poorer than male-headed households because of the unequal distribution of long-term assets, because men primarily own land and houses, but recent research shows that, far from being left behind, female-headed households have generally seen more rapid poverty reduction (Milazzo and van de Walle 2015), making women of obvious interest as a demographic segment that includes large numbers of potential customers for energy products and services. Despite promising evidence of women's increasing incomes and an overall decline in poverty in female-headed households, affordability is a well-recognized barrier to accessing OGS products (for households headed by men and women alike). In addition, women are often employed in seasonal and informal jobs, and their income fluctuates throughout the year, making regular payments on energy products difficult.

Discriminatory property and tenure laws restrict women's ownership of land and other assets that can serve as collateral for loans from formal financial institutions. Therefore, women have limited access to financing for OGS technologies from formal banking institutions. Nearly 1 billion women are excluded from the global financial system, and women constitute 56 percent of all unbanked adults (World Bank 2018a). Discriminatory gender norms concerning intrahousehold decision making, mobility, asset ownership, and the social status of women also hinder women's ability to access finance (Toronto Center 2019). Even when women entrepreneurs are involved in sales and distribution of OGS energy products, they are often unable to meet the requirements to access credit to purchase product inventory, because they lack access to most acceptable forms of collateral (land, homes, other physical immovable property).

Women have limited access to mobile phone services. In low-income and developing contexts, women are 8 percent less likely than men to own a mobile phone and 20 percent less likely to use mobile internet services (GSMA 2020). Cultural norms affect use of mobile phones and consequently of mobile money and mobile- based services such as pay as you go (PAYGo), which presents another barrier to women in adopting OGS technologies.

1.2.4 Lack of Business and Technical Skills

Women have less exposure to formal business training than men and tend to have less confidence in their financial abilities (IFC 2020b). Lack of financial literacy among women microentrepreneurs leaves them unable to weigh the risks and benefits of financial products that they cannot fully understand. They are thus highly risk averse, and the range of financing opportunities they can access or the range of products they can sell as OGS agents is limited. In addition, women tend to have less digital financial literacy, which makes it difficult for them to take advantage of digital financial services. According to the Global System for Mobile Communications Association's Connected Women Commitment Initiative, women are less likely to be aware of and understand the availability, value, and benefit of mobile financial services and have less familiarity with and confidence in their ability to use these services and less trust in the reliability and security of the service (GSMA 2019).

Women tend to own informal businesses that have little or no record keeping, which makes it difficult for them to demonstrate viability or respond to due diligence when seeking financing through traditional assessment methods (IFC 2019). The complexity of the application processes to obtain a loan is also a barrier for women, who sometimes lack confidence because of lifelong socialization patterns (Goldman Sachs Global Markets Institute 2014). For example, a study in Bahrain showed that 57 percent of Bahraini women business owners found financing procedures too complicated (World Bank 2013a). Other barriers include length of the application process and onerous requirements, which can be challenging given women's time constraints because of the unequal care burden. Women entrepreneurs in developing countries experience higher rejection rates for loan applications than their male counterparts. They are also likely to face higher borrowing costs, may be required to provide collateral for a higher share of their loans, and usually secure shorter-term loans (IFC 2019).

1.2.5 Lack of Appropriate Financing for Women-Owned and -Led Businesses

There is little information about what kind of financial products and services women prefer. Financial institutions increasingly design gender-neutral policies and services, but this often equates to "treating women like men" (Yaccato and Murray 2016). By not recognizing women's special needs and how society's social norms and gender-based divisions of labor and practices shape their behavior, such gender-neutral approaches unintentionally exclude women. Women's businesses may, for example, need a combination of financial and nonfinancial products and services, including training in accountancy and financial planning (IFC 2019). In interviews with 13 financial institutions across Africa, Europe, Latin America, and the Middle East, 63 percent of respondents reported that women want advisory, mentoring, and networking services, in addition to transparency and clear processes for loan approval (EBRD and WWB 2014). Such services are rarely available when commercial banks offer services in a traditional gender-neutral manner. New and innovative business models around financing, such as PAYGo, and algorithm-based credit scoring

for access to digital credit do not account for the inherent differences in women's and men's financial needs. For example, women often have smaller digital footprints because of lack of access to phones and therefore continue to be left out of the market as these new financing models grow.

For early-stage OGS enterprises, there is limited financing for women to grow and sustain businesses. Microfinance and traditional rural village savings and loan associations (VSLAs) and cooperatives are the most common financing options available to women, but they are not suitable for women who want to operate beyond the level of individual enterprises, such as those working on rooftop solar installations or operating mini-grids. This creates a gap in financing women's business beyond micro entrepreneurship or village-based group lending. Women's enterprises are often stereotyped as micro, sideline, slow-growth businesses, which results in women being able to obtain approval only for smaller loans, sometimes because they lack the confidence to apply for loans of a size commensurate with their business needs. Larger loans also require traditional forms of collateral, which are often unavailable to women because of discriminatory laws and gender norms.

1.2.6 Lack of Training and Mentorship Opportunities

Throughout the OGS sector, women lack access to dedicated training and mentorship opportunities. Gender norms often result in women's exclusion from the familial, social, and professional networks that men enjoy, so they miss out on information about career development opportunities. In addition, existing training and mentorship programs can be discriminatory if they do not cater to the specific needs of women (e.g., childcare needs, skills gaps), with the result that few women participate. Inaccessibility of training and mentorship programs may also deny women opportunities to network with their peers (IRENA 2019b).

Women may not have the technical background or be viewed as having the competency to enter the workforce. Because of gender norms and unequal access to education and subject streaming,[8] women face various barriers to employment in the sector and being taken seriously. Thorough understanding of the categories of workers in the OGS sector and the barriers that typically affect each category (e.g., women in sales versus women technicians) will therefore ideally inform design of supportive measures to address these barriers.

Women are not welcome in male-dominated spaces. Even when women are hired and take on leadership positions in the OGS sector, they face additional challenges that may prevent them from progressing in the sector or even lead them to leave it, including limited flexible work policies,[9] unwelcoming work environments, coworker biases, gender wage gaps, unaccommodating workplace facilities, and sexual harassment. Sandler and Hall (1996) coined the term "chilly climate," which is used to refer to unwelcoming social factors for women in male-dominated science, technology, engineering, and mathematics (STEM) fields. Many women in the OGS sector have had similar experiences while working in OGS companies in technical and nontechnical roles.

1.2.7 Lack of Policies and Laws that Address Gender Inequality

Gender discrimination in laws, policies, and regulations inhibits women from accessing the benefits of energy services and from actively participating in the sector. Discriminatory property, land tenure, and inheritance laws make it difficult for women to accumulate resources or access credit. *Women, Business and the Law* (World Bank 2021) reports that 75 countries limit women's property rights in some form and that legal barriers prevent them from working in specific sectors and occupations. Renewable energy policies and frameworks can be catalytic by introducing labor conditions conducive to women's active participation in the sector, whereas if gender inequality remains embedded in legal frameworks, it remains difficult to address labor gaps between women and men, which has knock-on effects on lifetime earnings and pension. According to Sustainable Energy for All (SEforAll 2018), most countries have at least one law that undermines economic opportunities for women, particularly in the informal economy, which is where most women in developing countries work. Even when energy frameworks include some gender considerations, women are mostly characterized as potential beneficiaries rather than as agents of change (IUCN 2017). An enabling environment is crucial for women entrepreneurs to be able to establish and grow their OGS businesses. This entails not only facilitation of business for women, but also fiscal policies for OGS products, industry standards, and certification of quality-assured market products.

Company policies rarely address gender equality. Policies that do not meet the needs of women limit the attraction, retention, and advancement of female employees in the OGS sector. Few companies have policies that encourage women to remain in the workforce. At the recruitment phase, job descriptions tend to omit inclusive language, and unbalanced interview panels usually lack recruitment targets for women. This is tantamount to ignoring the unique challenges facing women while giving men an automatic advantage in the hiring process (PwC 2017). In this context, other policies of crucial relevance are those that govern wages, opportunities for career progression, flexible work arrangements, and training opportunities. Women remain vulnerable in the workplace because of lack of protection against discrimination, harassment, and gender-based violence. Then, when they start families of their own, the absence of flexible working policies or maternity leave makes it difficult for them to remain in the sector.

BOX 1.1

OPPORTUNITIES FOR INCLUSION

Closing gender gaps is a corporate priority for the World Bank Group, as highlighted in the World Development Report Framework (World Bank 2012), which identifies three crucial domains for gender inequality:

- **Endowments:** Inequalities related to education, health, and physical assets
- **Economic opportunities:** Inequalities related to jobs, land, agriculture, technology, or markets
- **Agency:** Ability to make choices and take action to achieve desired outcomes, including a voice in decision making

In recent years, the World Bank Group has implemented pioneering approaches and helped develop knowledge and best practices related to integration of gender equality considerations into all phases of off-grid energy projects. The Energy Sector Management Assistance Program and World Bank Task Teams are changing how gender equality is considered during project and program design, moving toward an analytical approach to mapping gaps between men and women in relation to the Bank's gender strategy pillars. This new approach involves an ambitious view of gender as an integral part of the design, implementation, monitoring, and evaluation of projects and programs. The World Bank Group has identified the need to build on existing knowledge and remedy shortcomings in terms of approaches and design features already demonstrated to have been successful in the World Bank Group portfolio and among partners and external stakeholders. Building on the World Bank Group Gender Strategy (2016-2023), three objectives are most relevant to closing the gender gap in the OGS sector: removing constraints on more and better jobs, removing barriers to women's ownership and control over assets, and increasing women's voice and agency while also engaging men and boys[10].

Removing Barriers to Ownership of and Control Over Assets

Consumer financing. Programs can close gender gaps in access to credit and technologies by identifying potential asset-financing models, partnerships, use of digital payments, synergies between diverse off-grid technologies, and uses of energy (especially productive uses).

Company financing. By adopting a more ambitious view of financing

mechanisms while considering the needs of and opportunities for women-owned and -led companies, as well as the barriers that they face, programs can help women play a role in the off-grid energy transition while achieving gender equality. The needs fall under the following categories:

- Lending to more women-owned and -led businesses
- Helping companies target the needs of women (along with those of men)
- Helping companies target women-owned and -led small and medium-sized enterprises and productive use of relevant technologies.

Capacity building and technical assistance can help ensure that women-owned and -led businesses benefit from training opportunities to establish and grow their enterprises.

Removing Constraints on More and Better Jobs

Increase women's participation in off-grid solar (OGS) energy supply chains at all levels. Women can earn income and gain employment from producing, distributing, selling, and maintaining OGS appliances and providing after-sales services. Untapped opportunities lie in exploring women's involvement in management and higher levels of OGS companies.

Gain deeper understanding of women's demand for and use of off-grid products that are conducive to job creation. Off-grid technologies can also support income-earning activities by extending the workday or providing the energy needed to set up small businesses that depend on energy provision.

Increase women's participation in productive uses of energy activities that generate income. Labor-saving mechanized services such as electric water pumping, and grain grinding yield time savings and can allow women to set up their own small enterprises.

Increasing Women's Voice and Agency and Engaging Men and Boys

Build the evidence base for changing gender norms by collecting evidence and sharing knowledge about the business case for women's inclusion in the sector, including roles that women can fill as technicians, operators, sales agents, and business leaders.

Increase representation of women in leadership positions and decision-making structures by increasing their representation in governance and service provision. Mitigate and respond to gender-based violence by ensuring that the work environment is free from violence and harassment, by adopting policies, codes of conduct, and survivor-centered reporting mechanisms.

NOTES

6. Based on interviews with CLASP.
7. Research under the Yemen Emergency Electricity Access Project revealed mobility constraints on women that restrict their ability to charge batteries for lighting or mobile phones and limit their access to information about alternative energy options that could ease their daily burden.
8. Overall, educational streaming is evident, with women overrepresented in health and education, and men dominating in the engineering and technology fields. For more information see Schomer and Hammond (2020).
9. These can take many forms, including variable working hours (flextime), telecommuting, and reduced hours.
10. "Improving Human Endowments" is a primary strategic objective of the World Bank Group, but it is not covered within the scope of this operational handbook. Health outcomes, as well as education and school-to-work transition, can be considered crucial outcomes of off-grid energy interventions.

©INKA SCHOMER/
WORLD BANK

TWO OPPOTUNITIES FOR GENDER INCLUSION

2.1 Entry Points for Inclusive Market Development

There are several entry points for increasing gender equality in OGS interventions and businesses. Efforts can be focused on closing gender gaps at the supply, demand, and ecosystem levels, with implications for various OGS stakeholders (financial institutions, nongovernmental organizations (NGOs), education and training providers, policy makers).

In this operational handbook, discussion of supply-side factors focuses on existing and potential OGS firms and how companies make choices about technology products, financial products, and employment and leadership. Demand-side factors, including opportunities to increase optimal use of OGS products, are focused on customers—men and women. The discussion of ecosystem refers to broader areas that may need to be unpacked beyond the level of the direct OGS stakeholder that affect the gender gaps prevalent in companies and experienced at the customer level.

Organizations that have made gender equality a priority or value proposition; private-sector companies that have been piloting promising approaches; and various initiatives worldwide designed to capture lessons learned, share best practices, and remove barriers that women face have championed women's inclusion in the OGS sector. This section discusses such approaches, best practices, and lessons learned from various organizations working on closing gender gaps. It also recommends actions to guide private-sector stakeholders, financial institutions, policy makers, World Bank Task Teams, and stakeholders implementing promising approaches.

2.1.1 Supply-Side Factors

- **Enable access to finance.** Access to finance is critical to increasing participation of women-led and -owned businesses. Project teams should prioritize support for such businesses through targeted funding windows and support studies designed to highlight the different needs and preferences of women-led OGS businesses for financial service providers (FSPs). They can also support collection and use of sex-disaggregated data to make the business case and create awareness among FSPs (e.g., banks, microfinance institutions (MFIs), financial, technology) about the market opportunity that providing financing for women-led OGS businesses presents. They should complement financial incentives with nonfinancial support in the form of technical assistance in designing specialized value propositions (e.g., a financial product for women entrepreneurs that includes access to advice, networking, mentoring, access to business management technologies) for women-owned OGS businesses (IFC 2020b).
- **Encourage OGS companies to recruit, retain, and advance women at all levels.** The growing OGS sector is a huge opportunity for good-quality jobs for women, but

unless there is a concerted effort to support OGS companies in recognizing this opportunity, women will continue to be excluded. OGS companies can attract and retain female talent by implementing policies that allow for parental leave, part-time positions, flexible work hours, safe travel and mobility options, and equal opportunities for professional development and advancement. Financial and nonfinancial incentives such as targets and technical assistance for OGS companies to implement these policies, along with targeted training on understanding and addressing gender bias within organizations, can support them in collecting and analyzing data on women in customer-facing roles and creating mentoring and leadership development opportunities for advancing economic opportunities for women (IRENA 2019b). Some companies are already doing this; for example, the Paradigm Project, which was launched in 2009 and is operating in Kenya and Uganda, places women at the core of its business strategies and its consumer-facing brand—EzyLife. Recognizing that women are the main users and consumers of their products, the company uses a last-mile distribution program to sell cookstoves, solar lights, and water tanks based on Ezy Agents, 95 percent of whom are women, surpassing the initial target of 50 percent (ICRW 2018b) They have achieved this level of women's participation by adapting their hiring, retention, training, and mentoring programs for gender inclusion.

- **Support companies in creating sales and after-sales processes and policies that build trust and customer loyalty with female clients.** Building trust with clients is critical to increasing sales of OGS products to women. Companies can benefit from technical assistance to evaluate the entire OGS customer journey, starting with when a potential client may hear about a product to when they make the purchasing decision and including client satisfaction, feedback, and after-sales services, all seen through a gender lens. This can help increase understanding of how and why women are unintentionally excluded as clients at any step along the way. This understanding can then be used to adapt or redesign the sales and after-sales processes. Numerous projects are already leveraging the strengths of female employees or entrepreneurs to build trust and loyalty among female customers. The joint World Bank–International Finance Corporation (IFC) project, Lighting Africa, worked with the NGO Practical Action to train hundreds of female entrepreneurs in the OGS energy sector to leverage their personal and business networks, building trust and selling OGS products. Since 2009, the project has benefitted roughly 20 million people in Sub-Saharan Africa by providing access to electricity (Business Fights Poverty 2017).
- **Understand that, because of gender norms, women face specific constraints that must be addressed to increase their participation in the OGS value chain and sector.** Women face barriers to entering and meaningfully participating in the OGS sector, often because of restrictive social and gender norms and beliefs about gender roles. These norms shape not just the behavior of women, but also the behavior all system actors, creating systemic constraints that exclude women. Project teams can address these normative constraints by working with families and communities to challenge and shift perceptions about gender roles, supporting inclusion of

women in leadership roles within the sector, encouraging companies to acknowledge and address constraints related to product financing or productive use of energy, and testing new ideas for promoting inclusive sales and distribution models that account for women's limited mobility or limited access to mobile phones or using PAYGo options (IRENA 2019b).

- **Increase the capacity of women to enter and advance in the OGS value chain and sector.** Project teams can directly support efforts to lower barriers to entry for women in the OGS value chain by developing women-focused or women-only technical training programs, including training women to act as the last-mile link to energy access in their communities. These women can showcase opportunities for employment and growth to attract women to the sector. Finally, they can support design of energy products and energy-related products based on the needs, preferences, and constraints of women so that women are more likely to use and benefit from these products (ICRW 2017).

2.1.2 Demand-Side Factors

- **Design and provide OGS products that women want at the household and enterprise levels.** The needs and preferences of women as consumers of OGS products must be understood to better design and inform business strategies and to increase women's ability to access, use, and benefit from OGS technologies. Understanding product preferences regarding delivery channel, affordability, behavioral aspects of adoption, intrahousehold decision-making factors, will better inform the adoption and use of energy products (ICRW 2017).

- **Increase access to OGS products for women.** Design and testing of financing models for OGS products and services and payment methods that will increase access at the consumer level (whether domestic or enterprise) must be supported. This may include asset financing, microfinance, bank financing, and PAYGo models that recognize the unique circumstances affecting women as consumers, entrepreneurs, and productive users of technology. Underlying policies that prevent women from owning property and title deeds or other assets that can be used as collateral to secure loans must be considered. OGS companies must be encouraged to partner with innovative FSPs that use alternative credit scoring or explore partnerships with community-based FSPs such as savings groups that can address affordability constraints at the last mile for women in remote and rural areas (CDC Group n.d.).

- **Support economic opportunities for women entrepreneurs through productive use of energy.** Through market research and scoping studies, project teams can increase understanding of the energy needs of women's businesses and their productive activities and design interventions to stimulate demand and increase women's capacity to use products that reduce drudgery or support productive activities. They can also use funding opportunities to test new models and products that address women's needs (ENERGIA 2019).

- **Address gender norms regarding women's access to OGS products and finance.** Project teams can directly address restrictive gender norms regarding women's ability to access OGS products and financing in projects through market-level awareness campaigns that target families and communities. They can collaborate with training institutions, NGOs, and savings groups to increase women's understanding on the benefits of OGS products and in digital financial literacy. They can support design and implementation of marketing campaigns that emphasize the benefits of labor-saving technologies for women to stimulate demand (ARE 2020).

2.1.3 Ecosystem Factors

- **Encourage investors and fund managers to make investment decisions and measure approaches that address gender inequality.** Investors have a variety of opportunities to support gender equality while seeking financial returns in the OGS sector. This approach is often called "gender-lens investing," which the Global Impact Investing Network (GIIN 2020) defines as "investment strategies applied to an allocation or to the entirety of an investment portfolio, which seek to examine gender dynamics to better inform investment decisions and/or intentionally and measurably address gender disparities." Analysis by Calvert Impact Capital indicates that the companies with the greatest female representation in board and leadership positions outperformed those with the least. The metrics reviewed included return on sales, return on assets, and return on equity in a portfolio covering 11 years and more than 160 borrowers from around the world (Calvert Impact Capital 2018).
- **Collaborate and partner with other sectors to reduce barriers for women-led businesses.** To facilitate access to finance for women-led OGS businesses, recognize synergies with the financial sector laws, and collaborate with regulators on banking, microfinance, financial inclusion (including mobile money), and savings and credit societies to increase the supply to appropriate financial service companies. Prioritized and subsidized access to finance for women should be considered, other policy instruments should be designed to meet women's affordability levels, and efforts should be focused on closing policy and legal gaps to increase women's property ownership (World Bank 2014).
- **Address constraints and barriers that limit women's ability to benefit economically from the OGS sector.** To help women obtain jobs and benefit from economic opportunities in the OGS sector, project teams can implement antidiscrimination legislation and improve the legal and regulatory environment that affects women's ability to enter the labor market. They can also support inclusive policies and targets for women in science, technology, engineering, and mathematics (STEM) energy jobs, facilitate exposure to careers in energy for girls, work with policy makers to remove barriers for women who are starting and running businesses, and help women-led businesses formalize and expand their operations (Schomer and Hammond 2020).
- **Support women entrepreneurs in the OGS sector.** To enable women to enter, grow, and thrive in the OGS sector, project teams can facilitate development of

energy sector gender policies to provide a framework for public- and private-sector actors to include the needs of women in all OGS initiatives and to support women who are entering male-dominated sectors by showcasing opportunities and promoting networking and mentorship among women entrepreneurs (ARE 2020).

2.2 Framework

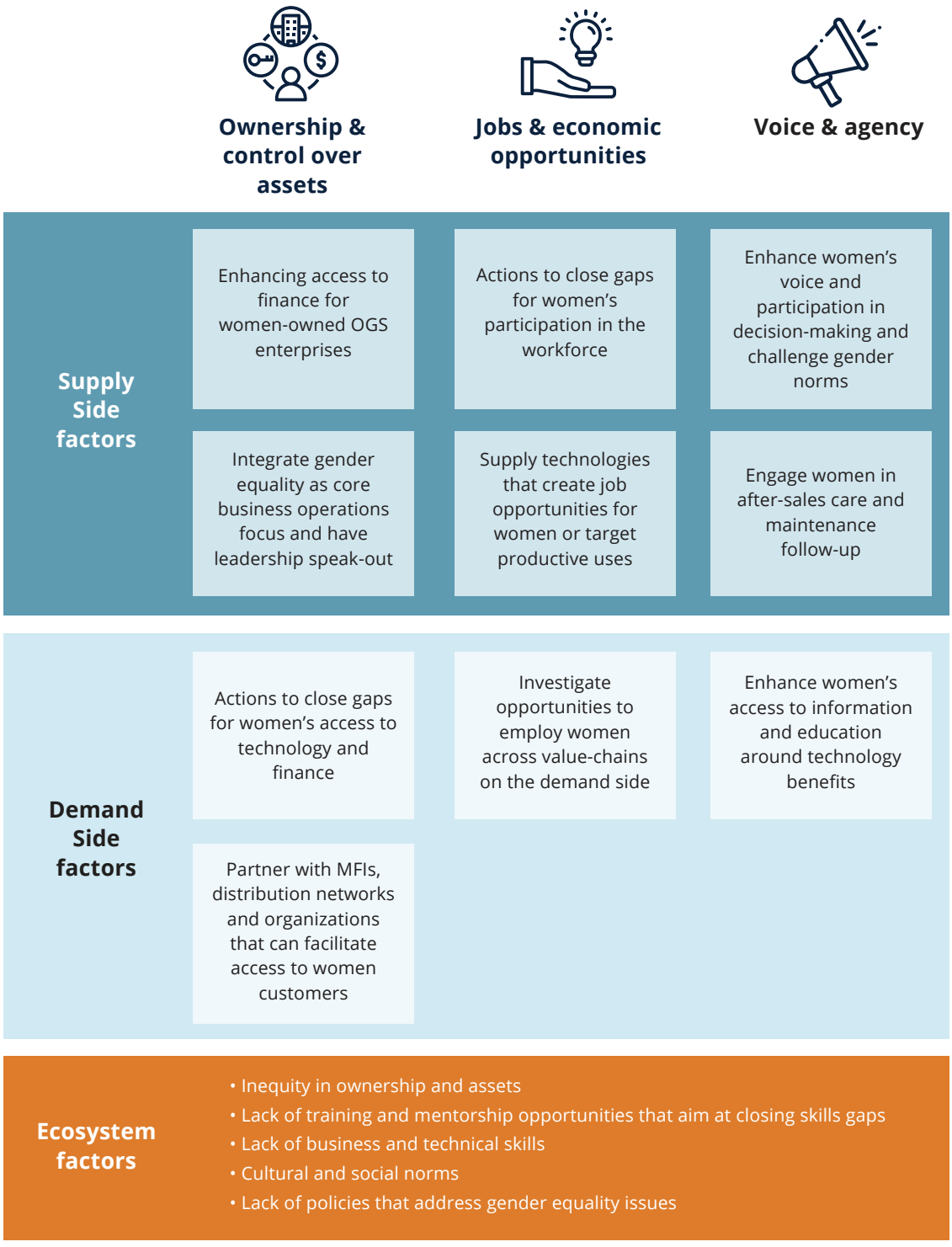
The framework for this operational handbook delineates an approach that focuses on overcoming barriers through action points at the supply, demand, and ecosystem factors. This approach maps interventions according to three objectives: increasing women's ownership and control over assets, their economic opportunities, and their voice and agency.

The framework is meant to be used as an illustrative set of options that can guide project teams, OGS companies, and other stakeholders in selecting promising approaches by considering country contexts, the maturity of the market, the policy environment, and other enabling factors. To overcome the pervasive barriers discussed in Section 2.2, several entry points at the supply, demand, and ecosystem factors are mapped, represented in orange and blue in Figure 2.1. These two layers of intervention outline what the private sector can do to close gender gaps at the business level and what project design interventions can do to support market-led approaches or close persistent gaps at the institutional and societal levels. These inclusive practices are opportunities to close gaps, and they are set out according to the three objectives, or levels of ambition, that businesses, project teams, and other stakeholders can strive for.

- **Ownership and control over assets.** Entry points on the demand side focus on increasing access to technologies and financial inclusion. Project teams should focus on support for inclusive business practices that close gender gaps affecting women's access.
- **Jobs and economic opportunities.** Entry points on the supply side focus on removing impediments to women's participation in value chains while targeting their productive uses of energy. Project teams should focus on support for inclusive business practices and removal of barriers to women's participation in the workforce.
- **Voice and agency.** Entry points on the supply and demand sides can increase women's voices and participation in decision making and challenge or transform gender norms. Project teams should focus on support for inclusive business practices that promote equal representation and participation of women.

FIGURE 2.1

Framework for Exploring Entry Points on Gender Equality in the Off-Grid Solar (OGS) Sector



2.2.1 Supply-Side Factors

2.2.1.1 PROVIDE ACCESS TO FINANCE FOR WOMEN-LED OGS BUSINESSES

Access to finance is critical to increasing participation of women-led and -owned businesses in the OGS sector. Project teams should prioritize support for women-led OGS businesses through targeted funding windows and support demand studies to highlight the needs and preferences of women-led OGS businesses. They can support collection and use of sex-disaggregated data to make the business case for and create awareness among FSPs (e.g., banks, MFIs, financial technology) of market opportunities that can be realized by financing women-led OGS businesses (Box 2.1). They should also complement financial incentives with nonfinancial support in the form of technical assistance in designing specialized value propositions—for example, financial products for women entrepreneurs that include access to advice, networking, mentoring, and business management technologies (IFC 2020b). This support may also encourage women business owners to consider entering the OGS market from other sectors such as import-export, retail, and agribusiness.

This section discusses some of the entry points that can provide access to financing for women-owned and -led enterprises. The main recommendations involve providing financial and nonfinancial services for women, including tailored information, business training, mentoring, and networking opportunities.

- **Integrate gender criteria into funding windows and create targeted funding opportunities for women.** Existing funding windows should address women's distinct needs to end the inequitable effects of a gender-neutral approach to funding OGS businesses. Funding windows can meet the needs of women entrepreneurs through funding for women-led businesses only, using selection criteria that prioritize women-led businesses, and where possible collaborating with women-focused financing initiatives such as the Women Entrepreneurs Finance Initiative or the Women Entrepreneurs Opportunity Facility, which the World Bank and the IFC implemented, although these funds alone cannot currently offer the necessary volume of support. There is also a need to establish dedicated support for women-led OGS small and medium-sized enterprises (SMEs), such as offering tailored pre-submission advice and feedback to women-led businesses. When a project is investing in or supporting commercial banks to lend to OGS businesses, it can include components to encourage them to reach out to women-led SMEs by setting targets and providing training on how to identify and address gender bias with the banks' products, processes, and personnel.
- **Support financial institutions and the private sector by collecting and showcasing data that make the business case for investing in women-led OGS businesses clear** and train them on how to use the data to invest in and undertake activities that support women in OGS businesses. As far as possible, the data should be specific to a country or region and organized to highlight the needs of specific segments of women-led SMEs. Awareness-raising campaigns targeting financing institutions e.g. banks and MFIs, can also be designed to illustrate the barriers that

women face when seeking finance, as well as the potential business opportunities in serving these women-led SMEs.

- **Work with financial institutions to develop financial products and bundled value propositions tailored to meet women's needs.** One effective approach to supporting women entrepreneurs involves expanding their access to finance by developing specific financing instruments and loan products (Box 2.2). For example, a loan product could be bundled with additional nonfinancial advisory services; recent work by the IFC shows how such services can generate positive returns for the financial institution and the client (IFC 2020b). Commercial banks can also provide business skills training to women entrepreneurs covering financial literacy, coaching, mentoring, networking, and how to prepare bankable business plans and submit loan applications and empowerment training to support women's financial decision-making skills. (Appendix B). Given the challenges that women-led SMEs have with providing collateral, this kind of training can also create awareness of noncollateralized lending models, such as using cash-flow-based credit assessment methodologies or alternative credit scoring. Project teams can work, where possible, with initiatives such as the World Bank's Gender Innovation Lab to generate new practices in response to identified barriers and to test their effectiveness. Financial institutions are likely to require donor and government support to implement these activities (e.g., setting up digital systems that can collect and report on sex-disaggregated consumer data).

BOX 2.1

WORLD BANK IN ETHIOPIA: CLOSING THE GENDER GAP IN ACCESS TO FINANCE

The $45 million market development for renewable energy and energy-efficient product credit line that the Development Bank of Ethiopia, which is funded through the World Bank–financed Electricity Network Reinforcement and Expansion Project (P119893) and Electricity Network Reinforcement and Expansion Additional Financing Project (P155563), is addressing gender gaps in access to finance and entrepreneurship. A significant gender gap was identified for applicants and beneficiaries of this credit line, leading to a focus on the women's segment. A workshop was hosted in February 2017 that all microfinance institutions (MFIs) engaged under the credit line attended to map out barriers and opportunities to address this gender gap. In 2018, actions were undertaken to advance the gender equality agenda in off-grid energy provision. As part of the technical assistance for MFIs under the Development Bank of Ethiopia credit line, a specific module focused on reaching more women with financing solutions was delivered in January 2019 to all MFIs actively engaged in the consumer finance aspects of off-grid energy provision. The training focused on the business case for reaching women, global case studies showing what works, and the design of new approaches focused on women as a target market segment.

Through various technical assistance interventions, these gender gaps are being closed. As of March 2020, 24 percent of borrowers (7 of 29 credit-line beneficiaries) of loans amounting to 89,907,878 birr (roughly $2.5 million) were women. On the consumer side, women beneficiaries constituted 60 percent (106,981) of borrowers, with a corresponding loan value of 270,409,075 birr (roughly $7.7 million). The World Bank has also assessed the constraints and opportunities that women entrepreneurs in the OGS sector perceive and experience and the financing needs of and constraints on women in households as consumers of off-grid energy services and as micro-entrepreneurs through a study from June 2021 to June 2022. This forms part of the ongoing analytics for the $500 million Access to Distributed Electricity and Lighting in Ethiopia project.

BOX 2.2

SPOTLIGHT ON TARGETED FUNDING OPPORTUNITIES FOR WOMEN-LED AND -OWNED BUSINESSES

ECOW-GEN: A gender-inclusive investment facility. The Economic Community of West African States Centre for Renewable Energy and Energy Efficiency and UN Women established a 5-million-euro facility to disburse small grants. Its aim is to provide technical and financial support for projects that promote gender equality and increase access to energy in the region. The facility is structured around three components:

- Women's Business Fund
- Women's Technical Exchange Program
- Women's Economic Empowerment through Energy for Productive Uses

Source: ICA 2020.

The Energy and Environment Partnership Africa gender-themed call for proposals. Funding for early-stage, repayable grants of 200,000 to 500,000 euros have been awarded to applicants that are focused on promoting leadership and economic opportunities for women across the clean energy sector and have proposed innovative approaches to gender inclusion. Eligible applicants include companies, nonprofits, and social enterprises. Of 285 applications received, 174 were from women-led enterprises, and 57 percent of applications have a higher share of women, compared to men, in leadership roles.

Source: EEP Africa 2020.

Renewable Energy Performance Platform gender-themed request for proposals. Targeting women-led renewable energy projects in Africa, this initiative provides tailored support, including technical assistance, loans, gap financing, and access to risk mitigation instruments for successful applicants. The targets are women-owned or -managed companies whose focus is to promote women's economic empowerment by enabling productive use of energy for women as end users or access to energy finance for female entrepreneurs.

Source: Camco Management Ltd 2020.

U.S. African Development Foundation and General Electric Africa Women and Energy Challenge. This initiative, which Power Africa supports under the Off-Grid Energy Challenge and Beyond the Grid initiative and is targeted at women-owned and -managed African energy enterprises, awards grants of up to $100,000 to address financing barriers that women entrepreneurs face in the off-grid space.

Source: AllAfrica 2016.

Affirmative Finance Action for Women in Africa—African Development Bank. Affirmative Finance Action for Women in Africa employs a $300 million risk-sharing instrument that unlocks $3 billion in credit for women-led businesses in Africa, building on a network of commercial banks and financial institutions. Their approach includes finance (risk-sharing instrument and rating system), advisory services for women entrepreneurs and financial institutions, and enabling environmental activities to engage with African governments in support of policy reforms to overcome structural barriers impeding women in business.

Source: African Development Bank Group 2022.

Companies that intend to use an entrepreneur-based model should work with women to understand their ambitions, barriers to their entry into the sector, and aspirations for expanding their businesses. Women may start by selling solar products as a seasonal, flexible side business, bringing extra income into the household, but they may not be interested in formalizing their business or seeking the credit needed to grow. Their motivations should be considered as part of the company's expansion strategy. Many women entrepreneurs work comfortably within their communities until the local market is saturated, at which point they struggle to continue, let alone expand, their businesses. Pollinate Group and Frontier Markets have been differentiating their product offerings so that women entrepreneurs can create demand at the local level, whereas the United Nations Capital Development Fund (UNCDF) Renewable Energy Challenge Fund in Uganda found that a woman's decision to take up commission-based work often depends on the possibility of career advancement within the organization (UNCDF 2020). For this reason, companies were advised to include opportunities for promotion and transition to permanent employment as part of their recruitment strategy (Additional recommendations on jobs are discussed in the next section).

2.2.1.2 JOBS AND ECONOMIC OPPORTUNITIES

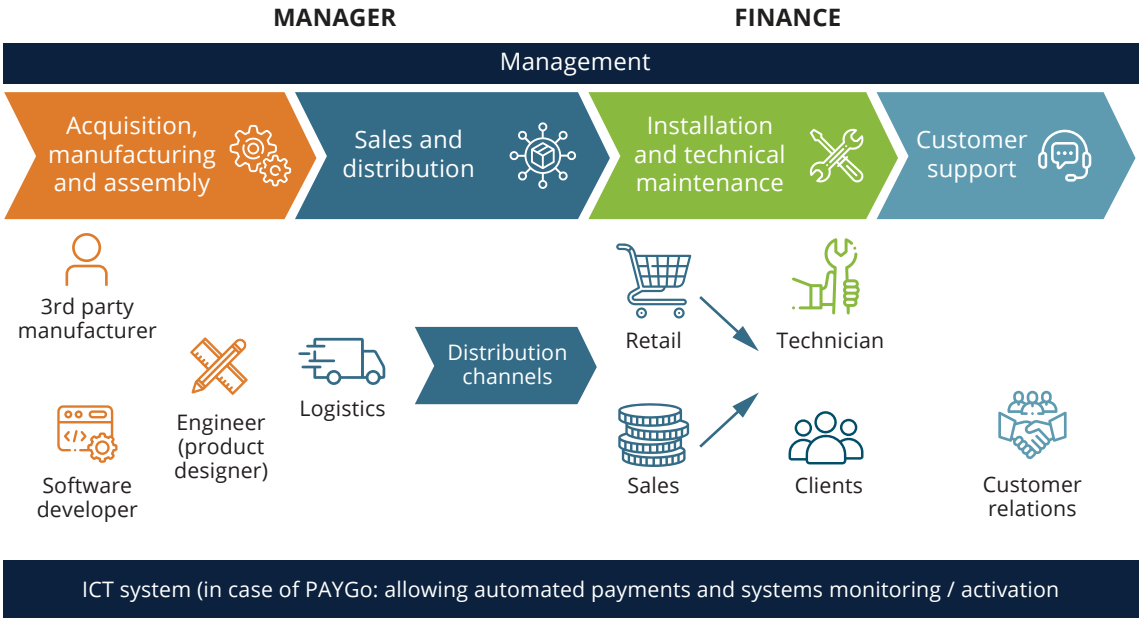
The OGS sector has created a variety of employment opportunities along the whole value chain, from acquisition, manufacturing, and assembly to sales and distribution, installation, and technical maintenance and customer support (Figure 2.2). There are also various roles

in information and communications technology with regard to payments and systems monitoring.

In 2018, the Global Off-Grid Lighting Association's first job brief estimated that the OGS sector could create 1.3 million jobs globally by 2022. In a more recent brief, it estimated that 510,000 of the 1.3 million jobs would be medium and high skilled and that 800,000 would be low skilled (Figure 2.3). It should be noted that the survey is based in a sample of 40 companies, limiting the applicability of the data globally and regionally.

FIGURE 2.2

Jobs and Income-Generating Opportunities in the Solar Value Chain



Source: Vivid Economics and GOGLA 2018.

FIGURE 2.3

Skills Level of Jobs in the OGS Sector

High skill Graduate or postgrade degree 3-5 years+ experience	**Medium skill** Graduate degree 1-3 years experience	**Lower skill** Secondary education Minimal experience
220,000 Managers, finance, software developers and other engineers	**290,000** Technicians, logisticians	**800,000** Customer relations, sales, retail, other jobs

Note: Units are in full equivalent (FTE) jobs.

Source: GOGLA 2019a.

Involvement of women in sales and distribution of OGS technologies yields business performance benefits and wider customer reach, yet barriers and opportunities for women differ based on the type of job.

Employing more women in high-skilled jobs will require ambitious policy changes, with programmatic and long-term approaches aimed at transforming relevant markets and sectors and building a pipeline of female talent in engineering, software development, finance, and related fields (WBG and GOGLA 2020). Small, private off-grid companies are unlikely to be motivated to invest in activities that do not yield benefits until the long term, often with only a limited guarantee of direct resulting benefits. For example, they might be concerned about a young woman who was awarded educational support joining a different company after she graduates, although they can be motivated to participate in less costly activities that yield short-term benefits and encourage women to enter the workforce, including offering internships and apprenticeships to women. Women recruited to such programs can be drawn from engineering and technical students and graduates or women in junior positions within the companies who can be supported with extra training. Such programs can also improve retention.

Medium-skilled jobs include installation work; assembly of comparatively low-tech products such as lanterns, circuits, and panels; and off-grid installation services. Lack of women in these jobs can be addressed through vocational and on-the-job training and apprenticeships. Women can be recruited for these positions from secondary and tertiary educational institutions; even semiliterate women can be trained for them (Appendix B). Remote Energy, which designs and delivers solar design and installation courses targeted principally or exclusively at women, has adopted another approach, namely recruiting women that come from a wide range of backgrounds. Courses targeted principally or exclusively at women tend to increase women's level of comfort, giving them greater confidence to enroll in additional courses that they might previously have thought of as being in men's domain.

A higher percentage of women have traditionally filled lower-skilled jobs such as customer relations, sales,[11] and other retail positions. Women with limited education, including those with only a secondary education or who are semiliterate, can be recruited for these positions. Training and backup support is needed to ensure their effectiveness. Although these positions are lower skilled, women entering this sector can catalyze other young women's interest in the sector, and some can be supported to progress to mid-level skilled jobs.

Despite differences across the job market, there are numerous entry points where women's participation in the OGS workforce can be increased at various levels.

- **Encourage companies to employ women by providing technical and financial assistance.** Differentiated results-based financing and partnerships with the private sector should be used to encourage off-grid companies to deliver vocational and business skills training, offer accelerated leadership and other employment opportunities for women, and create a pipeline of skilled women. Technical assistance can help companies identify gaps in the employment of women in sales and distribution

and design strategies to address these gaps. A diagnostic analysis of the sales force can help companies identify the gender gaps in their policies and processes and understand what is needed to increase women's involvement in their sales and distribution network.

- **Disbursement of funds can be based on meeting quotas for women in new job markets and developing training for relevant skills.** The IFC and Lighting Asia have been working with Frontier Markets and Dharma Life to expand their sales networks by increasing women's participation in the sales force. Technical assistance to these companies has included diagnosis of the business model, identification of partners such as women's self-help groups and training partners, design and implementation of training for women entrepreneurs, refinement of OGS companies' business model, and development of an awareness campaign.

Companies should be prepared to invest in training women and in monitoring and evaluation to track their progress. Power Africa and the IFC, who have been providing technical assistance to companies to pilot gender inclusion approaches, have been working closely with leadership of these companies. These efforts have generated considerable interest from other companies and financial institutions and have elevated beneficiaries as champions in the field, which has attracted additional financing. Technical assistance should help companies:

- **Collect data and showcase the business case for inclusion of women in the workforce.** Project designs can encourage or even mandate that companies collect and annually report a sex-disaggregated staff footprint, with data on female versus male employment at all levels, including sales teams. In engaging companies this way, cases in which inclusion of women in the workforce or high female staffing has benefited companies should be showcased. Although studies often track the overall increase in sales from women working as energy entrepreneurs, few compare women's and men's sales of the same product. Data on women sales agents will increase understanding of the challenges and opportunities involved in including women in sales and distribution networks. In the clean cooking sector, Shankar, Onyura, and Aderman (2015) showed, through a randomized controlled study of 257 male and female cookstove entrepreneurs in Kenya, that after empowerment training, women outsold men by almost three to one and were more likely to persist even when sales were limited. From the banking sector, FINCA International, Inc. and the IFC found that women sales agents in the Democratic Republic of Congo outperformed male agents in digital financial transactions (12 percent more than male agents) and net profits (16 percent higher than male agents) (IFC 2017a).

- **Implement company policies to enable more women to work in the sector.** Examples of such policies include those concerning maternity and parental leave, flexible working hours and easier shift changes, part-time work, job sharing or work-from-home schemes, providing transport, and anti-harassment and anti-discriminatory policies (including wage parity.) Human resources departments must clarify the provisions and procedures for ensuring that workplaces are free from harassment,

gender-based violence, and discrimination and ensure that everyone is aware of provisions, procedures, and their respective responsibilities. Employees should also be informed that, when requested, anonymity can be guaranteed for anybody who reports sexual harassment. Other important examples of women-friendly workplace policies include support for pregnant women if changes to their normal work are required and guaranteeing their return to their previous positions after giving birth, as well as supporting breastfeeding where necessary (e.g., allowances for feeding or pumping, breastmilk storage).

- **Showcase opportunities for employment.** Project teams, policy makers, and market stakeholders can encourage women's employment by showcasing career opportunities in the off-grid sector to young women. This could include open days, take-girls-to-work days, STEM talks for girls (being sure to involve female staff), and sponsoring energy-specific STEM education in schools at all levels. Internships and apprenticeships for young women should rotate them through various departments to increase their understanding of the sector and help them make informed career choices. Some promising examples from the private sector include Bboxx in the Democratic Republic of Congo, which has focused on increasing women's participation in their technical workforce. Bboxx has attracted women technicians by creating Bboxx Moseka, an initiative that provides training on installation and repair for talented young female recruits at universities. Young women are offered participation in an internship program and provided with technical training and leadership mentoring.

- **Design recruitment processes and job opportunities to meet women's needs in terms of time flexibility, mobility constraints, and childcare to bring women into the workforce.** Companies that are interested in increasing women's involvement as sales agents must design job requirements and job descriptions that are possible for women to meet. Training of women sales agents and entrepreneurs should be tailored to their availability, be sensitive to their other responsibilities, and fit the cultural context. Solar Sister's approach has demonstrated the efficacy of business and sales training that considers literacy levels, availability of time, mobility constraints, and childcare needs. Understanding women's cultural and educational backgrounds and literacy levels is crucial to support their advancement in the sales force. For example, Greenlight Planet found that its sales jobs included requirements that were preventing women's career advancement. Agents had to pass an exam before being allowed to sell larger solar systems, and women were reluctant to take such exams because of their low levels of literacy and self-confidence. It is critical that companies investigate these possible barriers and provide sufficient support or alternative assessment methods to recruit staff that consider the barriers women face in accessing education and their lower self-efficacy,[12] which cultural norms shape.

- **Train and recruit women in the communities where they live** and where off-grid projects are being implemented to work as installers and technicians and in customer support to increase retention. This can also reduce the need for childcare for very

small off-grid companies that cannot afford dedicated childcare facilities, because women may be better able to organize childcare in their own communities or to organize their work around their other responsibilities if they can reduce the need to travel to external worksites (Box 2.3). Trainings could focus on coaching, business starter-packs (e.g., promotional materials for sales and distribution agents), and initial installation kits for installers. Project teams could work with the private sector, public entities, educational institutions such as universities, technical and vocational education and training institutions, and professional networks to support women's training and learning environments. This might have to take the form of new World Bank initiatives. Alternatively, project teams could, where possible, draw upon existing initiatives for women and girls in STEM and energy initiatives. Development agencies such as the World Bank Group; United Nations Educational, Scientific and Cultural Organization; United Nations Children's Fund; United Nations Development Programme; and U.S. Agency for International Development can also be engaged when they undertake initiatives for women and girls in STEM.

- **Train staff on gender inclusion and gender bias at all levels.** Train staff to become aware of gender bias and sexist language, which can suppress women's voices and agency in the workplace (such trainings should target women and men). Although, in some contexts, evidence of the effectiveness of this strategy is mixed, it can be a valuable starting point for dialogue and change (Schomer and Hammond 2020). It is also important for providing employees with the tools and operating framework within which women-friendly policies are implemented and accountability is established. Women can then receive additional dedicated training or support to help them identify, report, and address gender bias and harassment (Box 2.4).
- **Support and provide apprenticeship, mentoring, and networking opportunities and leadership training and opportunities for women at all levels.** This will involve investing in training for public speaking and creating mentorship programs within the company or through partners, all with a goal of developing the capacities of women to advance in the sector. Companies can support networking events such as business lunches and industry associations for women entrepreneurs and inclusion of women in leadership and decision-making positions within organizations and decision-making bodies, including on welfare and procurement committees.
- **Support certification programs to set gender standards.** The Gender Equality Seal and related certification of companies can help embed broad changes and increase women's representation in the sector. Projects can design and support such certification for recipients of World Bank financial and technical support. In Latin America, for example, gender equality certification programs that set gender standards and audit company adherence to these standards with respect to selection and hiring, professional development, training, remuneration, work-life balance, and sexual harassment in the workplace have been found to advance gender equality in the workplace. Such certification has been shown to increase women's representation in certified companies more than in companies that collect and report sex-disaggregated data but do not have

gender standards. Other initiatives, such as the 2X Challenge Gender Lens Investment criteria, are helping investors reflect on the impact they are having in areas such as women's employment and leadership, as PEG Africa is doing (Box 2.5).

- **Develop gender equity score cards, certification, or excellence awards that are publicized annually.** This would highlight private-sector actors that meet or exceed targets for investing in women-led off-grid energy businesses. Awards such as the Women Energy Entrepreneur award or Women's Energy Company of the Year could be used to highlight businesses that support women's energy entrepreneurship.

BOX 2.3

INCREASING RECRUITMENT AND RETENTION OF WOMEN AND REDUCING WOMEN'S CHILDCARE BURDEN

As part of the World Bank-supported Burundi's Solar Energy in Local Communities, the ESMAP funded a gender action plan that provides training and workforce development, including:

- Technical assistance to ensure that policy commitments on gender equality in the energy sector are strengthened and included in all key government policy and institutional documents
- Formal interventions to foster and showcase female talent in the sector through leadership training and targeted mentorship programs
- A full scholarship program supported by the General Directorate for Energy for 40 women studying for STEM-related university degrees who wish to join the energy workforce after graduation

Addressing Childcare Constraints to Increase Women's Employment

The World Bank–supported Ethiopia Electrification Program is designed to promote gender equality, including increasing women's employment in the Ethiopian Electric Utility from 20 percent to 30 percent by 2023, but as in many countries, unpaid responsibilities, including childcare, present a barrier to women entering the workforce. With support from ESMAP's Africa Gender and Energy Program, Ethiopia Electrification Program funding supported establishment of childcare facilities at its head office in Addis Ababa and 11 regional offices in 2020. The Bank is supporting these efforts by financing the recruitment of a childcare expert to conduct standardized site-specific needs assessments with a focus on risk factors; undertake a cost-benefit analysis on the

proposed childcare services; and develop a childcare service implementation plan. Because most off-grid companies are unlikely to be able to afford such detailed planning and operationalization of childcare facilities, grant support can be an important element of project design.

Supplying Technologies that Create Job Opportunities for Women or Target Productive Uses

Energy products for productive use can bring about transformative changes in gender roles and increase gender equality by enabling women to undertake jobs from which they have traditionally been excluded. According to practitioners, refrigerators, sewing machines, and solar water pumps rank among the top five appliances for women[13] (Efficiency for Access. 2020a).

These reflect women's traditional roles in food preparation, agricultural, and tailoring activities, but available market research reports only perceived customer demand and does not consider that appliances can have a transformative impact on women's access to job opportunities, enabling them to perform jobs that would otherwise be too burdensome or require excessive physical strength. For example, ENERGIA's research in Ghana found that lack of suitable tools and machinery was a decisive constraint on women who wanted to cross into traditionally male-dominated sectors such as automobile repair and carpentry. When women have access to these appliances is enabled, they perform as well as their male counterparts in sectors previously considered to be off limits (IDS and GIZ 2019). Companies that want to support job opportunities by making appliances available for productive use should consider that gender norms are a key determinant of women's participation in male-dominated sectors. To determine which technologies are appropriate for stimulating job creation, it is advisable to examine women's roles in each specific context, conduct market research to identify their employment opportunities in that context, and only then begin to identify productive applications that could increase women's participation in ecvonomic activities.

BOX 2.4

WOMEN-LED AND -FOCUSED TRAINING PROGRAMS

Remote Energy offers solar technical trainings with expertise in design, installation, and maintenance of photovoltaic systems. Women have been teaching women-only solar electric classes, and graduates from their programs teach and mentor other women, expanding their approach to reach additional communities.

BOX 2.5

PEG AFRICA

After receiving technical assistance to increase its focus on gender inclusion, **PEG Africa,** a for profit corporation, financing and deploying solar power to households and SMEs in West Africa, closed a $12.5 million deal with CDC Group under the 2X Challenge for gender equality in three of the five 2X categories: advancing women in leadership, meaningfully supporting its female employees, and implementing a targeted strategy to increase the number of female customers.

2.2.1.3 VOICE AND AGENCY

Actions can be taken to strengthen women's voice and agency.

- **Work with families and communities to challenge gender roles.** Companies that have successfully grown a sales network of women agents have had to work closely with families and communities to help them understand the barriers women face, that social norms create. Businesses should communicate sensitively with local community leaders, particularly in communities where there has been little or no previous contact with the company. Recruitment can be undertaken in collaboration with community leaders and women's groups. Although this involves considerable investment, it has been successful for retention of sales agents and for expanding the network. Pollinate Group learned that, to retain women sales agents in India, they had to work with families too. After a preliminary session to introduce its program, the company engages with family members and leaders in the community. For

example, before training sessions, families are invited to visit the offices and observe the training program in operation.

- **Support and promote leadership and the voice of women in industry associations by funding advocacy, networking, and other efforts by associations of women in the energy sector.** Because of the costs involved in maintaining advocacy networks and because many public entities have little incentive to engage in advocacy and networking, project design may need to include support for networking.
- **Provide mentorship and advice on career opportunities and support links between women professionals.** Opportunities for women to share their experiences and learn from peers can attract new talent and help women advance in the sector (Box 2.6).
- **Link funding with incentives for companies but consider societal barriers and gender norms in the specific context.** Companies can be encouraged to increase the number of women in their sales and distribution networks through outcome-oriented financing mechanisms, such as results-based finance. Depending on the context, these mechanisms can be used to expand existing distribution models, providing women entrepreneurs with access to working capital to expand their networks.
- **Provide grants for pilot projects.** In contexts in which women have limited exposure to job opportunities and high levels of poverty, grant financing may be appropriate to pilot approaches and reduce barriers of mobility and logistics. Targets for women's inclusion as sales agents should be set according to the context. In some countries, women may face additional cultural barriers to working as sales agents, and despite companies' commitments and ambitions, high targets could prove counterproductive, discouraging private-sector participation. For example, 45 percent of Greenlight Planet's sales agents in Kenya are female and 30 percent in other parts of Africa, whereas in India, they have a predominantly male field staff, with roughly only 2 percent being female.
- **Help companies pilot and test gender-inclusion strategies for marketing and sales.** Project teams and funders can help off-grid companies tailor marketing messages to women as part of their technical assistance efforts, offering the support of a gender specialist when possible. The Shell Foundation found that, although gender-inclusion strategies can benefit SMEs at all levels, adoption of inclusion strategies for marketing and sales is more appropriate for SMEs that have reached a certain level of maturity (Value for Women 2018). Some of the conditions necessary for implementing such strategies include a stable business mode, a dedicated team for implementation and resource allocation, funding for testing (mostly needed for the first 2 to 3 months, at an average of $3,000 to $9,000), and the potential to benchmark results internally and against industry standards.
- **Support knowledge creation and knowledge sharing.** Project teams can support companies by funding the sharing of best practices and successful cases of effective

marketing that targets women. This will facilitate learning and the sharing of experience, making marketing activities more inclusive across the sector.

- **Help companies develop sales and after-sales processes and policies to build trust and customer loyalty with female clients.** Building trust is critical to increasing sales of OGS products to women clients. To this end, it is important to examine the entire customer journey from a gender perspective, understand the pain points (i.e. specific problems faced by customers in the marketplace) of women clients, and adapt sales and after-sales processes to build trust and loyalty with customers. Women are often hesitant to try new technologies such as solar because of social norms and lack of familiarity with these technologies. Building elements of client education into the sales process and delivering it through trusted sources such as women in the community can help companies increase their outreach to women. In addition, offering a package that includes post-sale service, through leasing models or locally trained technicians, can help women who are new to technology feel more comfortable buying OGS products.

BOX 2.6

PEOPLE-CENTERED ACCELERATOR MENTORING PROGRAM FOR WOMEN WORKING IN ENERGY ACCESS

The **Global Women's Network for the Energy Transition (GWNET)** is an interdisciplinary networking, advocacy, training, coaching, and mentoring initiative based in Vienna. The People-Centred Accelerator Mentoring Programme, co-organized by the GWNET and Sustainable Energy for All, is designed to accelerate the careers of women in junior and middle-management positions in energy access; support their path to leadership positions; and foster a global network of mentorship, knowledge sharing, and empowerment. The mentoring program, which began in January 2020, focuses on four Sub-Saharan African countries—Ghana, Kenya, Rwanda, and Zambia. Other regional mentoring programs have been developed in Latin America, the Middle East, and North Africa. GWNET also hosts a Women in Energy Expert Platform, whose members demonstrate the diversity of roles and skills of women who are active in the sector.

2.2.2 Demand-Side Factors

Assessing the market from a gender-equality perspective entails exploring and describing women's demand for and access to products and services. Data derived from such exploration can inform strategies that address women's needs and overcome barriers to their access to OGS products. This section illustrates entry points for closing gaps in assessing the OGS market in terms of women's product preferences, affordability, behavioral factors, intrahousehold decision making, and how these factors affect adoption and use of energy products.

2.2.2.1 OWNERSHIP AND CONTROL OVER ASSETS

This section illustrates entry points for designing appropriate financing products and services and payment methods that can increase access at the consumer level (for domestic and enterprise), including asset financing, microfinance, bank financing, and PAYGo models that recognize the circumstances affecting women as consumers, entrepreneurs, and productive users of energy. Financial inclusion is critical in advancing gender equality in the OGS sector and increasing women's economic empowerment (Napier et al. 2013). The development benefits of financial inclusion are increasingly well documented, particularly those related to use of mobile money services, payment cards, and financial technology applications. OGS stakeholders can learn valuable lessons on how to increase access to consumer financing, improve women's income-earning potential, increase their savings, and reduce poverty (World Bank 2018a).

- **Help companies collect and use sex-disaggregated data on OGS product purchasing, product use, and payments to inform business strategies.** Understanding how purchase choices are made at the household level and how women use OGS products is fundamental to any assessment of the potential market for OGS products. Use of such data helps companies understand women customers and their needs in relation to product purchases, the uses they envisage, and appropriate consumer financing options. Guidance should be provided on systematic collection of sex-disaggregated data at the consumer and company levels. All market actors, including companies, should be supported in collecting and using this type of data systematically. The guidance should include answers to questions such as how these data can be used. Businesses should track various indicators to increase inclusivity and market penetration, including percentage of customers who are women, percentage of customers making purchase decisions in the household who are women, main user of the products or services in the home, and satisfaction with products and services that men and women report (Box 2.7).

BOX 2.7

WHAT DO WE KNOW ABOUT SEX-DISAGGREGATED DATA IN THE OGS SECTOR?

60 Decibels, a global, tech-enabled company that measures social impact, has the largest data set available on OGS customers, covering 35,000 customers (68 percent male) of 49 OGS energy companies in 17 countries. GOGLA (the global association for the off-grid solar energy industry) found that women buy solar lanterns and smaller products mostly on a cash sales basis and that, for solar home systems, 70 percent of women are PAYGo customers. Companies adopting an entrepreneur-based distribution model collect only limited data on their customers because it is difficult to keep track of sales through entrepreneurs, most of whom used a cash-based model. Companies using PAYGo models can easily track this data, but they rarely use it to design products and services tailored to women customers, and they may lack qualitative information.

The Multi-Tier Framework for energy access (MTF) tracks progress toward sustainable energy goals and represents a global baseline survey on household access to electricity and clean cooking. This framework takes a nuanced approach that treats access as a spectrum of service levels that households experience (Tier 5 [full access] to Tier 0 [no access]). Hence, it includes information about the quality, safety, reliability, and other characteristics of the electricity connection. It has been completed in several countries, including Bangladesh, Cambodia, Ethiopia, Honduras, Kenya, Malawi, Myanmar, Nepal, Rwanda, Sao Tomé and Principe, and Zambia. Diagnostic reports provide a gender analysis of the country, including data on female-headed households, their affordability levels, their access to energy, and their willingness to pay for solar systems or clean cookstoves.

An analysis of multi-tier framework surveys across countries shows that male-headed households tend to report higher rates of access to off-grid electricity than female-headed households, which are overrepresented in urban locations, where grid connection is more common than in rural areas, although in most countries, the gap in off-grid access persists even after controlling for household location. Female-headed households are also overrepresented in the lower expenditure quintiles. In addition to having lower rates of access, these households generally have lower quality of access, and in most surveyed countries, female-headed households are overrepresented in Tiers 0, 1, and 2 of this index. The different OGS technologies used to access electricity partially explain the difference in aggregate tier distribution according to the sex of the head of household. For example, in Nepal, where the gap favoring male-headed households is the widest, female-headed households have less access through mini-grids and rely more on solar lighting products.

In summary, where sex-disaggregated market data exist, evidence shows that women tend to have less access to off-grid electricity than their male counterparts, and they mostly use pico-solar products and lanterns or other lower-tier technologies.

- **Use outcome-oriented financing mechanisms to encourage OGS companies and FSPs to serve female customers.** Financing mechanisms such as results-based financing, credit lines, and guarantees can be used to set preconditions and targets to motivate companies and FSPs, such as MFIs, PAYGo, and others who fund micro, small, and medium enterprises to prioritize inclusivity. These mechanisms may be more appropriate in contexts in which social and gender norms do not inhibit women from leaving their homes and communities or for companies that already have sales and distribution networks that can reach female customers. In contexts in which reaching female-headed households involves higher costs and logistical challenges, support can be provided through grants linked to achievement of project objectives. For example, the Renewable Energy Challenge Fund that the UNCDF implemented in Uganda links disbursement of grants to milestones charting successful outreach to women in underserved counties. The fund supports marketing, logistics, training, and support for sales agents. To access funding, companies must demonstrate that new female customers will have access to clean energy technologies and that sales agent jobs have been created for women. The UNCDF complements the grant funding with technical assistance to help companies hire women and tailor marketing messages to target them.
- **Partner with formal FSPs to tap into their customer base.** FSPs such as MFIs often have large customer bases of women. Partnering with them can provide well-organized, credible access to women who typically have income-generating activities while also providing important insights into data such as customer payment histories. Companies such as Greenlight Planet in India have been tapping into MFI networks to sell their products to women. In Malawi, SunnyMoney partnered with FINCOOP Savings and Credit Cooperative, Malawi's largest financial cooperative, to distribute solar products to their customer base in rural areas (SolarAid 2017). Project teams can encourage such partnerships to provide solar energy providers with a larger customer base and reduce the cost and effort of reaching women.
- **Leverage women's groups, savings groups, cooperatives, and community-based networks to reach women in rural and hard-to-reach areas.** These organizations can be an avenue for reaching women customers. Because men are often the primary purchasers of energy products, women may be unaware of some products or may not have been exposed to relevant promotional campaigns. A product demonstration held in cooperation with an organization that can provide financing on fair terms may sway a woman's decision to purchase an item. For consumer financing of OGS products, VSLAs are an entry point for gender equality, and the cumulative

savings enable women to purchase products in installments. Supported by CARE and w-POWER, research in Kenya, Rwanda, and Tanzania found that VSLAs can act as microenterprises for financing clean energy products such as cookstoves and solar systems (Wright 2013, CARE 2019). VSLAs in these countries charge 5 percent to 10 percent interest per month on loans. Members are allowed to borrow up to three times what they have saved, and all savings, plus the interest earned, are distributed to members every 12 months. The United Nations Children's Fund's Project Lumiere has adopted a similar approach in Burundi (UNICEF 2018). Women involved in VSLAs were able not only to access solar lamps using credit from the group, but also to benefit from the revenue it generated. The VSLAs demonstrated an increase in technology uptake and revenues for those participating in group savings and lending activities.

In rural India, MFIs provide loans to women's groups using a joint liability model, whereby women form a group and take joint ownership of the loan. This model has generated collateral-free credit to support and enhance sustainable livelihood practices of women. This practice has been used effectively in the agricultural sector. Financing can be provided to individuals such that each group member is jointly and severally liable for repayment of all loans that all individuals in the group take, or the group can function as a single borrowing unit. In the latter case, the group is eligible to access a single loan (normally the combined credit requirement of all its members). Although limited evidence has been found of the application of this mechanism to energy-related loans, it could be explored on a pilot basis to investigate its potential to encourage women's savings groups to access OGS products. Some companies in the sector, such as Bidhha Sasa, have found this model successful. This company mitigates risk through group repayment methods, because the group is less likely to default than an individual, and consumers who might not have enough cash to pay for the products up front can access financing to purchase OGS products. Although women do not exclusively form these groups, they account for 69 percent of the company's clientele and only 57 percent of its defaulters (ICRW 2018a).

- **Build the capacity of FSPs and companies to tailor financial products to women's enterprises.** Energy products that enable productive uses of energy are often beyond the reach of individual consumers and require a long-term investment. Project teams can work with FSPs and OGS companies to develop relevant financial products. In some cases, targeting solar pumps or refrigerators to women's groups rather than to individuals has been a successful strategy, but MFIs and companies require capacity building to tailor such offers to a group's needs. Project teams can also deliver training to staff on how to present solar energy products to new customers, and even on maintenance, to enable MFIs to act as facilitation hubs. Solar companies require technical assistance in designing PAYGo and other asset-financing schemes that work for women's productive activities.
- **Financial providers should offer flexible loan repayments and less-stringent loan requirements.** It is essential that FSPs understand the nature of women's

cash-flow cycles. Many women, farmers in particular, have seasonal incomes, so their cash flow varies throughout the year. Moreover, women often lack the documentation and assets needed to secure formal financing. There are various ways to reach and serve the needs of poor women; generally, it involves allowing flexibility for payments to be made in installments and reducing the size of payments, such as through PAYGo schemes (Africa Clean Energy 2020; ENERGIA 2019), as well as exploring alternative lending models. Project teams can encourage FSPs to learn and adapt from innovative financial products, for example by using supportive instruments such as credit guarantees, risk sharing, and alternative credit scoring, along with technical assistance for noncollateralized lending. In Morocco, for example, high collateral requirements and limited information about supportive donor-financed mechanisms often created an insurmountable barrier for women seeking access to financing, even when credit guarantee schemes were available (IFC 2005). In Senegal, Energy 4 Impact (E4I) works directly with MFIs to build their capacity, increasing their understanding of energy technologies for productive uses and how best to structure financial products tailored to women's needs. Although MFIs generally have good understanding of growing seasons and farming cycles, they rarely have in-house expertise on energy loans and may thus be reluctant to offer them. Consequently, during the pilot phase, E4I acts as a guarantor to de-risk the investment, allowing the MFI to provide collateral-free energy loans to women entrepreneurs. In a World Bank-financed energy project in Yemen, MFI's are being engaged to make changes to financial products for women customers (Box 2.8).

BOX 2.8

FINANCIAL INCLUSION AND ENERGY ACCESS: THE WORLD BANK YEMEN EMERGENCY ELECTRICITY ACCESS PROJECT

The objective of the World Bank (2018b) Yemen Emergency Electricity Access Project is to expand solar photovoltaic access via subsidized microfinance packages to communities in the rural and periurban parts of the country. In Yemen, 46 percent of the population has access to electricity. Because only 2 percent of Yemeni women have a bank account, they only rarely meet the eligibility requirements of MFIs for financing to purchase electricity. In addition, digital financial services are difficult to access because of cultural norms that restrict women's movements and prevent them from traveling to public places with electricity, limiting their ability to charge and use mobile phones. This project was designed to eliminate barriers to financial inclusion, increase women's participation in decision making related to energy, and increase their understanding of the benefits of access to electricity. For example, actions taken included modifying eligibility requirements to address lack of documentation for women, engaging male leaders on the benefits of technology adoption by women and putting in place a higher financial subsidy for MFIs sales made to females to create incentives from the supply side.

Source: World Bank 2020a.

- **Apply lending models used for agricultural loans.** Many MFIs offer agricultural loans that span several years to cover multiple growing seasons. These MFIs will consider providing such loans for appliances that promotes productive uses of electricity and therefore income generation. This agricultural model, combined with a social collateral approach such as the group guarantee or the joint liability approach that MFIs use, is an effective way to circumvent information asymmetries because it encourages group members to use their social ties to screen and monitor members of the group and enforce loan repayment by their peers (Postelnicu, Hermes, and Szafarz 2014). It could be applied to energy appliances that promotes productive use. This would enable women who are constrained by the seasonality of income streams to purchase appliances for their businesses and boost their incomes (Box 2.9).
- **Consider women's access to mobile phones when implementing PAYGo or mobile payment schemes and establish partnerships with mobile money providers to tailor services for women (World Bank 2018a).** In Tanzania, for example, Ashden (2020) found that women had less access to mobile phones than men and were thus less able to set up PAYGo accounts. Project developers can provide in-depth training on use of mobile money, particularly for women with limited literacy, offering mobile money accounts as part of a sales package, with targeted flexible payment terms. (Box 2.10 and Box 2.11).

BOX 2.9

SECURING FLEXIBLE LOANS WITH SOCIAL COLLATERAL: THE ONE ACRE FUND

In East Africa, the One Acre Fund sells packages of maize seeds and fertilizer to farmers. "Top-up" packages, which include seeds, fertilizers, and energy products such as efficient cookstoves, are also available for purchase on credit. The One Acre Fund also offers loans of up to $200. To mitigate credit risk, social collateral is used via joint liability groups consisting of four to ten farmers. The farmers are required to pay an $11 security deposit to ensure their ability and willingness to repay. The use of social collateral encourages group members to use their social ties to screen and monitor members of the group and enforce loan repayment by their peers. This mechanism is particularly helpful for individuals who lack the credit history or documentation otherwise needed to assess their creditworthiness. The One Acre Fund also uses a flexible schedule for loan repayment. Approximately 80 percent of participating farmers re-enroll in the program once they have paid off their loans.

Source: World Bank 2018.

BOX 2.10

ASSET FINANCING OPTIONS THAT WORK FOR WOMEN

Successful asset financing models such as Grameen Shakti in Bangladesh, Brightlife FINCA in Uganda, and Kenya Rural Enterprise Program (K-Rep) Development Agency (KDA) have offered women the following terms:

- **Alternative collateral requirements** such as movable assets, loan deposits, and social collateral
- **Customized loan options** with appropriate down payments, payback time, and service charge incentives
- **Monthly or weekly installments** based on energy savings that customers achieve using the clean energy product
- **Long repayment terms,** sometimes up to 3 years
- **Loan repayments that build credit history** and facilitate access to other financial services such as insurance and business and agricultural loans

BOX 2.11

MICROCONSIGNMENT FOR MICRO-ENERGY ENTREPRENEURS

For many women micro-entrepreneurs, accessing financing to become energy entrepreneurs is difficult and risky because of lack of credit history, limited financial and energy knowledge, and small margins on solar lantern sales that would make it difficult to earn sufficient profits to repay a loan. Solar Sister, a social enterprise formed in 2009, buys a range of solar and other energy products from international manufacturers, recruits women (called Solar Sisters), and trains them to set up their own distribution chains for these products. This model enables them to earn money from product sales and commissions that would otherwise not be profitable. Solar Sister was founded with the personal funds of two women, but grants from development institutions, private funds, and earnings from the Solar Sister venture now support its operations. The Solar Sister model has enabled more than 3,000 women to become solar energy entrepreneurs. The organizations Baobab+, Little Sun, Kopernik, and others use variations of this model across Africa.

2.2.2.2 JOBS AND ECONOMIC OPPORTUNITIES

This section highlights entry points and recommended actions for increasing jobs and economic opportunities for women.

- **Design products and services targeted to women's needs and preferences.** Collection of sex-disaggregated data provides companies with critical information about women's unique needs and preferences for energy products and can shape a company's strategy for reaching and benefitting women customers. However, most product manufacturers do not distribute OGS products, and many OGS energy companies collect data at the purchase point, not at the user's household or location. It is also important to gain a good understanding of how women use technologies and which features or applications have the greatest impact on their lives so that they are more likely to recommend the product to their families and friends. Fenix International found that women purchased only 20 percent of their OGS kits in Uganda and Zambia and that about 60 percent of its sales were through personal referrals. On average, women referred four new customers, whereas men referred three, meaning that women were better ambassadors for the company. The women received received a small commission for each referral (Deign 2018). Similarly, customer research suggests that targeting women could increase sales, because they have higher net promoter scores.[14] Some organizations strive to ensure that women's preferences are heard; for example, Smiling Through Lights conducts focus groups with customers to learn about their satisfaction with products and their use, and Frontier Markets (2019) has put women's needs at the centre of its product development process (see Box 2.12).
- **Support market research and scoping studies to understand the market for women's businesses and productive activities and to stimulate demand for them.** Research is needed in the OGS sector to better understand the size of the market and identify entry points for stimulating demand, particularly regarding technologies that help reduce drudgery, minimize time poverty, and support women's economic activities. Such research will help companies identify opportunities to reach women's businesses (and the constraints on such efforts) and analyse women's and men's roles in the economy, especially regarding productive uses of energy. Such studies could provide a deeper understanding of gender roles in the economy and the barriers to women's full participation in the labor force and help companies develop gender-inclusive marketing strategies while improving their understanding of women's product needs and preferences.

BOX 2.12

PUTTING WOMEN'S NEEDS AT THE CENTER OF PRODUCT DEVELOPMENT EFFORTS

Frontier Markets recognized the need for a high-quality, long-range-beam, light-emitting-diode, solar flashlight to address challenges in rural Rajasthan, including outdoor safety problems that farmers faced. The company worked with their female agents throughout the product development process to create a fit-for-purpose flashlight suitable for tough environments. Feedback on use, durability, and affordability was sought from farmers using a three-dimensional printed version of the flashlight to include consumer preferences in its design. Solar Rakshak Plus is the first solar-powered flashlight made in India to meet global quality standards for lighting.

- **Build women's capacity to use energy products that reduce drudgery and support productive activities.** Because women, particularly female farmers, have limited exposure to products and marketing campaigns, targeted training should be required to help them understand the benefits of technologies that can be put to productive use. Anecdotal evidence also suggests that, when capacity building is provided along with access to technology, demand for productive appliances such as hand power tools is similar among women and men (Kooijman et al. 2020). E4I, in Senegal, has been working closely with women entrepreneurs to understand their needs and tailor capacity building to specific technologies. Certain equipment, such as solar refrigerators, and business models are user friendly and, by generating income, provide women's groups with revenues that can be used for loans to women in the group. Other technologies, such as solar pumps, have greater benefit in reducing drudgery, but they require tailored assistance and capacity building to increase incomes. The Efficiency for Access Coalition found that female customers in East Africa were more likely than their male counterparts to use pumps to collect water for domestic use than for productive uses (Efficiency for Access and 60 Decibels 2019). To overcome these challenges, technology providers can partner with organizations that already have access to or provide services to women farmers to identify needs and distribution strategies. With the support of Mercy Corp's AgriFin Accelerate, SunCulture, a company focused on productive OGS technologies, explored various distribution channels for reaching rural women farmers with PAYGo solar water pumps.
- **Design funding opportunities to increase energy demand by targeting women's businesses.** Several OGS companies have shown interest in diversifying their products' offer to include productive uses of energy, but these technologies and the

associated business models remain largely untested and cannot be widely adopted unless consumer awareness is substantially raised. Unfortunately, OGS companies may lack the capacity to market such products to women's enterprises and may understand the appropriate consumer financing models (Efficiency for Access Coalition 2019). To overcome these barriers, funders and project teams could adopt a phased approach oriented to building demand among women's enterprises, which would enable companies to test business models and marketing and sales approaches. Incentives for targeting women's businesses and productive activities can be based on achievement of project outcomes and should be coupled with awareness raising and capacity building targeted at women's enterprises.

- **Set targets for achievable goals to monitor benefits for women's enterprises.** Projects that target women's businesses or productive activities should measure the impacts on, for example, the number of new enterprises established, increased income, or increased employment.

2.2.2.3 VOICE AND AGENCY

This section features entry points and actions to increase women's voice and agency.

- **Develop market-level awareness campaigns to educate and change attitudes toward women's involvement in paid and unpaid work and their roles in and potential to operate in productive activities.** Social norms determine the division of work; through these norms, women may be barred from certain activities in a given economic context, whether rural or urban. Challenging these norms by implementing wide-reaching awareness campaigns and working with community leaders and other stakeholders can influence acceptance of changing norms and open a market for productive use technologies. Combined with targeted capacity building and empowerment training, such awareness and advocacy campaigns can demonstrate that women have an important role to play in the energy value chain.
- **Collaborate with VSLAs and other savings groups to build women's financial literacy.** VSLAs combine credit and saving elements and are organized around groups of participants who collectively manage savings and make loan decisions. These mechanisms are likely to accelerate women's empowerment and financial inclusion substantially. CARE's extensive experience in the field has demonstrated improvements in the share of women who reported having a high degree of control over household business decisions and expenses and in the number of women who said they had influence over their children's education and health-related expenses (CARE 2019).
- **Collaborate with training institutions and NGOs to build the capacity of women in digital and financial literacy and digital financial services.** Capacity building is critical in reducing gender inequality in access to finance and solar energy products. Financial literacy training can build women's understanding of financial products available to them and their terms and conditions, which will increase their confidence

in accessing financial services and help them make informed decisions about how to use the products. Angaza (2019), an off-grid mobile payment provider, notes that digital illiteracy can be a major obstacle to repayment of digital loans. Offering digital learning support and using voice instructions and text messages can help increase adoption of digital payment services and repayment rates. This is especially important in contexts in which women have limited access to mobile phones.

- **Consider the differences between men's and women's exposure to sales and marketing channels (television, radio, social media) and the different literacy levels and product preferences of women and men.** Many women employed in the OGS sector have marketing and sales jobs even though relatively few companies intentionally target women for these positions or design marketing campaigns to reach women. This is in part a reflection of the barriers that women in the sector typically face. Meanwhile, companies that have intentionally involved women have soon seen the benefits of having women take the lead in designing and implementing marketing materials, sales pitches, distribution models, and plans tailored to respond to the unique needs and perspectives of women (USAID 2020). Marketing activities should take place in areas that women frequent and be delivered through women sales agents or women's groups. A pilot project that the Shell Foundation and Value for Women supported tested sales models as an alternative to door-to-door visits (which presented barriers for women in terms of mobility, safety, and constrictive social norms). Agents were trained in how to engage in group settings, present and discuss solar products, and report data on sales generated. Strategic locations were identified for conducting group demonstrations and sales in public settings. The pilot project revealed an 85 percent increase in sales, and women agents outsold men by 44 percent (Value for Women 2018). The Shell Foundation pilot indicated that gender-disaggregated messaging for marketing strategies did not necessarily increase sales but increased brand awareness within the community. Similarly, a case study from Lighting Asia/India and Frontier Markets, a company that sells clean energy products, found that the awareness campaign targeted at women through self-help groups reached a significant number of communities in a market segment that male agents were not able to access (IFC 2017b).
- **Design marketing campaigns that emphasize benefits for women.** Labor-reducing technologies, such as solar for productive uses and time-saving appliances, offer huge everyday benefits for women, but this is rarely communicated in marketing campaigns. Regarding household products, experience from Greenlight Planet shows that women care and value more study time for children and health benefits, especially less indoor air pollution. The Deliver for Good Senegal Campaign showcases an innovative approach to energy campaigns (Box 2.13).

BOX 2.13

THE DELIVER FOR GOOD SENEGAL CAMPAIGN

The Deliver for Good Senegal Campaign is an advocacy approach and movement working to catalyze actions that advance gender equality at the community, county, and national levels. Women Deliver and Energy4Impact are powering the campaign as part of a project on energy opportunities for women in Senegal. The campaign's advocacy work led to integration of gender considerations into national energy policies and programs. Since the campaign began, women's organizations have become more aware of their right to access clean, sustainable energy for domestic and productive uses. Combined with targeted training and support of women entrepreneurs, the campaign has drawn attention to women's paid and unpaid labor and to the drudgery of labor-intensive activities.

2.2.3 Ecosystem Factors

2.2.3.1 OWNERSHIP AND CONTROL OVER ASSETS

The following actions can help women gain ownership and control over assets.

- **Encourage investors and fund managers to make investment decisions and measure approaches that address gender equality.** Investors and fund managers can make investment decisions based on specific metrics such as women's representation in leadership and ownership of firms, in the workforce, and in operations, including human resources policies and workplace facilities; product design and considerations made in terms of women's distinct needs and preferences as a consumer segment; and steps taken to "do no harm" and mitigate risks at the community level, for example gender-based violence. Investors and fund managers interested in the OGS sector also have an opportunity to reflect on their own firm-level approaches to gender equality. Global commitments have been made to ensure a focus on gender equality in the development finance space. For example, the 2X Challenge (2021) is a public commitment that the Group of 7 development finance institutions made to mobilize $3 billion in development financing for gender equality in emerging markets. For a company to qualify as a 2X investment, it must meet at least one criterion relating to women's entrepreneurship, leadership, employment, or products and services benefitting women (see Box 2.4). Additional resources can be found in Box 2.14.
- **Recognize synergies with financial sector laws and collaborate with regulators on banking, microfinance, financial inclusion, and savings and credit societies.** Policy and regulations on banking, mobile money, microfinance, and related matters

BOX 2.14

TOOLS AND GUIDANCE FOR OGS INVESTORS AND FUND MANAGERS

- 2X Challenge. 2020. "How to Measure the Gender Impact of Investments Using the 2X Challenge Indicators in Alignment with IRIS+."
- 2X Challenge. 2021. "2X Challenge: Criteria."
- Acumen. 2015. "Women and Social Enterprises: How Gender Integration Can Boost Entrepreneurial Solutions to Poverty." (Gender Diagnostic Tool)
- Calvert Impact Capital. 2018. "Just Good Investing- Why Gender Matters to Your Portfolio and What You Can Do About It."
- CDC Group. n.d. "Gender-Smart Investing Toolkit." (Includes specific guidance for the OGS sector)
- IFC. 2020. "Private Equity and Value Creation: A Fund Manager's Guide to Gender-Smart Investing."
- ICRW (International Center for Research on Women). n.d. "Off-Grid Energy Gender Scoring Tool."
- SEAF. n.d. "Gender Equality Scorecard Manual."

Source: Stefiszyn 2021.

have a direct impact on the ability of women to obtain financing for OGS products. Governments and project teams working on off-grid energy sector development should consider country-specific conditions. For example, governments can consider less-onerous know-your-customer rules to recognize the barriers that women face in attempting to access finance. With limited or no credit history, lack of identification, and informal status, women are disadvantaged in accessing formal financial systems. Less-onerous know-your-customer measures for certain types of basic accounts, with limits on balances and size of transactions, are especially useful. Other relevant measures include lowering collateral requirements for lending to women, designing regulations on savings and loans associations, introducing consumer protection regulations, and providing long-term contractual microsavings for MFIs (AFI 2016). In addition to policy measures, financial education and financial literacy programs are crucial for increasing women's access to finance.

- **Consider prioritized and subsidized access to finance for women and other policy instruments to meet women's affordability levels.** Energy safety nets are one option for reaching vulnerable and poor female-headed households to meet

some of the costs of off-grid electrification (SEforAll 2020). Energy safety nets can be used to cover maintenance and recurring costs for off-grid electrification; policy makers should consider barriers to women's access to financial services and energy distributors when designing energy safety net mechanisms. To avoid market distortion, these or other types of end-user subsidies should ideally be introduced only in the final phases of electrification efforts, once market-based approaches have fully realized their potential (GOGLA 2019a). Other effective instruments for lowering costs for women include tax exemptions and lower taxes for OGS products. Policy makers and project teams can also identify appliances that benefits women and reduces drudgery and design tax incentives (e.g., removal of value-added tax (VAT), lower import tariffs) to support market penetration and lower costs for end users.

- **Close policy and legal gaps to increase women's property ownership.** Women's disadvantage in property ownership can be directly attributed to discriminatory norms and laws, including property and inheritance laws. Reforms to establish an equitable legislative framework, including land registration programs and inheritance reforms, can reduce gender gaps. Policy makers can boost women's productive activities and close gaps in access to financing by reforming the legal framework that influences women's ability to obtain finance; ownership of and control over immovable assets such as land and housing have a direct influence on women's ability to obtain loans for OGS products and productive use appliances. Governments and project teams can collaborate to identify reforms needed to ensure that women and men have equal ownership rights and equal rights to inherit assets.
- **Work with policy makers, industry associations, chambers of commerce, and others to reduce bottlenecks in doing business for women.** This will involve simplifying business registration and licensing procedures, increasing access to information (format, forums, targeting), and providing guarantee letters. It will call for cross-sectoral collaboration—working not just with energy sector actors, but also with economic planning and trade departments, chambers of commerce, the registrar general, and so forth, as well as within the World Bank with global practices such as Finance, Competitiveness, and Innovation and Governance.
- **Remove barriers for women who are starting and running businesses to increase participation of women-owned enterprises in the OGS sector.** Policy makers have a significant role to play in enabling women to start and run OGS businesses. Governments and project teams can collaborate to identify whether gender-related barriers inhibit women from participating in the sector as entrepreneurs and business owners. Constraints to consider include whether a woman can sign a contract or register a business in the same way as a man and whether the law prohibits discrimination in access to credit based on gender.
- **Encourage women-owned enterprises to grow by helping women formalize their businesses and gain access to financial services.** For governments seeking to increase economic growth and achieve gender equality, reducing the cost of registration and designing interventions that increase direct contact with formal

financial institutions are compelling options. Evidence from Malawi indicates that, when support is provided for registering a business, women-owned firms do so, and when registration assistance is combined with banking information, the intervention leads to even higher levels of formalization, increasing the use of financial services and profits. Governments and project teams can target women-owned enterprises, particularly microentrepreneurs working in the OGS sector, which can then grow into larger businesses and access additional funding opportunities.

- **Promote training opportunities, networking and mentorship among women entrepreneurs.** Experimental training initiative that included psychology-based entrepreneurship training focused on teaching self-starting behavior, innovation, identifying and exploiting new opportunities, goal setting, and planning and feedback cycles have been proven to be effective (Box 2.15). Women find networks useful because people who have experiences in common will often share tips and recommendations with each other.[15] Such sharing can help women take collective action in their sectors or share strategies for individual action in the workplace. Few women entrepreneurs, especially in low-income countries, are aware of funding opportunities or how to access them; networking and mentorship opportunities facilitate their access to finance. Psychology-based entrepreneurship training can also be very effective to enhance profits of women entrepreneurs (Box 2.14).

BOX 2.15

SPOTLIGHT ON TRAINING WOMEN ENTREPRENEURS: EVIDENCE FROM THE GENDER INNOVATION LAB IN AFRICA

The Gender Innovation Lab supports training programs for entrepreneurs in several countries, including Ethiopia, Jamaica, Madagascar, Mauritania, Nicaragua, and Togo. In Togo, the Gender Innovation Lab implemented an experimental training initiative that included psychology-based entrepreneurship training focused on teaching self-starting behavior, innovation, identifying and exploiting new opportunities, goal setting, and planning and feedback cycles. This new personal initiative training was particularly effective for female entrepreneurs, for whom traditional training has often been ineffective; women who received this training saw their profits increase 40 percent, compared with 5 percent with traditional business training.

Source: Campos et al. 2018.

2.2.3.2 JOBS AND ECONOMIC OPPORTUNITIES

These actions can help women gain jobs and economic opportunities.

- **Remove constraints on women's agency and freedom of movement by implementing antidiscrimination legislation.** Social norms and laws influence women's decisions to enter the labor force and engage in entrepreneurial activity. Whether a woman can travel outside her home in the same way as a man and whether there are laws affecting women's decisions to enter the labor market, including women's legal capacity for and ability to work, directly influence their ability to be employed in the sales and distribution of off-grid products. Governments should implement antidiscrimination legislation to prohibit discrimination in employment based on gender and sexual harassment in employment, which would increase women's economic opportunities and earnings.
- **Improve women's employment prospects by improving the legal and regulatory environment that affects their ability to enter the labor market.** The legal and policy environment directly affects women's ability to enter and thrive in the labor market, including women's legal capacity and ability to work, as well as protections in the workplace against discrimination and sexual harassment. Although these reforms take a long time to implement and require coordination of diverse voices in the policy-making process, they are ultimately important for increasing women's inclusion in the OGS sector workforce. Some things that affect women's economic participation include whether they can access job opportunities in the same way as men without restrictions (e.g., needing their husband's permission or additional documentation); whether the law prohibits discrimination in employment based on gender; whether there is legislation on sexual harassment in employment; and whether there are laws affecting occupational segregation, the gender wage gap, and equal remuneration for work of equal value. In some countries, women are not allowed to work in the same way as men in positions that are deemed "dangerous" or "morally inappropriate" for women; this includes jobs in manufacturing, energy, and agriculture. Policy makers and project teams have a role to play in identifying which policies inhibit women's participation in the OGS sector workforce and the steps needed to overcome these barriers. A continuous dialogue among government entities, policy makers, energy stakeholders, and project teams is needed to identify country-specific interventions.
- **Implement inclusive policies and targets for women in STEM energy jobs and facilitate exposure to energy careers for girls.** National policies and action plans that promote gender equality can include specific clauses to promote women's participation in STEM jobs in the energy sector. A high-level policy commitment is needed to ensure that ministries, state-owned enterprises, and the private sector are provided with institutional direction to address gender gaps in the OGS sector. For example, quotas and targets can help increase the share of women in the off-grid energy workforce, especially in highly skilled and leadership jobs. In addition to inclusive policies, governments, project teams, and ecosystem-level stakeholders

such as training institutions can implement measures to attract young women. Exposure to careers in the off-grid energy sector can build a talent pipeline of women through internships, engineering scholarships, opportunities for on-the-job training, and exposure to STEM subjects for younger girls. Evidence shows that, when girls are provided with information on labor market returns and the potential for earning higher wages, they are more likely to enroll in programs. Schools and skills-training programs can disseminate information on the labor market returns of off-grid energy careers available to girls and young women. For example, the U.S. Department of Energy's "Girls of Energy" initiative encourages young women to enroll in energy fields.[16]

2.2.3.3 VOICE AND AGENCY

These actions will help increase women's voice and agency.

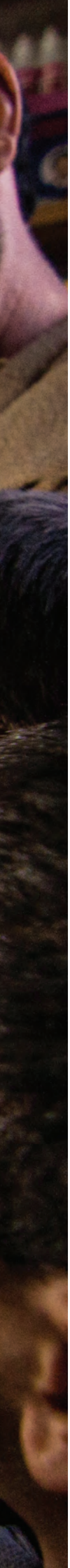
- **Develop energy sector gender policies to provide a framework for public- and private-sector actors to include the needs of women in all off-grid initiatives.** Good practices for gender-inclusive policy development include involvement of women's voices during policy drafting and allocation of appropriate financial and human resources for policy implementation. Policy makers have a pivotal role to play in closing gender gaps in the OGS sector and in depicting women not just as beneficiaries of the sector, but also as active participants and agents of change in it. Several countries have taken steps to integrate gender considerations into energy policies, and some pioneering examples illustrate the steps needed to recognize women's needs as consumers and entrepreneurs. For example, Rwanda's National Energy Policy of 2015 committed to mainstreaming gender into national energy planning and its infrastructure gender mainstreaming policy outlines how the sector will strive to integrate gender into its policies, plans, processes, programs, and projects. The Ethiopian National Electrification Program 2.0 (2019) identifies the central role of women as entrepreneurs in the market and as beneficiaries of off-grid solutions. In Kenya, the 2019 Gender Policy of the Ministry of Energy included policy recommendations, commitments, and implementation strategies to ensure integration of gender considerations into generation, transmission, and distribution of energy resources across the country.
- **Support women entering male-dominated sectors by showcasing opportunities for their productive activities and businesses.** Governments and policy makers can support market development efforts targeted at increasing women's productive uses of energy by encouraging women to participate in energy-intensive economic activities. Policy makers and project teams can work together to identify targeted sectors such as agribusiness and manufacturing where women-led businesses can grow and design programs and policies that challenge attitudes toward women's roles in the sector. Programs that encourage entry into male-dominated sectors may be particularly pertinent in policy efforts to encourage women-owned enterprises to grow from microenterprises into SMEs, where access to OGS energy can play a

catalytic role. Research in Ethiopia demonstrates that women are more likely to cross over into male-dominated sectors when they have access to information about the higher earning potential (Alibhai et al. 2017). As a first step, policy efforts to encourage women to enter these sectors should identify women who are committed to operating a business and provide information on the profitability of the sector.

NOTES

11. Barriers to recruiting women for sales teams may be higher than for other roles listed. Barriers can include care constraints and mobility, including safety considerations and cultural norms at the community level. Companies must investigate these barriers before designing initiatives or setting targets without programs that address these challenges.
12. Self-efficacy refers to an individual's belief in his or her capacity to perform tasks necessary to produce specific performance attainments.
13. The survey by Efficiency for Access was completed by energy access and appliance stakeholders, and the majority of them provided a negative response when queried whether their impact rankings would change based on the end user's gender. Those who answered positively to the question, when prompted to re-order their perceived impact rankings from a male vs. female perspective, listed the appliances indicated as being most impactful for women in their own estimation.
14. The net promoter score indicates customer satisfaction and loyalty and is measured by asking customers to rate their likelihood to recommend a product or service to friends or family.
15. Based on interview with the International Center for Research on Women.
16. More information about the Girls of Energy is available at https://www.energy.gov/diversity/girls-energy and in the Girls of Energy booklet, at https://www.energy.gov/sites/prod/files/2016/10/f33/GOE_eBook.pdf.

THREE KEY ACTIONS FOR PROJECT DESIGN



This section describes opportunities for World Bank teams in the project design cycle. Teams can use these guidelines to select the prompts that are best aligned with the parameters, goals, and outcomes of each project. For each phase, project teams can consult the section for guiding questions, recommendations for stakeholders and experts to engage in projects, and data to collect. Although the operational handbook regards gender equality broadly, guidance is also included on the World Bank Gender Tag methodology, which constitutes the corporate requirement in Bank operations (Table 3.1).

What does a gender-inclusive OGS project look like? Depending on the context of the intervention and on the identified gaps and development objectives (as discussed in Section 2.2), project teams (such as World Bank Task Teams and their government counterparts) are encouraged to consider the project design features outlined in Table 3.1. Teams are not advised to include all the design features in one project. Instead, the list provides options that can be chosen depending on the objectives of the project and the context of implementation. The focus areas are mapped against recommendations for project design.

TABLE 3.1

Summary of Entry Points for Project Design

FOCUS AREA	WHAT DOES A GENDER-INCLUSIVE OFF-GRID SOLAR PROJECT LOOK LIKE? RECOMMENDATIONS FOR PROJECT DESIGN
OWNERSHIP AND CONTROL OVER ASSETS: Remove barriers to ownership and control of assets.	**1. Support generation of sex-disaggregated market data.** Systematic collection of sex-disaggregated data at the consumer and company levels should include making the business case for collecting such data and how to use it. See *Section 2.1.1 & 2.2.1.1 for additional information.*
	2. Support market research and scoping studies to understand the market size for women-led or -owned businesses and women's productive activities and to stimulate demand for them. Projects can support understanding of women's and men's roles in the economy, including constraints and opportunities involved in creation of women-led or -owned businesses, with an emphasis on productive uses of energy and technologies that reduce drudgery and time poverty. *See Section 2.1.2 for additional information.*

3. Use outcome-oriented financing mechanisms to encourage the private sector to reach women customers. Results-based finance and concessional finance can be used to set preconditions and targets to motivate the private sector to target men or women. In some contexts, in which gender norms hinder the ability of companies to reach women customers (e.g., where women have limited mobility outside of the household or they cannot be reached using traditional marketing and sales activities), grants can be useful. *See Section 2.2.1.3 & 2.2.2.1 for additional information.*

4. Foster partnerships between financial providers—including MFIs and banks—and technology suppliers to develop and target products and services toward women's productive activities and women-led business needs. Build the capacity of MFIs and financial institutions to tailor financial products to women's enterprises and bundle technologies for productive uses. Support can be provided to financial institutions to reach women-led SMEs by setting specific targets; providing training on gender bias; creating awareness of and providing methodologies for noncollateralized lending; supporting market research; offering information on best practices for reaching women-led SMEs; and where appropriate, simplifying administrative procedures. *See Section 2.2.2.1 for additional information.*

5. Establish cross-sectoral collaboration between policy makers, industry associations, chambers of commerce, and other actors to reduce bottlenecks in doing business for women. This includes simplifying business registration and licensing procedures, increasing access to information (e.g., format, forums, targeting), and providing guarantee letters.[17] This will require cross-sectoral collaboration in the country (not just working with energy sector actors, but also with economic planning and trade departments, chambers of commerce, the registrar general's office, and so forth) and within the World Bank, working with other global practices such as Finance, Competitiveness, and Innovation and Governance. *See Section 2.2.3.1 for additional information.*

JOBS AND ECONOMIC OPPORTUNITIES: Remove constraints and yield more and better jobs and economic opportunities.	**6. Encourage the private sector to employ women by providing technical and financial assistance.** Help companies pilot and test gender-inclusive human resources strategies. Grants can be used to pilot and test approaches in which gender norms inhibit women's participation, such as when women are prevented from operating as technicians or lack of mobility precludes their work as sales agents. Results-based finance and concessional finance can be used to track outcomes in terms of employment in sales, distribution, and management where social norms enable women's participation in these areas. Funding can cover skills development, training, and accelerated leadership opportunities. Technical assistance can involve placing gender experts in companies to support them in diagnostics and development of hiring strategies. *See Section 2.2.1.2 for additional information.*
	7. Set achievable targets to monitor benefits for women-owned and -led enterprises. Projects that target women-owned businesses or women's productive activities should measure impact in terms of number of new enterprises established, increased income, or increased employment.
	8. Develop women-focused or women-only training programs. Project teams are encouraged to collaborate with the private sector, public entities, educational institutions (universities, technical and vocational education and training institutions, tertiary and technical institutions), and professional networks to catalyze training oriented to women and foster supportive learning environments and networks. *See Section 2.2.1.2 for additional information.*
	9. Implement women-centric capacity building at all levels. Ensuring buy-in from senior leadership of clients, partners, and implementing agencies is crucial to motivating stakeholders to support equality goals. Projects should include capacity building on gender equality and working with women customers and partners. *See Section 2.2.1.2 for additional information.*

	 **10. Develop gender equity score cards, certification, or excellence awards that are publicized annually.** This would highlight private-sector actors that meet or exceed targets for investing in off-grid energy businesses led by women. Awards such as Women's Energy Entrepreneur Award or Women's Energy Company of the Year could be used to highlight businesses that support women's energy entrepreneurship. *See Section 2.2.1.2 for additional information.*
	 **11. Showcase opportunities for employment.** Encourage women's employment by showcasing career opportunities in the OGS sector for young women by sponsoring open days, take-girls-to-work days, STEM career talks for girls (involving female staff), and energy-specific STEM education in schools at all levels. Support internships and apprenticeships for young women and rotate them through various departments to increase their understanding of the sector and help them make informed career choices. *See Section 2.2.1.2 for additional information.*
VOICE AND AGENCY: Increase women's voice and agency and engage men and boys.	 **12. Support knowledge creation and knowledge sharing to reach women customers and showcase the business case for inclusion of women in the workforce.** For most companies operating in OGS markets, this may involve an extra cost that a grant or technical assistance from a project will be needed to cover. Project design can encourage or mandate that companies collect information on and report on a sex- disaggregated staff footprint with data on female and male employment annually. *See Section 2.2.1.3 for additional information.*
	 **13. Develop market-level awareness campaigns to educate the public and change attitudes on women's involvement in paid and unpaid work, women's roles, and their potential to participate in productive activities.** *See Section 2.2.2.3 for additional information*
	 **14. Collaborate with training institutions and nongovernmental organizations to build women's capacity in digital and financial literacy and digital financial services.** Remove barriers to accessing mobile payments and financial services by building the capacity of women and women's enterprises.

The design recommendations described above can be implemented at various stages of the project cycle, from identification and analysis to reporting on results (Figure 3.1). Project teams and partners are encouraged to follow a step-by-step approach to assess, select, and implement those entry points based on the context, the proposed project objectives, and the needs of the recipient.

The next section of this chapter outlines practical steps that project design teams can take to begin the change process in the off-grid sector at any stage of the project cycle. Concerted, sustained effort will be needed, especially from leadership, to ensure that women have genuine opportunities to enter the sector and participate as consumers and that there is dedicated support for women working in the off-grid market as employees and entrepreneurs.

FIGURE 3.1

Entry Points on Gender Equality in the Project Cycle

3.1 Assessing Gender Equality in OGS

The first steps in identifying gender equality issues are often to collect sex-disaggregated data, conduct an assessment, and develop an evidence base for the sector. This can lay the foundation for making the business case for teams, companies, and other stakeholders. The data will provide helpful insight into gender gaps, as well as the most promising areas for intervention.

3.1.1 Consider Hiring Experts for the Project

It is recommended that World Bank project teams hire an expert with experience in gender analysis related to women's employment, entrepreneurship, and access to finance and rights-based approaches to focusing on disparities between women and men. Expertise in human resources, gender audits, program design, and monitoring and evaluation may also be helpful. Gender experts can support a review of the evidence and data gathered; hold discussions with counterparts; and conduct additional research and help link it to recommended actions, targets, and monitoring and evaluation indicators.

3.1.2 Use Available Data Sources to Better Understand Gender Inequality

Existing data and resources can help project teams better understand a country's laws, regulations, and policies. At the country level, it can be helpful to explore sector-specific policies and ministry-led initiatives, as well as civil society efforts to achieve gender equality. Finding data sources that link to the OGS sector (e.g., data about women's barriers to gaining access to finance, gaps in entrepreneurship and skills, gender norms in society that hinder women from progressing as leaders in the OGS sector) is critical. Women, Business and the Law is a World Bank Group project that collects and publishes unique data on laws and regulations that restrict women's economic opportunities in 190 economies.[18] This resource covers such topics as accessing institutions, owning property, obtaining a job, providing incentives to work, going to court, building credit, and protecting women from violence. The Gender Data Portal[19] is the World Bank Group's comprehensive source for the latest sex-disaggregated data and gender statistics covering demography, education, health, access to economic opportunities, public life and decision making, and agency. The Social Institutions and Gender Index is an Organization for Economic Cooperation and Development[20]–supported measure of discrimination against women in social institutions through formal and informal laws, as well as social norms and practices in 180 countries. The Social Institutions and Gender Index covers four major dimensions of discriminatory social institutions that affect women's lives: discrimination in the family, restricted physical integrity, restricted access to productive and financial resources, and restricted civil liberties. The Global Gender Gap Report (WEF 2021)[21], supported by the World Economic Forum, benchmarks 153 countries on their progress toward gender parity across four dimensions: economic participation and opportunity, educational attainment, health and survival, and political empowerment. Although these data and resources may not relate directly to the

OGS sector, many gender gaps in the sector can be understood by examining access to such things as finance and civil liberties. Teams are also encouraged to explore other data sources for more information on gaps at the consumer level, such as the Multi-tier Framework for energy access data sets (Box 2.7).

3.1.3 Examine National Development Strategies

It can also be helpful to evaluate national development strategies. For example, the Ethiopia Growth and Transformation Plan 2 (Green Policy Platform 2016) focuses on employment and entrepreneurship targets. Similarly, the National Electrification Plan 2.0 outlines key gender gaps and includes baseline data, and actions for the sector (Federal Democratic Republic of Ethiopia 2019).

3.1.4 Collect Data to Understand Specific Gender Issues

In addition to secondary data, collecting quantitative and qualitative primary data from the OGS sector and key institutions can help clients understand the level and nature of gender equality in a variety of areas, such as employment, leadership, entrepreneurship, and consumers. Such data can provide a helpful perspective on participation of men and women across value chains and their access to opportunities, highlight ways to achieve greater parity, and provide important information about perceptions and attitudes within a business or at the community level.

Teams can start by establishing the scope of the assessment; identifying any existing sex-disaggregated data already available in databases or reports; and leveraging opportunities to incorporate relevant questions into broader sector-wide data collection efforts or assessments, such as consumer market assessments conducted by development banks or companies.

To gain a fuller picture of women's experiences in the OGS sector, qualitative surveys are needed, along with insights gathered during consultations or focus group discussions with companies, employees, or consumers. It may be useful to hold some women-only consultations or conduct consumer journey mapping.[22] This could help women feel sufficiently confident to speak candidly about the challenges they face and the opportunities they are seeking. For example, women farmers may face rigid gender norms regarding accessing technologies for their farms, or they may have financial pressures at home, causing affordability constraints or influencing their willingness to pay.

Assessments should include a general review of policies and legal frameworks, such as loan terms for consumers, know-your-customer rules, ownership and inheritance policies, and human resources policies at the company level. This can help identify the specific ways that gender norms and bias affect women in the sector and what legal barriers prevent women from entering or being retained in the workforce. It is also vital to review collective bargaining agreements and identify the prevalence of sexual harassment, as well as the efficacy of any prevention and response mechanisms. Some of the broader self-reflective questions teams and clients may want to ask include:

- What are the biggest gender gaps and barriers at the country level?
- How can financial and other assistance be designed to have the largest impact on closing gaps between women and men?
- Does the proposed project development objective address both women's and men's needs?
- Are project development objective–level results indicators measuring impacts for women and men?
- Who are the beneficiaries? Does the project explicitly target female-headed households, female employees, and women-owned and -led businesses to address gender inequalities?
- Does the project provide opportunities to increase ownership and access to assets, reduce barriers that stand in the way of more and better jobs, or increase women's voice and agency?

3.2 Building Momentum: Securing Active Support for Gender Equality from Leaders and Counterparts

Buy-in of senior leadership is critical to any organizational change process. Leaders who demonstrate a genuine understanding of the importance of gender equality can encourage others to take the goal of achieving it seriously. It is important that World Bank teams ascertain whether management or counterparts are interested in or at least open to discussing these issues. Although managers might be generally aware of the strengths and weaknesses of their technical staff or sales team, the specific challenges that female staff typically face are probably not their primary concern.

As first steps, the project team can leverage some of the initial data collected to engage the company or counterpart in the business case for gender equality, discuss some company-level challenges the organization is facing, and allow that to lead to discussion. Gender equality may help address these challenges by, for example, focusing on staffing challenges or devising a strategy to reach missed market segments at the consumer level. It can be inspiring and encouraging to share international experience from other OGS entities that have faced similar challenges and explain how they overcame them by making changes (Appendix B). In addition, it is helpful to highlight how the focus on gender equality links to broader global and national mandates and goals. This approach can also help build buy-in and advance adoption of strategies on gender equality in the OGS sector generally.

When engaging senior leadership, it is important that diverse technical counterparts are present. Human resources managers and finance team members, for example, are often best placed to ensure that decision makers and potential high-level champions are engaged. Other department managers will also be important when discussing the sales

approach with customers, changes or improvements to customer care, or adjustment of the credit metrics used for potential customers. It may even be relevant for OGS companies to consult and involve the investors or donors that will join them, who may value a focus on gender equality in operations.

Although senior leaders or department heads may be able to make institutional commitments, employees will be crucial in driving the change process. It is therefore important to hold regular discussions and use feedback processes to ensure that employees agree with the ideas being proposed and that they have a space in which to discuss diverse perspectives and ideas. Staff trainings may also be necessary to provide everybody with a foundational understanding of gender equality.

It will also be useful to have a dialogue on the barriers that prevent women from actively engaging in the OGS value chains, because this may have policy implications that go beyond the energy sector and may require changes in overall policies and regulatory frameworks. These broader barriers will need to be acknowledged, and counterparts will often be grateful that they have been recognized. Project teams can still indicate how OGS companies can themselves make a valuable contribution to gender equality overall.

3.3 Developing a Strategy and Action Plan

To ensure broad implementation of gender equality objectives in the OGS sector, the commitment of senior leadership to these goals should be translated into concrete, specific actions that are clearly spelled out in an institutional plan or strategy under a project or at the company (or institutional) level. This is important to prevent overreliance on champions or on specific leaders or staff in case of changes at the company level.

A McKinsey (2018) study revealed that companies that increased inclusion of women over a 3-year period did so predominantly through company-specific diversity and inclusion strategies. Such plans usually include details on gender equality policies (national, sector, or company level) and specified targets for each action, focused on areas such as access to finance, business skills development, and productive use of energy. The most important thing overall is ensuring that the strategy and action plan is widely consulted on and discussed with all relevant stakeholders (e.g., investors, the board, customers, staff).

World Bank project teams must also understand specific local contexts and carefully consider them in developing actions. Any actions taken must include the negotiation of existing social and cultural circumstances resolutely but intelligently. For example, if project initiatives change how women earn money, interventions that engage men and boys on gender norms and household budget planning and raise awareness of women's important contributions to the OGS space may need to be developed. If such considerations are not integrated into the design, resistance from husbands or partners could ensue, risking efforts and progress made on women's aspirations and outcomes such as employment or improved livelihoods.

3.3.1 Setting Specific Goals and Targets

The strategy should be specific about the steps that will be taken to achieve targets set for gender equality in the OGS sector. Project teams should support the design, track progress toward project targets and initiatives in identified focus areas, and help organizations revise and adopt revisions in policies as needed.

It would be helpful to create specific goals with, for example, development banks or MFIs on how many women entrepreneurs and business owners they would like to reach through OGS products. This will allow steps to be taken to meet these goals, such as partnering with women's savings groups or cooperatives or hiring more women as credit officers. These goals can then be embedded in the project design or in an organization's overall strategy to address gaps between women and men.

3.3.2 Identifying Champions in the OGS Sector and Engaging Men

Designating champions at all levels with project counterparts, such as the private sector, financial institutions, or policy makers, can help sustain institutional commitment to change. For example, employees who are passionate about diversity, inclusion, and women's participation in the workforce or mentoring women entrepreneurs can be assigned to take charge of key initiatives. Project teams can also encourage relevant counterparts to create roles for focal points with budget and resources and committees or councils to drive progress through monthly meetings, planning sessions, and roundtable discussions. Supporting champions and checking in with the focal point or staff member driving the actions is also important, because the work can be challenging. Appointing senior advisors is also recommended. Because most OGS employees and entrepreneurs are men, engaging men as partners and supporters of gender equality initiatives is a precondition for success. One way to achieve this is to engage men as mentors and implementers or leaders of gender equality strategies.

3.3.3 Creating the Business Case for OGS Business

Highlighting the business case for promoting gender equality can help garner broader support than addressing the issue from a top-down or corporate requirement perspective. While developing the case for gender equality, take care that messaging does not portray women as victims, which could further disempower women on staff or women entrepreneurs. Positive messaging that communicates some of the ways that inclusion can help modernize the organization or increase its competitive edge can help create a more constructive, respectful business culture.

3.3.4 Capturing Results Through Monitoring and Evaluation Procedures

New monitoring and evaluation mechanisms may be needed to capture qualitative and quantitative data on the effectiveness of various approaches, strategies, and activities that

have been implemented. If relevant output and outcome indicators are included in project design, these indicators should be reported on during implementation. Interventions designed to increase the comprehensiveness of annual reporting would ideally include information on, for example, access to finance for women consumers or business development support delivered to women-led enterprises and report progress on the number of women employed and the number of female senior executives and board members. Encouraging OGS entities to disaggregate their employee and customer satisfaction survey according to sex can help paint a clearer picture of the current situation and progress made. Table 3.2 highlights some examples of indicators that project teams and OGS stakeholders may want to include in their projects, programs, and operations.

Project teams can share information about progress achieved through project reports, action plans, blogs, and other mechanisms. They should also advise entities to announce progress made toward their targets in quarterly reports, newsletters, and staff meetings, clearly stating the business case for the interventions, calling on champions and staff to engage on the topic, and outlining the steps that they are taking to set and meet planned targets.

TABLE 3.2

Examples of Indicators

THEME OR DESCRIPTION	EXAMPLES OF INDICATORS
WOMEN CUSTOMERS	Female-headed households newly provided with electricity from stand-alone systems (percentage of target)
WOMEN'S PRODUCTIVE USES OF ENERGY (AS FARMERS AND BUSINESS OWNERS)	Number of female-headed households with enhanced off-grid productive uses of energy through adoption of OGS products (including appliances) Women's employment as share of jobs created from direct and productive use application at project site (percentage of target) Enhanced livelihood or productivity for women, for example, farmers or business owners (percentage of target)
COMPANY FINANCING OR OTHER FINANCIAL SUPPORT (E.G., FOREIGN EXCHANGE)	Women-led or -owned firms that have been provided with financial products and services (percentage of baseline and target) Number of information sessions held for women-owned and -led companies and women's business associations

WORKFORCE DEVELOPMENT AND EMPLOYMENT **FEMALE LABOR PARTICIPATION** **WOMEN'S PARTICIPATION IN OGS SECTOR VALUE CHAIN**	Training courses completed and how many completed by women (percentage of baseline and target) Women employed (percentage of baseline and target) Ratio of women to men in senior management (percentage of baseline and target) Number and types of opportunities for vocational education programs and technical training programs aimed at women Paid female employees in OGS companies in discrete role categories: product design, manufacturing, distribution and sales, after-sales service, management (percentage of baseline and target for each)
COMPANY-LEVEL OPPORTUNITIES AND HUMAN RESOURCES POLICIES	Policies on maternity and paternity leave, flexible work options, prevention of sexual harassment, etc. Career opportunities for women with demonstrated employee retention

The Gender Tag[23] (Table 3.3 and Table 3.4) identifies operations that seek to close socially and culturally contingent gender gaps (gaps in human endowments), provide more and better jobs, encourage women's ownership and control of assets, and promote women's voice and agency. These constitute the four pillars of the World Bank Group Gender Strategy 2016–2023. Operations tagged for gender must meet two criteria. They must address at least one of the pillars of the strategy, and the project appraisal document must articulate a logical chain from analysis to actions to indicators in the results framework.

TABLE 3.3

Elements of the Gender Tag

ANALYSIS	ACTIONS	MONITORING AND EVALUATION
• Identify and substantiate gaps between or among men and women in a sector or project. • The analysis must provide substantiated evidence of the gender gaps, with specific baseline information and data relevant to the project and to the targeted area or country contained in, for example, systematic country diagnostics, country partnership frameworks, regional gender action plans, and global practice follow-up notes. • Gender gaps can also be analyzed using quantitative and qualitative data from existing research, such as academic and gray literature and studies produced by line ministries, local think tanks and universities, or the United Nations and other international agencies. Alternatively, primary research can be conducted at an early stage in the project cycle, through social and gender assessments.	• Actions must close gaps relevant to the four pillars of the Gender Strategy and the project objectives. Work on gender does not mean only rectifying disadvantages for women; men can also be at a disadvantage, for example because they are more likely to drop out of high school or a die at a younger age. • Beyond disadvantage, projects should consider men's roles as agents of change to improve outcomes conducive to gender equality. • It is good practice for the actions to be reflected in the description of the components, rather than being confined to a single paragraph on gender in the project appraisal document. • It is also good practice to spell out in sufficient detail key features of gender gap–related actions, including which entities will be responsible for implementing the action; what resources will be required; how the narrowing or closing of the gaps should be achieved and measured; and the process for ongoing or interim evaluation, with appropriate refinement or modification of actions.	• There should be indicators to measure narrowing of the gender gap that the operation is addressing. • The results framework can include quantitative indicators based on sex-disaggregated statistical data from surveys or administrative records. These can be process, output, or outcome indicators, as appropriate. • Baseline data should be collected to set targets for the indicators. If these data are not available, a baseline of zero can be used to measure change over time. • All person-level indicators should be sex disaggregated. Indicators should be designed to measure narrowing of identified gaps.

TABLE 3.4

Example of a Gender-Tagged Operation: Access to Distributed Electricity and Lighting in Ethiopia

ANALYSIS	ACTIONS	MONITORING AND EVALUATION
• Although women account for more than 40 percent of the agricultural labor force and head approximately 25 percent of all farming households, women's agricultural productivity in Ethiopia is significantly lower than men's—mostly because of differences in factors of production. • In entrepreneurship, women-owned firms underperform those owned by men in an array of critical dimensions, including profitability, survival rate, average size, and growth trajectory. • Women in rural areas tend to rely on informal and community-based financial services. Efforts to bring financing to women to purchase OGS products have met with limited success. • Consultations with mini-grid and off-grid companies revealed a women's labor force participation rate of around 20 percent, with most women in nontechnical roles. Larger gaps were identified in bigger international companies.	• The proposed operation includes a comprehensive strategy focused on increasing gender equality in the off-grid sector at the enterprise, employee, and customer levels (budget allocation $2 million). Focus areas include: » Increasing productive uses of energy for women-owned businesses and female farmers » Increasing access to finance for women entrepreneurs » Building capacity for MFIs and PAYGo providers to develop customer-centric models for female consumers (e.g., entrepreneurs and household members) • Building capacity of women entrepreneurs through training, networking, and mentoring • Providing technical support to existing and new energy companies in off-grid and mini-grid settings by helping them reshape their human resources frameworks and identify job opportunities for women.	• **Component 2:** Number of mini-grid sites that have adopted a strategy on closing gender gaps in productive uses of energy: **Baseline: 0, Target: 50** • **Component 2:** Percentage of women among total number of people employed by mini-grid companies: **Baseline: 21%, Target: 30%** • **Component 3:** Percentage of off-grid systems used in support of small women-owned businesses: **Baseline: 0%, Target: 20%** • **Component 3:** Percentage of people employed by OGS companies that are women: **Baseline: 20%, Target: 28%** • **Component 4:** Adoption of skills development and job creation road map for women for stand-alone solar system installation and maintenance for social institutions • **Target: Yes or No**

Source: Access to Distributed Electricity and Lighting in Ethiopia (ADELE). World Bank, Washington, DC, https://projects.worldbank.org/en/projects-operations/project-detail/P171742.

3.4 Mobilizing Budget and Technical Experts

Some activities outlined in this operational handbook require allocation of budget and experts if implementation is to be effective and sustained. The costs may include hiring consultants to deliver a consumers-focused baseline assessment in the field, designing mentorship programs for female technicians, earmarking funds for business training, and forming partnerships with new organizations or shaping new ways of working at the company level.

Costs vary from country to country and according to type of initiative. Although there are differences depending on the context, initiatives that address the longer-term challenges of gender equality (including intergenerational challenges),[24] such as initiatives for promoting women in STEM and women's leadership, may take longer and cost more. Other initiatives, such as training women to be community technicians, could cost less. Similarly, addressing a few aspects of women's experience in the energy sector would be less costly than investing in working with development banks to change collateral requirements or providing business training for female entrepreneurs so that they can compete on a more equal footing in the OGS market.

Generally, little information is made available on the specific costs of initiatives, given questions of confidentiality and lack of budgets specifically allocated to gender equality in OGS, but project teams and counterparts should endeavor to determine what each activity and initiative costs over successive years to ensure sustainability of efforts.

3.5 Navigating Challenges

When targeting gender equality efforts in OGS projects, project teams can work to navigate the challenges proactively. Some of the more substantial actions, such as creation of new jobs, training programs for entrepreneurs, adaptation of appropriate workplace facilities, and provision of childcare, require upfront investment. Such investments can subvert the business case for gender equality in the short term and reduce the project team's ability to advocate successfully for change. Increased spending and additional expertise could also be needed for introduction of new metrics and measurement systems designed to hold management or OGS sector leaders accountable for progress on closing gender gaps. World Bank clients and counterparts in developing countries may not have the financial resources needed, so discussions will need to be held on how to cover these costs or raise the funds for them.

Limited counterpart or senior management buy-in for initiatives can place far-reaching limitations on collection of data, development of a gender-equality strategy, adoption of nondiscriminatory policies, and setting of targets to close gender gaps. It can also lead to insufficient allocation of resources, persistent tolerance of gender bias in the workplace, and reinforcement of beliefs and cultural norms that the OGS sector is one in which only men are active and can own businesses. It can also perpetuate the myth that OGS products

inherently advance gender equality and that OGS stakeholders need take no further action. It is best to use several strategies to secure buy-in and to ensure that, when these topics are being discussed, the key project counterparts are in the room so that the feedback is based on the preferences or opinions of more than just a few counterparts.

Good practices must be context specific and grounded in each country's realities, and although good practices from other countries can be useful as a guide for project teams, solutions for overcoming barriers for women must be context specific. Examples from high-income countries may not be replicable in low- and middle-income countries, where gender norms may differ or specific local dynamics, such as loan terms (requiring land, rather than movable assets, as collateral) or community beliefs about appropriate educational or job choices, influence gender-equality outcomes.

Including gender equality when developing projects and initiatives in an emerging market is not easy, and implementation can be challenging. The most promising institutional strategies, such as training local women to become solar technicians, may be hard for some women to take advantage of, given their unpaid care responsibilities and lack of autonomy at home. Initiatives can also backfire if they are not fully aligned with corporate strategy, such as when managers are not trained to hold appropriate conversations with staff or consumers or some of the staff do not fully understand the actions taken and why. Sensitivity is critical, and this requires in-depth knowledge of the context. Thus, locally based experts should be engaged whenever possible to bring stakeholders on board as they go through changes associated with increasing gender equality.

Despite these challenges, OGS stakeholders around the world are beginning to recognize the importance of creating a more equal environment, one that enables women and men to participate and thrive at all levels of the sector. They are making commitments to gender equality, adopting interventions to increase the share of women employees, facilitating access to finance for women, and driving an increase in female entrepreneurs. All of this involves thoroughly investigating the affordability constraints that women and men experience and their technology preferences. Investors are pressing for change and observing the impact on gender-equality outcomes. As the research and case studies in this operational handbook demonstrate, there is vast potential for women and men in the OGS sector to thrive in and benefit from the sector—bringing about widespread positive knock-on effects for employers, employees, businesses, and society overall.

NOTES

17. For example, in some countries one needs to be a member of the renewable energy industry association to benefit from tax-free importation of renewable energy technologies. See Women, Business and the Law (database), World Bank, Washington, DC, https://wbl.worldbank.org/en/wbl.
18. See Women, Business and the Law (database), World Bank, Washington, DC (accessed July 1, 2020), https://wbl.worldbank.org/en/wbl.
19. See Gender Data Portal (database), World Bank, Washington, DC (accessed July 1, 2020), https://genderdata.worldbank.org/
20. See OECD Development Centre's Social Institutions and Gender Index (SIGI), OECD, Paris (accessed July 1, 2020), https://www.genderindex.org/
21. See WEF interactive data platform, World Economic Forum, Switzerland (accessed July 1, 2020), http://reports.weforum.org/globalgender-gap-report-2021/dataexplorer
22. A visual representation of customer interactions with a company. See examples at Morgan n.d.
23. Good Practice Note for the Gender Tag May 2020 available internally within the World Bank athttps://worldbankgroup.sharepoint.com.mcas.ms/sites/Gender/Knowledge%20Base/Gender%20Tag%20Good%20Practice%20Note%20Updated%20May%2013%202020.pdf?McasTsid=20892. Gender Tag Resources and Tools available at https://worldbankgroup.sharepoint.com.mcas.ms/sites/wbgender/
24. Refers to the concept of unfair treatment of a certain gender across generations—often addressing the long history of inequity and the underlying drivers of gender gaps that can span many generations. Addressing these challenges requires resources, knowledge, and time.

©INKA SCHOMER/
WORLD BANK

APPENDIX A. Organizations Consulted

60 Decibels

CDC Group

Center for Financial Inclusion

CLASP (Energy Access)

CLASP (RBF)

CSC Empowerment and Inclusion Programme

EcoEnergy Finance

ENERGIA

Energy2Equal

Energy 4 Impact

Financial Alliance for Women

Global Distributors Collective

Global Off-Grid Lighting Association

Greenlight Planet

International Center for Research on Women

Lighting Asia -International Finance Corporation

Solar Sister

Sustainable Energy for All People-Centered Accelerator

Pawame

Pollinate Group

Power Africa, U.S. Agency for International Development

Smiling Through Light

Sosai Renewable Energies Company

Uptrade, Goats for Water

Value 4 Women

Zola Electric

APPENDIX B. Case Studies

CASE STUDY 1 Increasing Productive Uses of Energy: *Businesses targeting women farmers and workers for productive uses of energy*

Energy 4 Impact (E4I) is an implementer of the ENERGIA program on productive uses of energy in Senegal. E4I supports 300 women entrepreneurs so that they can acquire solar equipment—mainly refrigerators, solar pumps, and solar dryers—and develop a business funded on these technologies. Its approach involves providing support to women entrepreneurs, who act individually or in groups. E4I provides mentoring to identify the right technology supplier and helps them learn how to use products. E4I also provides business, accountability, sales, and marketing support to help women establish their businesses. After an initial incubation phase of about 6 months, the women entrepreneurs and E4I prepare a business plan with which to access finance through microfinance institutions (MFIs) and technology suppliers. E4I coordinates with MFIs to increase their understanding of women customers' needs and of financing mechanisms related to energy products. Product financing comes from the MFI (ranges between 30 and 50 percent), the solar pump company (ranges between 30 and 50 percent), and the women themselves (20 percent). E4I de-risks the investment during the pilot phase by providing a guarantee for the women.

Root Capital invests in growth of agricultural enterprises around the world. As part of the Women in Agriculture Initiative, which is aimed at promoting greater economic opportunities for women, Root Capital has implemented the Gender Equality Grants program and partnered with Value for Women to conduct a diagnostic analysis of their clients in selected countries. The aim was to work with them to identify strategies to improve women's quality of life and increase their representation in agricultural enterprises. Agribusinesses were given Gender Equity Grants of $20,000 with which to test tailored gender inclusion strategies, with a view to gathering evidence for the business case. In Peru, for example, the Cooperativa Agraria de Frutos Ecológicos Sanchirio Palomar identified the need to increase productivity and diversify income streams by purchasing equipment. The women's committee linked to the Cooperativa decided to use the seed funding to purchase roasting equipment and train its members in running a new business venture. Root Capital has piloted similar approaches in Kenya and Rwanda, where acquisition of productive technologies has helped women diversify their incomes and increase their productivity.

Sosai Renewable Energy is active in Northern Nigeria, selling clean energy products in rural communities. Sosai created Women of the North for Excellence, an initiative through which women can become entrepreneurs through leadership in commission-based projects. One project involves renting out solar dryers for drying pepper and other crops, increasing their shelf life. Nigeria accounts for about 50 percent of Africa's pepper production; in rural northern Nigeria, as much as 40 percent of a family's income can derive from pepper cultivation. Women of the North for Excellence members rent solar dryers from Sosai and use the drying fees that they charge to pay for its rent while earning a 10 percent

commission from their sales. These energy ventures involving small renewables have given women ownership of property, independence, and the ability to provide sustainable energy to their communities. Women of the North for Excellence members' incomes have risen by as much as 30 percent.

CASE STUDY 2 Access to Consumer Finance: *Tailoring consumer finance and payment methods to what works for women*

FACILITATING ASSET FINANCING FOR ENERGY PRODUCTS

Village savings and loan associations (VSLAs) are community-based groups that enable low-income women to save as a group and lend to one another as needed. They enable women to access loans to manage personal financial shocks, expand their businesses, or make purchases. Solar energy companies that have tapped into VSLA networks have been able to promote financial inclusion for women and provide an alternative financing option for purchasing solar energy products. To expand its customer base, PEG Africa Ghana integrated VSLAs into its growth strategy. Supported by Power Africa, PEG Africa developed a gender action plan to improve conditions for women in the company and create new employment opportunities. The gender action plan also included a goal of reaching 4,000 new female customers. To achieve this target, PEG Africa worked directly with existing women's savings groups and established three additional VSLAs dedicated to saving for the PEG Africa solar home system.

TAILORED FINANCIAL SERVICES FOR WOMEN

MFIs have been serving women and bridging the financial inclusion gap. In Pakistan, the Community Empowerment and Inclusion Programme offers loans for solar products to women. Tailored financial services go beyond "gender-neutral" services that fail to meet the needs of women (see Box B.1) (WWB 2018). Some MFIs, such as SEWA Behrat in India and the Kenya Women Microfinance Bank, cater exclusively to women. Like the Community Empowerment and Inclusion Programme, these organizations offer services designed to meet women's financial needs. Through these services, women can access affordable credit to purchase energy products that they could not otherwise obtain.

DIGITAL FINANCIAL SERVICES

Mobile money offers a way to begin to close the gender gap in financial services. According to the World Bank 2017 Findex[25], a comprehensive data set on how adults save, borrow, make payments, and manage risk, a study in Kenya found that access to mobile money enabled female-headed households to increase their savings by more than one-fifth. The study also found that mobile money enabled 185,000 women to leave farm work to develop their own businesses or retail activities and reduced poverty in female-headed households by 22 percent.

BOX B.1

MICROFINANCE INSTITUTIONS HELPING WOMEN IN PAKISTAN, INDIA, AND KENYA

In Pakistan, the Community Support Concern's Community Empowerment and Inclusion Programme lends exclusively to women, working with private-sector companies such as d.Light, Harness Power, and Allied Solar to offer loans specifically for the purchase of solar energy products. Loans are available for select solar products that meet the needs of the Community Empowerment and Inclusion Programme's clients, helping women access energy products that enable them to run their businesses and microenterprises. Participating solar companies benefit as well by being able to expand their client base to include poor (base of the pyramid) customers.

SEWA Behrat operates a microfinance program in India that caters exclusively to women. Through its thrift and credit cooperatives, SEWA offers credit and loans that can be used to purchase solar and other renewable energy products. SEWA offers regular declining-interest loans to its members at a rate of 1.5 percent per month, to be repaid in 10 installments. The cooperative also offers secured loans or "gold loans." The terms of these loans vary according to the sums involved.

The Kenya Women Microfinance Bank also serves women exclusively, offering loans to enable customers to purchase solar lighting equipment that can be paid in flexible installments. The Kenya Women Microfinance Bank showcases the stories of women who benefit from their products and provides programs to train women to become renewable energy ambassadors. Working on commission, these women help the microfinance institution expand its customer base by mobilizing women's groups.

The Global System for Mobile Communications Association (GSMA) has published several case studies in which women gained access to mobile payment services. In Ghana, mobile services provider MTN launched MoMo Pay, a mobile money platform that female merchants have widely adopted in open-air markets, which primarily serve women. The association found that women merchants who adopted MoMo Pay drove uptake and awareness of MoMo Pay among their women customers. Women who used MoMo Pay were also more likely to engage with MTN's suite of mobile payment services (GSMA 2020). This case study demonstrates that mobile payment services can increase women's financial inclusion and that, in settings dominated by women, such as markets, women can drive uptake and consumer awareness of new products and services.

In some contexts, mobile money is less effective at reducing the financial gender gap. Cultural norms can affect adoption of mobile phones and, consequently, use of mobile money. The GSMSA's Connected Women program found that, in low- and middle-income countries, women are 8 percent less likely than men to own mobile phones and 33 percent less likely to use mobile money. For these reasons, off-grid energy interventions that intend to use PAYGo or mobile money should consider the access gap in mobile ownership in the target context.

ASSET FINANCING

Asset financing is another consumer financing model that can increase access to energy products by enabling customers to purchase energy products by paying in installments. In addition to offering immediate access to the energy product, asset financing increases consumers' purchasing power by helping them build a credit rating and gain access to other financial services (Global Alliance for Clean Cookstoves 2015). Asset financing can promote women's financial inclusion while enabling them to access essential energy products immediately.

In Kenya, the KDA offers customers an asset financing option to purchase cookstoves. Customers put down an initial 10 percent deposit and then have 3 months in which to repay the loan. They are encouraged to make a weekly payment based on their weekly energy savings. The loans, which are subject to 3 percent interest, are repaid via mobile payments or collected in person by the cookstove entrepreneur, who then pays the KDA, which has found that this approach has drawn more women into participating in the program (WWB 2018).

LESSONS LEARNED FROM OTHER SECTORS

Although financial inclusion in the energy sector is still at an early stage, other sectors such as agriculture have implemented financial services for women. Some of the lessons learned that can be applied to the off-grid energy sector include:

- ***Ensuring a design of financial services that is sensitive to women's needs.*** Financial services should be designed in accordance with gender norms in the local context and in the energy sector.
- ***Providing access to credit with alternative forms of collateral.*** MFIs can reach women customers by eliminating traditional collateral requirements in favor of alternative guarantees, such as mortgages on movable assets and future harvests.
- ***Considering group-based approaches that use joint liability.*** Joint liability groups allow poor customers to use social rather than physical collateral. In Bangladesh, Grameen Bank provides loans via joint liability groups of five women. The women guarantee one another's loans, which are paid off in small weekly installments.
- ***Using innovative delivery models via information and communications technology.*** Use of information and communications technology at post offices, petrol stations,

and shops can broaden the reach of financial services. In the agricultural sector, this is primarily for rural populations, but this technology could be applied elsewhere to reach women with limited mobility or be placed in locations that women frequent for convenience of access.

- ***Building capacity in financial literacy and improving access to information.*** Building capacity in financial literacy can promote learning and help women make informed decisions. Training can also facilitate creation of networks among the participants and organizations involved (FAO 2019).

CASE STUDY 3 Unlocking Capital for Women Entrepreneurs and Women-Led Businesses: *Greater access to finance depends on targeted financing and enabling conditions.*

CHANGING PRACTICES TO INCREASE THE PROPORTION OF WOMEN-LED SMALL AND MEDIUM-SIZED ENTERPRISES

In 2013, Banco G&T Continental, in partnership with the Inter-American Development Bank, created the G&T Mujer program, a credit line that targets women-owned small and medium-sized enterprises (SMEs). The program provides tailored financing, business development services, training, online networking support, and support for access to markets (FAW 2014). In a little more than a year, the percentage of women in G&T's portfolio increased from 2 percent to 6 percent and after 2 years to 29 percent. By 2019, 40 percent of Banco G&T's customers were women, showing the value of serving women's needs in a targeted manner. The main changes entailed:

- Conducting a market study to understand women's needs analyzing and changing loan appraisal processes and credit risk assessment capacity to meet the needs of women-led SMEs
- Introducing new tools to monitor women entrepreneurs in its SME portfolio, starting with simple tracking of the sex of the business owner and the number of women-owned and -led SMEs that the bank's products served
- Training bank staff on gender issues and new processes being introduced to serve women better
- Creating an online portal for women SME customers to help them network, increase business exposure, and create business-to-business links
- Partnering with a nongovernmental organization with experience in identifying, training, and empowering emerging women leaders and social entrepreneurs to target and serve women's financing and technical needs and increasing awareness of the program
- Publishing the results to showcase the benefits of the program

HELPING WOMEN TRANSITION FROM MICRO TO SMALL AND GROWING BUSINESSES

In many countries, women business owners are concentrated in microenterprises, with 96 percent of women-owned businesses being in this subsector. For women-led off-grid businesses, transitioning from microentrepreneurship into a small and growing business can be challenging because of women's limited business skills and limited access to networks, both of which are critical to unlocking access to capital. To address this challenge, SHE Investments in Cambodia was established as a women-focused, culturally tailored business incubator and accelerator. In partnership with local and international organizations, businesses, and governments, SHE Investments provides business training, mentoring, financing, and networking opportunities and services for women. One woman-owned business that has benefited from SheInvestments is that of Thida Kheav, cofounder of Solar Green Energy, a Cambodian company that installs solar systems, including water pumps, streetlights, and grid-linked and off-grid solar (OGS) systems.

ADDRESSING BARRIERS THAT LIMIT WOMEN'S ACCESS TO BANKING SERVICES AND HELPING THEM EXPAND THEIR BUSINESSES

Garanti Bankasi (Garanti Bank) in Turkey has been innovating and offering products and services targeted toward women entrepreneurs since 2006. Its activities to support women are anchored on three pillars: financial support, education, and encouragement. Their financial support services include commercial loans for women entrepreneurs, which are provided exclusively to women. The bank also provides letters of guarantee to facilitate women entrepreneurs' access to services such as purchase of goods, customs transactions, value-added taxes, tenders or bidding, and security deposits, as well as letters for foreign currency to facilitate payment for imported goods. Women can collect these letters at many of the bank's branches; this service addresses mobility barriers and reduces interruptions to the women's businesses. Since 2007, the bank has conducted women entrepreneur gatherings to provide local role models and education and training for women entrepreneurs on topics such as financing needs, marketing, working in changing environments, and e-commerce. The bank has also partnered with Bogazici University to offer an intensive mini-master's in business administration training program for women entrepreneurs. For the third pillar, encouragement, the women entrepreneur gatherings offer networking opportunities. A Woman Entrepreneur of the Year award—launched in 2013—showcases successful women entrepreneurs to serve as role models for other women entrepreneurs. Garanti Bank also partners with the Turkish Women Entrepreneurs Association for many of its activities focused on women entrepreneurs to leverage its expertise and networks (Garanti Bank n.d.; IFC 2016).

CASE STUDY 4 Expanding Businesses That Employ Women in Sales and Distribution: *How to expand businesses and social enterprises that have championed women-led sales and distribution networks*

ORGANIZATIONS WITH A CORE VALUE PROPOSITION FOR INCLUSION OF WOMEN

Active in Nigeria, Tanzania, and Uganda, Solar Sister recruits, trains, and helps women provide clean energy products in rural communities. With more than 86 percent of Solar Sister's staff being women, their model is based on building a women-led network of entrepreneurs that reaches the last mile of distribution. Solar Sister's approach helps women starting their businesses as clean energy entrepreneurs through business development training, literacy, soft skills support, grants for 2 years of experience before running a business on their own, apprenticeships, and fellowships. The enterprise has recognized a funding gap between livelihood support for women to create livelihoods and access to formal banking to create a business. Their support comes in the form of investment (inventory) and training. Solar Sister's experience shows that it is of fundamental importance not merely to make credit available to entrepreneurs, but also to empower women to make sound decisions about their financing needs. This entails ongoing mentoring, capacity building, and support of the infrastructure that helps women in their businesses.

Founded in 2019, **Smiling Through Light** is a solar product distributor that offers three types of quality-assured solar products (pico, solar lanterns, phone-charging solar lanterns) through a network of women sales agents in Sierra Leone. The company addresses two main barriers to women's employment as sales and distribution agents: access to formal banking systems and gender norms. Smiling Through Light employ women sales agents and pays them a monthly salary. Some do not have access to bank accounts when they are recruited, so Smiling Through Light established a partnership with a local bank to set up spending and savings accounts for them. Smiling Through Light has been working at the community level to change gender norms and help women become sales agents. By offering "husband workshops" for the partners of their sales agents, the organization found an effective way to engage men and secure family endorsement—to the extent that men are becoming champions of their wives' businesses. Through their Husband Champion program, women's families are invited to learn about the sales model and to share their concerns or difficulties. Smiling Through Light has demonstrated that this approach works for Sierra Leone, which has sold about 1,000 units through 12 women sales agents. To expand, this social enterprise is planning to integrate a PAYGo system and provide training to enable their staff to increase sales.

ORGANIZATIONS THAT HAVE CREATED A MORE-INCLUSIVE SALES NETWORK

Pollinate Group started in Bangalore and has expanded to six other locations in India, focusing on reaching customers in urban slums. The company has worked to expand a last-mile distribution model based on entrepreneurship. Pollinate states that its unique

strength is its ability to recruit women from urban slums who need a comprehensive set of skills to achieve their potential as entrepreneurs. Initially, the company struggled to attract women and recruited mostly men for their field staff positions. The group soon saw that women cannot readily travel away from their households without their family's permission. To address this challenge, Pollinate started interacting with the families and escorting the women and their families to the office. To address literacy barriers, Pollinate Group provided pictorial interactive training. As part of the process, the company works with the women's communities so that the women feel comfortable working independently and the community recognizes their role as ambassadors for Pollinate. As part of its recruitment and retention process, Pollinate facilitates access to national health insurance and loans for children's education to provide stability and security for women sales agents.

Frontier Markets is a last-mile distribution company that provides access to good-quality clean-energy solutions in rural India. Since 2011, it has built a scalable model with a network of 5,000 entrepreneurs, 50 percent of whom are women known as *solar sahelis* (solar friends). By partnering with self-help organizations, the company has put women at the center of its sales and distribution strategy and trained them in marketing, sales, customer service, and e-commerce. Women entrepreneurs are provided with e-commerce technology to make the end-to-end process comparatively seamless, and they earn a commission on their sales. The company has partnered with the International Finance Corporation (IFC) to identify women entrepreneurs and expand its business model. By identifying the right women, training them as entrepreneurs, and monitoring and evaluating them, the company increased the number of women entrepreneurs from 20 to 200 in 1 year. Central to the success of this expansion strategy was commitment on the part of the company, which invested its own resources to support training.

Dharma Life is a social enterprise focused on rural entrepreneur development and last-mile rural sales and distribution in India's villages. The IFC provided support to Dharma Life to increase women's participation in their sales and distribution channels and help them expand into new locations. The IFC and Dharma Life launched a broad awareness campaign on the benefits of quality-assured solar lighting products and designed a customized entrepreneurship development program focused on personal and business development. Dharma Life increased its network of entrepreneurs from fewer than 5,000 in 2015 to more than 16,000 in 2019, of whom 75 percent were women. Before this training, women represented only 15 percent to 20 percent of its network of entrepreneurs. The program compared earnings from the women entrepreneurs who undertook the training with those of another group operating in the same location and found that the entrepreneurs who had undergone an IFC screening process before training earned 17 percent more than those who had not.

Dharma Life has since expanded its model with additional funding from the POWERED Project (supported by the Foreign, Commonwealth & Development Office and the Shell Foundation) and has provided 3,000 entrepreneurs with start-up kits that include demonstration samples of clean energy projects (solar lights, cookstoves) and an inventory advance. The women were required to coinvest around 30 percent of the cost in the form of an upfront payment. The provision of these start-up kits boosted entrepreneurs'

performance by an average of 55 percent and reduced the post-training attrition rate from 10 percent to less than 5 percent, demonstrating that well-prepared entrepreneurs were more committed to selling products and recovering their investment.

CASE STUDY 5 Gender Considerations in Marketing and Product Use: *Understanding how best to target women customers and boost sales of solar products*

ADDRESSING MOBILITY CONCERNS

Companies and organizations active in the cookstove sector have been designing marketing strategies to appeal to women customers. BURN Manufacturing and Future Carbon, for example, take their products directly to women at home to demonstrate them.

In Kenya, more than half of the workforce at the modern biomass cookstove manufacturer **BURN Manufacturing** are women. Roughly 65 percent of women in the company work in administration, sales, and management (Ashden n.d.). BURN has found that woman-to-woman marketing has been a highly successful sales strategy; the company is therefore keen to hire women for sales positions (Women Deliver 2018). Using women sales agents also enables women to gain access to homes and reach potential female customers directly. These strategies promote and support women's involvement in the decision to purchase a cookstove.

In Bangladesh, **Future Carbon,** an energy and sustainable environmental consultancy firm, launched its *surjokonna* (women sales representatives) marketing campaign to put women at the center of its outreach activities. *Surjokonnas* are tasked with a series of activities to engage with the market and serve as brand ambassadors. They begin by conducting household surveys to identify potential consumers. The surveys are undertaken with the understanding that the purchaser and the primary user may not be the same person. Women are the target audience of the survey. After completing the initial survey, *surjokonnas* follow up with a phone call or an in-person visit to the home. If a purchase is made, the *surjokonna* delivers the product to the household and acts as a point of contact for after-sales services.

In Tanzania, **CLASP**, and international NGO specialized in appliance energy efficiency and quality in on-, off-, and weak-grid sectors, and **PowerGen,** founded in 2011 with the vision of making clean, renewable energy accessible to more people in Africa, conducted a pilot program with electric pressure cookers. The pilot's marketing strategy targeted women but did not exclude men and found that marketing and promotional materials should emphasize the benefits of electric pressure cookers for all household members, not just women. The technical aspects of the product were highlighted, which the team believed appealed to men, while still focusing on women as the primary users. The marketing strategy also included door-to-door awareness of women in the community.

PowerGen also held a training session on how to use the cooker and invited women and men; men were required to bring their partners, whereas women were welcome to attend alone. Makena Ireri, Research Lead at CLASP, noted the positive impact this training had on the women. The women "received a training certificate and found that to be really empowering. They were able to demonstrate that they could use the cooker." The trainings also proved to be an excellent sales strategy; according to Efficiency for Access, those who had attended the training made most of the purchases, and women made most of the purchases (PowerGen 2020). Powergen's approach not only built women's confidence by training them in how to use the cookers, but also enabled them to purchase the appliances themselves.

In Kenya, **Wisdom Innovations** had been promoting its clean cookstoves in marketplaces for some time, but by focusing solely on markets, the company was reaching only men, not women. They found that men would often fail to pass on information from the demonstrations to the women in their household, necessitating follow-up visits. The company then shifted its approach and began to work with women's groups, making itself known at events and meetings that the groups were already holding and demonstrating the product to members at these events. To reach even more women, the company began conducting household sales visits. By working with women's groups and conducting household visits, Wisdom Innovations was able to reach new customers directly.

KEY TAKEAWAYS FOR BUSINESSES

- Woman-to-woman marketing is an effective strategy for expanding a company's customer base to include more women and increase women's participation in purchasing energy products and appliances
- In terms of specific marketing strategies, household visits by women sales agents can reach women in communities where women experience mobility restrictions because of gender norms or security concerns
- Using training as a marketing activity helps change the dynamics of decision making
- Existing women-focused networks and groups can serve as an entry point for reaching more women customers

CASE STUDY 6 Training and Workforce Development: *Recruitment, Career Progression, and Support*

RECRUITMENT: ASSESSING THE BASELINE AND SETTING STRATEGIC TARGETS TO INCREASE RECRUITMENT OF WOMEN

Many of the companies in the off-grid space are operating with hard-to-reach populations and low profit margins. They find it is expensive to recruit for what can be considered "noncore" positions such as gender experts. To ensure that gender inclusion measures

would be sufficiently prioritized, **PEG Africa** hired a gender project officer, with an NGO paying the salary because the private company could not afford it. The gender project officer conducted a gender audit to determine a baseline with respect to gender inclusiveness at PEG and developed a gender action plan. From the gender audit, the following goals were identified:

- Increase the percentage of women in decision-making positions to 45 percent
- Strengthen internal policy and key internal documents to improve responsiveness to women's and men's needs
- Increase employment of women in field staff positions
- Create a pilot mentorship program pairing high-performing, mid-level women managers with senior managers, including the chief executive officer

To increase recruitment of women, a gender-inclusive clause was included in job advertisements, recruiters were required to search for women actively, and more women's resumes were include in the pools of candidates to be considered for positions. PEG attained a 14 percent increase in female staff in 1 year and a 15 percent increase in the number of women in decision-making positions over the 1-year implementation period of the Gender Action Plan.

RETENTION AND CAREER PROGRESSION: CREATING WORKING CONDITIONS FOR WOMEN TO STAY AND PROGRESS

As mentioned above, **BURN Manufacturing** is a Kenya-based facility manufacturing modern biomass cookstoves. In a country where only 17 percent of women work in manufacturing, BURN stands out as an exception, with women accounting for 54 percent of its workforce (more than 100 women). Women occupy 56 percent of lower-skilled jobs and 54 percent of medium-skilled positions at the company (wPower 2018). To achieve this, BURN has instituted:

- Deliberate recruitment of women to achieve a more gender-balanced staff profile
- A suitable work environment, including flexible hours for new mothers; recognition for good work; low-interest personal loans; and senior management support, including informal coaching, mentorship, on-the-job learning, and a micropromotion scheme that provides a combination of step-wise progression with pay increases and training. The scheme provides opportunities for career growth for line operators and material handlers.
- A 6-month women-in-engineering internship that has produced two women engineers (This addresses the paucity of women applying for technical positions; the few who do apply are now invariably already fully qualified)
- A leadership training program. One of the three staff members who participated in this program was a woman

- Support for agents through training, equipment, regular mentoring, and encouraging sales and good customer service

BURN has a high retention rate for women; 65 percent of 51 factory workers who have worked at the company for more than 1 year are women.

PROVIDING TRAINING AND SUPPORT TO INCREASE WOMEN'S ENTRY INTO OFF-GRID VALUE CHAINS

The **Barefoot College Solar Department,** established in 1984 in India and expanded globally in 2008, trains illiterate and semiliterate women from marginalized villages to become solar engineers. Women from around the world undergo 6 months of training on solar electrification and then return to their villages with skills and equipment; each is tasked with electrifying at least 50 homes. Through this model, Barefoot Solar has trained more than 2,200 women in 93 countries. Another outcome of Barefoot Solar is Bindi Solar, which is an alliance between Barefoot Solar and Frontier Markets to produce a line of solar products that will be manufactured, distributed, sold, installed, maintained, and repaired exclusively by women. Products include solar home lighting systems and lanterns, micro-grids, DC televisions, and fans.

NOTES

25. The Global Findex Database. 2017. available at https://globalfindex.worldbank.org/basic-page-overview. Accessed on July 1, 2021.

APPENDIX C. Tools for Project Design

TOOLS FOR PROJECT DESIGN	TYPE OF TOOL	RELEVANCE
MARKET ASSESSMENT		
Afghanistan Household and Enterprise Energy Diaries (internal World Bank Group only)	**Terms of reference**	Examples of terms of references from World Bank projects
Gender Needs Assessment: Terms of Reference for Energy and Gender International Consultant (World Bank and ESMAP)	**Terms of reference**	Useful when hiring gender and energy project consultants who can provide in-depth understanding regarding obstacles and opportunities in mainstreaming gender issues in projects and conduct gender and energy assessments of key counterparts
Gender Analysis of Household Energy Data: Terms of Reference for Energy and Gender Consultant (World Bank and ESMAP)	**Terms of reference**	Useful when hiring gender and energy project consultants who can analyze gender-disaggregated data from the household energy module, help inform an energy project design, and serve as a knowledge product for any given country
Gender Survey and Analysis of Rural Electrification (World Bank and ESMAP)	**Terms of reference, survey**	Can be used to hire local consultants who will survey electrified and nonelectrified households and prepare data for further analysis to inform project design and implementation
Lean Data Gender Toolkit: Impact measurement methods to better understand gender dynamics	**Toolkit**	Provides a useful framework for measuring the impact of projects and programs on women and girls, bringing a gender focus on impact measurement
Multi-Tier Framework surveys: gender analysis	**Survey**	Redefines how energy access is measured, going beyond traditional binary measures; provides a more nuanced approach to understanding why households are not accessing electricity or why their use is limited, providing useful insights to help fine-tune policies
Women Empowerment Principles Gap Analysis tool	**Gap analysis tool**	Allows project teams to collect data to help design funding and technical assistance for OGS companies; companies can use to identify strengths, gaps, and opportunities to improve their performance on gender equality

Off-grid-market-assessment in Malawi (internal World Bank Group only)	**Terms of reference**	Examples of terms of reference from World Bank projects
Off-grid-market-assessment in Mozambique (internal World Bank Group only)	**Terms of reference**	
COMPANY AND CONSUMER FINANCING		
2x Challenge	**Funds or facilities that have called for a focus on women**	Calls for the Group of Seven and development finance institutions to mobilize $3 billion in commitments to increase the access of women in developing country markets to leadership opportunities, quality employment, finance, enterprise support, and products and services that increase economic participation and access
Economic Community of West African States Programme on Gender Mainstreaming in Energy Access Call for Proposals for Gender Responsive Clean Energy Investments in the ECOWAS Region (2015)		Small grant facility that provides technical and financial support to expand deployment of projects that promote gender equality and improve energy access in the region
Energy and Environment Partnership -Africa		Provides early-stage grant and catalytic financing to innovative clean energy projects, technologies, and business models in 15 countries across southern and East Africa
Renewable Energy Performance Platform		Calls for women from across Africa's renewable energy sector to submit applications for funding for projects; by targeting women specifically, promotes gender inclusion and creates equal opportunities for women in the continent's rapidly expanding renewable energy sector
Women's Entrepreneurship Development Program		Provides financial and business support for growth-oriented women entrepreneurs in Ethiopia
Gender Equality Mainstreaming Framework	**Toolkits**	Helps identify, implement, and measure gender-equality mainstreaming strategies in companies; relevant for a wide range of investors and capacity-building actors

Promoting Women's Financial Inclusion: A Toolkit	**Toolkits**	Aimed at staff in governments, donor agencies, and nongovernmental organizations who want information about how to design and implement programs to increase financial inclusion of women. The first is created jointly by the UK Foreign, Commonwealth & Development Office (FCDO) and German Gesellschaft für Internationale Zusammenarbeit. The second is by the U.S. consultative group to assist the poor (CGAP 2015)
Global Business Case Tool for Financial Services Providers		Helps users develop a business case for tapping into the women's market by quantifying market opportunity and estimating an FSP's direct financial benefits from strategically targeting the female segment—providing strong foundation for presentation to senior management to integrate a women's marketing program into the FSP's overall strategy
Innovations In Asset Finance (Consultative Group to Assist the Poor)		Discusses how to unlock potential for low-income customers
SALES AND DISTRIBUTION		
Business-First Approach to Gender Inclusion (Value for Women)	**Pilot**	Pilot for gender inclusion in small and medium-sized enterprises and clean energy value chains
MARKETING		
Surjokonna Campaign	**Campaign**	Marketing plan or campaign to increase women's empowerment through access to clean cookstoves and other products.
Electric Pressure Cooking: Accelerating Microgrid E-Cooking through Business and Deliver Model Innovations	**Training**	Includes information on conducting in-person trainings in the sector, as described in Case Study 5

WORKFORCE DEVELOPMENT AND EMPLOYMENT		
Terms of Reference: Closing Gender Gaps in the Ethiopia Off-Grid Energy Sector: Gender Assessment and Strategy (World Bank internal link only)	**Terms of reference**	Examples of terms of reference from World Bank projects
Questionnaire on Human Resources, Training and Gender Practices	**Survey**	Can help teams understand status of women by investigating a company's human resource policies and procedures, its training and gender equality commitments.
EXAMPLES OF POLICIES AND TOOLKITS FOR POLICY MAKERS		
Rwanda National Energy Policy 2015	**Policy**	Example of a recent national-level energy policy
Kenya Gender Policy in Energy (2019)	**Policy**	Example of a recent national-level gender policy in the energy sector
Ethiopia's National Electrification Program 2.0 Integrated Planning for Universal Access (2019)	**Program**	Provides a thorough overview of a national electrification program, with some references to the role of women
Policy Frameworks to Support Women's Financial Inclusion	**Toolkit**	Provides policy frameworks to increase women's financial inclusion, which is relevant and necessary for the OGS sector

BIBLIOGRAPHY

2X Challenge. 2020. "How to Measure the Gender Impact of Investments Using the 2X Challenge Indicators in Alignment with IRIS+" https://assets.cdcgroup.com/wp-content/uploads/2020/03/16111901/How-to-measure-the-gender-impact-of-investments.pdf.

_____. 2021. "2X Challenge: Criteria." https://static1.squarespace.com/static/5b180402c3c16a6fe0001e45/t/60bfe754201d3d2a8e51745c/1623189333660/2X+Challenge+Criteria+%28Final+June+2021%29.pdf.

60 Decibels. 2020. "Why Off-Grid Energy Matters." https://60decibels.com/user/pages/energy-report/60%20Decibels%20-%20Why%20Off-Grid%20Energy%20Matters.pdf

Acumen. 2015. "Women and Social Enterprises: How Gender Integration Can Boost Entrepreneurial Solutions to Poverty." https://acumen.org/wp-content/uploads/2017/09/Women_And_Social_Enterprises_Report_Acumen_ICRW_2015.pdf

_____. 2018. "A Lean Data How-To Guide: Understanding Gender Impact Phase 1 and 2." https://acumen.org/wp-content/uploads/understanding-gender-impact-phase-2.pdf

AFI. 2016. "Policy Frameworks to Support Women's Financial Inclusion." https://www.afi-global.org/publications/btg-policy-frameworks-to-support-womens-financial-inclusion/

Africa Clean Energy Technical Assistance Facility. 2020. "Gender and Social Inclusion in Off-Grid Solar: A Handbook for Sub-Saharan Africa." https://www.ace-taf.org/kb/gender-and-social-inclusion-in-off-grid-solar-a-handbook-for-sub-saharan-africa/.

African Development Bank. 2016. "Empowering Women in Africa through Access to Sustainable Energy." https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AfDB-Gender_and_Energy_Desk_Review-EN-2016.pdf.

African Development Bank Group. 2022. "AFAWA (Affirmative Finance Action for Women in Africa)." https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/afawa-affirmative-finance-action-women-africa.

Alibhai, Salman; Buehren, Niklas; Papineni, Sreelakshmi; Pierotti, Rachael. 2017. Crossovers--Female Entrepreneurs Who Enter Male Sectors: Evidence from Ethiopia. Policy Research Working Paper; No. 8065. World Bank, Washington, DC. © World Bank. https://open-knowledge.worldbank.org/handle/10986/26757

AllAfrica. 2016. “Plans for a New Off-Grid Energy Challenge Focused on Women.” https://allafrica.com/view/group/main/main/id/00046146.html.

Angaza. 2019. “Four Ways Distributors Can Reduce Client Payment Risk.” https://www.angaza.com/2019/09/03/reduce-client-payment-default-risk/.

APA (American Psychological Association). 2008. “Answers to Your Questions: For a Better Understanding of Sexual Orientation and Homosexuality.” http://www.apa.org/topics/sexuality/orientation.aspx.

ARE (Alliance for Rural Electrification). 2020. “Women Entrepreneurs as Key Drivers in the Decentralised Renewable Energy Sector Best Practices and Innovative Business Models.” https://www.ruralelec.org/publications/women-entrepreneurs-key-drivers-decentralised-renewable-energy-sector-best-practices.

Ashden. n.d. “BURN Manufacturing: Empowering Women with New Economic Opportunities.” https://ashden.org/winners/burn-manufacturing/#continue.

_____. n.d. “TWP and AHDESA: Fuel-Efficient Stoves for Tortilla Makers.” https://www.ashden.org/winners/twp-ahdesa.

_____. 2019. “Gender Dynamics and Off-Grid Electricity: Lessons from Tanzania.” https://www.energia.org/gender-dynamics-and-off-grid-electricity-lessons-from-tanzania/.

ADB (Asian Development Bank). 2012. “Gender Toolkit: Energy. Going Beyond the Meter.” https://www.adb.org/sites/default/files/institutional-document/33650/files/gender-toolkit-energy.pdf.

_____. 2016. How Inclusive Is Inclusive Business for Women? Examples from Asia and Latin America.” https://www.adb.org/publications/inclusive-business-women-asia-and-latin-america.

Bhatia, M., N. Angelou, 2015. Beyond Connections: Energy Access Redefined. ESMAP Technical Report; 008/15. World Bank, Washington, DC. World Bank. https://openknowledge.worldbank.org/handle/10986/24368 License: CC BY 3.0 IGO.

BNY Mellon, Data 2x, UNF, Global Banking Alliance for Women. 2019. “Data Driving Action for Women Dialogue Series: The Business Case.” https://data2x.org/wp-content/uploads/2019/06/Roundtable-Report-Data-Driving-Action-for-Women-Dialogue-Series-The-Business-Case.pdf.

Brooks, A.W., I. Huang, S. Kearney, and F. Murray. 2014. “Investors Prefer Entrepreneurial Ventures Pitched by Attractive Men.” *Proceedings of the National Academy of Sciences of the United States of America* 111 (12): 4427–4431.

Buehren, N., P. Gonzalez, and A. Copley. 2019. “What Are the Economic Costs of Gender Gaps in Ethiopia?” World Bank Other Operational Studies 31441. World Bank, Washington, DC.

Business Fights Poverty. 2017. “In Solar Supply Chain, Women Entrepreneurs are Key to Reaching Remote Areas.” IFC, Kenya.

Camco Management Ltd. 2020. “REPP Annual Report.” https://repp.energy/wp-content/uploads/2020/12/REPP-Annual-Report-2019-2020.pdf.

CARE. 2019. “CARE’s Capacity Statement on Renewable Energy.” https://careclimatechange.org/wp-content/uploads/2019/09/CARE-Renewable-Energy-Capacity-statement_2019-CCRP.pdf

Calvert Impact Capital. 2018. “Just Good Investing: Why Gender Matters to your Portfolio and What You Can Do About It.” https://www.calvertimpactcapital.org/storage/documents/calvert-impact-capital-gender-report.pdf.

Campos, Francisco, Michael Frese, Markus Goldstein, Leonardo Iacovone, Hillary Johnson, David McKenzie, and Mona Mensmann. 2018. “Personal Initiative Training Leads to Remarkable Growth of Women-Owned Small Businesses in Togo. Gender Innovation Lab Policy Brief No. 22.” World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/29168.

CDC Group. n.d. “Gender-Smart Investing Toolkit.” https://www.bii.co.uk/en/news-insight/insight/articles/introducing-the-cdc-gender-toolkit/.

CGAP (Consultative Group to Assist the Poor). 2015. “A Market Systems Approach to Financial Inclusion.” CGAP, Washington, DC.

_____. 2018. “Digital Finance for the Real Economy.” CGAP, Washington, DC.

CLASP. 2016. “Demand DC: Accelerating the Adoption of DC in the Home.” Accessed on July 1, 2021. https://www.clasp.ngo/research/all/demand-dc-accelerating-the-adoption-of-dc-in-the-home/

Dassanou, M. E., M. Ganuza, A. A. Khan, A. Khodakivska, H. Kipnis, and A. Kudo. 2014. “Women-Owned SMEs: A Business Opportunity for Financial Institutions—A Market and Credit Gap Assessment and IFC’s Portfolio Gender Baseline.” https://www.semanticscholar.org/paper/Women-owned-SMEs-%3A-a-business-opportunity-for-a-and-Dassanou-Ganuza/3e84c56acc2bb1a5d8c5c2e0c3e2d3a1e2b3dc35.

Davidson, A., and V. Hume. 2020. “Accelerating Women-Led Startups.” Aspen Network of Development Entrepreneurs, Washington, DC

D’Espallier B., I. Guérin and R. Mersland 2009. Gender bias in microfinance, RUME Working

Papers Serie, 2009-04, Marseille, IRD.

Deign, Jason. 2018. "Why Gender is Key to African Off-Grid Solar Energy Sales." https://www.greentechmedia.com/articles/read/why-gender-is-key-to-african-off-grid-energy-sales.

Demirgüç-Kunt, A., L. Klapper, D. Singer, S. Ansar, and J. Hess. 2018. "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution." Washington, DC: World Bank.

Desprez-Bouanchaud, A., J. Doolaege, and L. Ruprecht. 1999. "Guidelines on Gender-Neutral Language." Paris: Unesco.

Dutta, S., A. Kooijman, E. Cecelski. 2018. "SEAR Energy Access and Gender: Getting the Right Balance." ENERGIA, International Network on Gender and Sustainable Energy and World Bank. https://documents1.worldbank.org/curated/en/463071494925985630/pdf/115066-BRI-P148200-PUBLIC-FINALSEARSFGenderweb.pdf

EBRD (European Bank for Reconstruction and Development) and WWB (Women's World Banking). 2014. "Global Best Practices in Banking for Women-Led SMEs." http://www.womensworldbanking.org/wp-content/uploads/2014/11/Global-Best-Practices-Banking-Women-Led-SMEs-WomensWorldBanking.pdf.

EEP (Energy and Environment Partnership) Africa. 2017. "Understanding the role of women and girls in renewable and energy efficiency projects. An in-depth study of gender in the EEP portfolio." Pretoria, South Africa. https://eepafrica.org/wp-content/uploads/2019/11/GendeStudy_final_full.pdf

_____. 2019. "Promoting Women in Clean Energy: Insights from 285 EEP Africa Applications." Pretoria, South Africa. https://eepafrica.org/wp-content/uploads/2019/11/EEP-Africa-CfP15-Analysis_.pdf.

_____. 2020. "EEP Africa Trust Fund Annual Report." Pretoria, South Africa. https://eepafrica.org/wp-content/uploads/2021/06/EEP-Africa-Annual-Report-2020_digital.pdf.

Efficiency for Access. 2019. "The State of the Off-Grid Appliance Market." https://www.clasp.ngo/wp-content/uploads/2021/01/SOGAM-Report-ExecSummary.pdf.

_____. 2020. "Off-Grid Appliance Market Survey." 2020 Report. https://storage.googleapis.com/e4a-website-assets/CLASP-MarketSurvey-2020-final.pdf

_____. 2020 "Electric Pressure Cooking: Accelerating Microgrid E-Cooking Through Business & Delivery Model Innovations." https://efficiencyforaccess.org/publications/electric-pressure-cooking-accelerating-microgrid-e-cooking-through-business-delivery-model-innovations.

Efficiency for Access and 60 Decibels. 2019. “Use and Benefits of Solar Water Pumps.” https://efficiencyforaccess.org/publications/use-and-benefits-of-solar-water-pumps.

ENERGIA. n.d. “Mainstreaming Gender in Energy Projects: A Practical Handbook.” https://www.energia.org/publications/mainstreaming-gender-in-energy-projects-a-practical-handbook/.

_____. 2019. “Gender in the Transition to Sustainable Energy for All: From Evidence to Inclusive Policies.” https://www.energia.org/assets/2019/04/Gender-in-the-transition-to-sustainable-energy-for-all_-From-evidence-to-inclusive-policies_FINAL.pdf.

FAO (Food and Agriculture Organization). 2019. “Women’s access to rural finance: challenges and opportunities.” Rome, License: CC BY-NC-SA 3.0 IGO. https://www.fao.org/3/ca5167en/CA5167EN.pdf

FAW (Financial Alliance for Women). 2014. “Banco G&T Continental”, accessed on July 1, 2020. https://financialallianceforwomen.org/members/banco-gt-continental-el-salvador/

Federal Democratic Republic of Ethiopia. 2019. “National Electrification Program 2.0: Integrated Planning for Universal Access.” https://www.powermag.com/wp-content/uploads/2020/08/ethiopia-national-electrification-program.pdf.

Fernandez, Sergio, and Hal G. Rainey. 2006. “Managing Successful Organizational Change in the Public Sector.” *Public Administration Review* 66: 168–176.

Frontier Markets. 2019. “First Indian-Made Solar Power Torch Meets Lighting Global Quality Standards.” https://frontiermkts.com/first-indian-made-solar-powered-torch-meets-lighting-global-quality-standards/.

Future Carbon. n.d. “Future Carbon EMF Marketing Plan.” https://www.cleancookingalliance.org/market-development/demand-creation/campaign/future-carbon.html.

Garanti Bank. n.d. “Women Entrepreneurs.” https://www.garantibbva.com.tr/en/sme_banking/sme_specific/support_packages/women_entrepreneur.page#calcContent4=UID233c39b.

Glemarec, Yannick, Fiona Bayat, and Oliver Waissbein. 2016. “Removing Barriers to Women Entrepreneurs’ Engagement in Decentralized Sustainable Energy Solutions for the Poor.” AIMS Energy 4: 136-172. 10.3934/energy.2016.1.136.

Glinski, A., A. Kes, and N. Sultana. 2017. “Strategies to Make Last-Mile Energy More Inclusive: Examples from India.” Washington, DC: International Center for Research on Women.

Global Alliance for Clean Cookstoves. 2015. “Consumer finance models for clean cookstoves. Global Mapping.” https://www.cleancookingalliance.org/binary-data/RESOURCE/

file/000/000/421-1.pdf.

Global Distributors Collective. 2019. “Last Mile Distribution: State of the Sector Report.” Rugby, UK: Practical Action Publishing. https://infohub.practicalaction.org/bitstream/handle/11283/622044/GDC%20SoS%20report%20updated%20Nov_web.pdf?sequence=9&isAllowed=y.

Global Impact Investing Network (GIIN), Gender Lens Investing Initiative, accessed July 1, 2020, https://thegiin.org/gender-lens-investing-initiative.

GOGLA. 2019a. “Global Off-Grid Solar Market Report: Semi-Annual Sales and Impact Data 2019.”

_____. 2019. “Powering Opportunity in East Africa.” https://www.gogla.org/sites/default/files/resource_docs/powering_opportunity_in_east_africa.pdf.

_____. 2019. “Powering Opportunity in West Africa.” https://www.gogla.org/sites/default/files/resource_docs/powering_opportunity_west_africa_eng_0.pdf.

_____ 2020. “Powering Opportunity in South Asia.” https://www.gogla.org/sites/default/files/resource_docs/gogla_powering_opportunity_in_south_asia_0.pdf.

Goldman Sachs Global Markets Institute. 2014.

GPRBA (Global Partnership for Results-Based Approaches). 2020. “How to Close Gender Gaps with Results-Based Financing in Energy Projects.” World Bank, Washington, DC. https://www.gprba.org/sites/gprba/files/publication/downloads/2020-03/Gender-RBF-Tool-GPRBA-Energy_0.pdf.

Green Policy Platform. 2016. “Ethiopia Growth and Transformation Plan II (GTP II).” https://www.greengrowthknowledge.org/national-documents/ethiopia-growth-and-transformation-plan-ii-gtp-ii.

GSMA. 2019. “Connected Women Programme.” Accessed on July 1, 2020. https://www.gsma.com/mobilefordevelopment/connected-women/.

_____. 2020. “MTN MoMo Pay Merchant Payments: Expanding Women’s Mobile Money Use in Ghana.” https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/05/MTN-MoMo-Pay-Merchant-Payments-Expanding-Female-Mobile-Money-Usage-in-Ghana.pdf.

_____. 2020. “The Mobile Money Gender Gap Report.” https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/05/GSMA-The-Mobile-Gender-Gap-Report-2020.pdf.

GWNET (Global Women’s Network for the Energy Transition). 2019. “Women for Sustainable

Energy: Strategies to Foster Women's Talent for Transformational Change." https://www.globalwomennet.org/wp-content/uploads/2020/02/Gwnet-study.pdf

_____. 2020. "The Role of Energy Appliances in Achieving Gender Equality and Energy Access for All." https://www.globalwomennet.org/the-role-of-appliances-in-achieving-gender-equality-and-energy-access-for-all/.

Hammond, Alicia, Eliana Rubiano Matulevich, Kathleen Beegle, and Sai Krishna Kumaraswamy. 2020. "The Equality Equation: Advancing the Participation of Women and Girls in STEM." Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/.

ICA (The Infrastructure Consortium for Africa). 2020. "ECOW-GEN: Empowering Woman in the Energy Sector." https://www.icafrica.org/en/news-events/infrastructure-news/article/ecow-gen-empowering-woman-in-the-energy-sector-672647.

ICRW (International Center for Research on Women). n.d. "Off-Grid Energy Gender Scoring Tool." https://www.icrw.org/gender-smart-investing-resource-hub/off-grid-energy/.

_____. 2011. "Understanding and Measuring Women's Economic Empowerment Definition, Framework, and Indicators." Washington, DC: ICRW. Available at: https://www.icrw.org/wp-content/uploads/2016/10/Understanding-measuring-womens-economic-empowerment.pdf.

_____. 2017.

_____. 2018a. "Gender Smart Investing: Off-Grid Energy Case Study—Bidhaa Sasa." https://www.icrw.org/wp-content/uploads/2018/12/ICRW_Bidhaa-Sasa_CaseStudy.pdf.

_____. 2018b. "Gender Smart Investing: Off-Grid Energy Case Study—The Paradigm Project." https://www.icrw.org/wp-content/uploads/2018/12/ICRW_Paradigm_CaseStudy.pdf

IDB Invest. 2018. "For Equality We Make the Difference: Financial Incentives to Close the Gender Gap." https://www.idbinvest.org/en/publications/report-equality-we-make-difference-financial-incentives-close-gender-gap.

IDS and GIZ. 2019. "Unlocking the Benefits of Productive Uses of Energy for Women in Ghana, Tanzania and Myanmar." Research report RA6, ENERGIA. https://www.energia.org/assets/2019/03/RA6-Unlocking-the-benefits-of-productive-uses-of-energy.pdf.

IFC (International Finance Corporation). n.d. "The IFC's Definitions of Targeted Sectors." https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/priorities/ifcs+definitions+of+targeted+sectors.

_____. 2005. "GEM Country Brief – Morocco 2005" Gender Entrepreneurship Markets (GEM)

and International Finance Corporation. Washington D.C.

_____. 2011. “Expanding Women’s Role in Africa’s Modern Off-Grid Lighting Market 2011.” International Finance Corporation and World Bank. Washington D.C. https://openknowledge.worldbank.org/handle/10986/17487.

_____. 2014. “Distributing Light and Livelihoods: Solar Products Create Economic Empowerment for Women in India.” https://www.ifc.org/wps/wcm/connect/region__ext_content/ifc_external_corporate_site/south+asia/resources/distributing+light+and+livelihoods+solar+products+create+economic+empowerment+-for+women+in+india.

_____. 2016. “Garanti Bank Turkey: Combining SME Banking Excellence with a Proposition for Women Entrepreneurs in Turkey.” https://documents1.worldbank.org/curated/en/861611597299888427/pdf/Garanti-Bank-Turkey-Combining-SME-Banking-Excellence-with-a-Proposition-for-Women-Entrepreneurs-in-Turkey.pdf.

_____. 2017a. “Women Entrepreneurs Are Essential for Private Sector Development in Emerging Markets.” https://www.ifc.org/wps/wcm/connect/d7623440-8bb4-4827-9ce5-470dcb6f86b1/Entrepreneurship+Offering+Brochure+July2017.pdf?MOD=AJPERES&CVID=lQps6KM.

_____. 2017b. “Investing in Women: New Evidence for the Business Case.” https://www.ifc.org/wps/wcm/connect/ac8fca18-6586-48cc-bfba-832b41d6af68/IFC+Invest+in+Women+October+2017.pdf?MOD=AJPERES&CVID=lYLVAcA

_____. 2019. “Financial Inclusion for Woman-Owned Micro, Small and Medium Enterprises (MSMEs) in India (English).” Washington, DC: World Bank Group.

_____. 2020. “Distributing Light and Livelihoods: Solar Products Create Economic Empowerment for Women in India.” https://www.ifc.org/wps/wcm/connect/region__ext_content/ifc_external_corporate_site/south+asia/resources/distributing+light+and+livelihoods+solar+products+create+economic+empowerment+-for+women+in+india

_____. 2020. “Non-Financial Services: The Key to Unlocking the Growth Potential of Women-led SMEs for Banks.” https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/priorities/banking_on_women/ifc-fmo-nfs-gender.

_____. 2020. “Private Equity and Value Creation: A Fund Manager’s Guide to Gender-Smart Investing.”

https://www.ifc.org/wps/wcm/connect/f9ad4204-42eb-4603-9c44-e99760a7c240/202011_GenderSmartInv_Guide.pdf?MOD=AJPERES&CVID=nnhxYiD

IRENA (International Renewable Energy Agency). 2019. “Renewable Energy and Jobs Annual Review 2019.” https://www.irena.org/publications/2019/Jun/Renewable-Energy-and-Jobs-Annual-Review-2019.

IRENA. 2019. “Renewable Energy: A Gender Perspective.” https://www.irena.org/publications/2019/Jan/Renewable-Energy-A-Gender-Perspective

IUCN. 2017. “Energizing Equality: The importance of integrating gender equality principles in national energy policies and frameworks.” IUCN Global Gender Office. Washington D.C. https://www.usaid.gov/sites/default/files/documents/1865/iucn-egi-energizing-equality-web.pdf

Jones, Linda. 2016. “The WEAMS Framework: Women’s Economic Empowerment in Market Systems Concepts: Practical Guidance and Tools.” Beam Exchange. https://beamexchange.org/resources/794/

Kapadia, Kamal. 2004. “Productive Uses of Renewable Energy: A Review of Four Bank-GEF Projects.” https://web.worldbank.org/archive/website00530/WEB/PDF/KAPADIAP.PDF.

Kenya Climate Innovations Centre. 2017. “Providing Improved Clean Cookstoves for Women in Kenya.” https://kenyacic.org/news/providing-improved-clean-cook-stoves-women-kenya.

Klugman, Jeni, Lucia Hanmer, Sarah Twigg, Tazeen Hasan, Jennifer McCleary-Sills, and Julieth Santamaria. 2014. “Voice and Agency: Empowering Women and Girls for Shared Prosperity.” Washington, DC: World Bank Group. https://openknowledge.worldbank.org/handle/10986/19036.

Kooijman, A., Corry, J., Ireri, M. 2020. “The role of appliances in achieving gender equality and energy access for all.” Policy Brief #4, ENERGIA. With thanks to K. Gatellier (IDS) and S. Abdulkadir (ENERGIA).

Kristanto, Lana. n.d. “Leveraging the Potential of Women Microentrepreneurs in Delivering Clean Energy Solutions: The Wonder Women Eastern Indonesia Program.” Kopernik. https://v1.kopernik.info/documents/publication/1548211652346_8450.pdf.

McKinsey and Company. 2010. “Retaining key employees in times of change.” Accessed on July 1, 2021. https://www.mckinsey.com/business-functions/people-and-organizational-performance/our-insights/retaining-key-employees-in-times-of-change

McKinsey and Company. 2013. “Gender diversity in top management: Moving corporate culture, moving boundaries.” Women matter series. https://www.mckinsey.com/~/media/mckinsey/featured%20insights/women%20matter/addressing%20unconscious%20bias/

womenmatter%202013%20report%20(8).pdf

McKinsey. 2018. “Delivering through Diversity.” New York: McKinsey & Company. https://www.mckinsey.com/~/media/mckinsey/business%20functions/organization/our%20insights/delivering%20through%20diversity/delivering-through-diversity_full-report.ashx.

McKinsey Global Institute. 2019. “The Power of Parity: Advancing Women’s Equality in Africa.” https://www.mckinsey.com/featured-insights/gender-equality/the-power-of-parity-advancing-womens-equality-in-africa.

MEDA (Mennonite Economic Development Associates). 2018. “Experiences in Gender-Sensitive Solutions to Collateral Constraints.” https://www.meda.org/document/experiences-in-gender-sensitive-solutions-to-collateral-constraints/

MEDA. 2018. “Gender Equality Mainstreaming for Business Growth”. Accessed on July 1, 2021. https://www.marketlinks.org/resources/resource-gender-equality-mainstreaming-business-growth-and-impact

Milazzo, Annamaria, and Dominique van de Walle. 2015. “Women Left Behind? Poverty and Hardship? in Africa.” Policy Research Working Paper 7331. Washington, DC: World Bank Group.

Gray, L., A. Boyle, and V. Yu. 2017. “Turning on the Lights: Transcending Energy Poverty through the Power of Women Entrepreneurs.” Aspen Network of Development Entrepreneurs, Washington, DC. https://www.andeglobal.org/publication/turning-on-the-lights-transcending-energy-poverty-through-the-power-of-women-entrepreneurs/.

Morgan, Carol-Ann. n.d. “B2B Customer Journey Mapping: An Introduction.” B2B International, New York. https://www.b2binternational.com/publications/customer-journey-mapping/.

Morris, Ellen, Jennye Greene, and Victoria M. Healey. 2019. “Blueprint Guide for Creating Gender-Sensitive Energy Policies.” Clean Energy Solutions Center. https://www.nrel.gov/docs/fy19osti/73927.pdf.

Napier, Mark, Claire Melamed, Georgia Taylor, and Thomas Jaeggi. 2013. “Promoting Women’s Financial Inclusion: A Toolkit.” https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213907/promoting-womens-financial-inclusion-toolkit.pdf.

Paarlberg, Laurie E., and Bob Lavigna. 2010. “Transformational Leadership and Public Service Motivation: Driving Individual and Organizational Performance.” *Public Administration Review* 70 (5): 710–718.

Pearl-Martinez, R. 2014. Women at the Forefront of the Clean Energy Future. White Paper-Initiative Gender Equality for Climate Change Opportunities (GECCO). IUCN-USAID. Washington D.C. https://portals.iucn.org/library/sites/library/files/documents/Rep-2014-005.pdf

Postelnicu, Luminita, Niels Hermes, and Ariane Szafarz. 2014. "Defining Social Collateral in Microfinance Group Lending." In Microfinance Institutions, edited by R. Mersland and R.Ø. Strøm, Palgrave Studies in Impact Finance. London: Palgrave Macmillan. https://doi.org/10.1057/9781137399663_10.

Power Africa. 2019. "Power Africa Case Study: Ghana: Advancing Gender Equality in Africa's Off-Grid Energy Sector." https://www.usaid.gov/sites/default/files/documents/1860/PA_Case_Study.2019.04.09.508.pdf.

Power Africa. 2020. "Nigeria Power Sector Program: Gender Mainstreaming in the Solar Home System Value Chain." https://pdf.usaid.gov/pdf_docs/PA00WQSC.pdf.

Power for All. 2019. "Powering Jobs Census 2019: The Energy Access Workforce." https://www.powerforall.org/application/files/8915/6310/7906/Powering-Jobs-Census-2019.pdf.

PowerGen Renewable Energy. 2020. "Electric Pressure Cooking: Accelerating Microgrid E-Cooking Through Business & Delivery Model Innovations." PowerGen Renewable Energy, CLASP, Efficiency for Access Coalition Co-Secretariat. MECSTRIID project, supported by Modern Energy Cooking Services (MECS). https://storage.googleapis.com/e4a-website-assets/Accelerating-Microgrid-E-Cooking-Through-Business-and-Delivery-Model-Innovations.pdf

Prebble, M. and A. Rojas. 2017. "Energizing Equality: The Importance of Integrating Gender Equality Principles in National Energy Policies and Frameworks." Washington, DC: IUCN and USAID.

Pueyo, A. 2019. "A Gender Approach to the Promotion of Productive Uses of Electricity." IDS Policy Briefing 162. Brighton: IDS.

Pueyo, A. and M. Maestre. 2019. "Linking Energy Access, Gender and Poverty: A Review of the Literature on Productive Uses of Energy." Energy Research & Social Science 53: 170–181.

PwC (PricewaterhouseCoopers LLP). 2017. "Winning the fight for female talent. How to gain the diversity edge through inclusive recruitment." https://www.pwc.com/gx/en/about/diversity/iwd/iwd-female-talent-report-web.pdf

Rakhi, R. n.d. "Joint Liability Groups: Unlocking the Potential of Women in Agriculture." http://kudumbashree.org/storage/files/qzp9h_rakhi%201.pdf.

Robino, Carolina, Carolina Trivelli, Carolina Villanueva, Florencia Caro Sachetti, Helen Walbey,

Luz Martinez, and Marcela Marincioni. 2019. “Financial Inclusion for Women: A Way Forward.” G20 Insights. https://www.g20-insights.org/policy_briefs/financial-inclusion-for-women-a-way-forward/.

Root Capital. 2018. “Gender Equity Grants: Evaluating Key Benefits for Businesses, Workers, and Farmers.” https://rootcapital.org/resources/gender-equity-grants-evaluating-key-benefits-businesses-workers-farmers/.

Rüegg, Maja, J. Carter. 2016. “Mainstreaming Women’s Economic Empowerment (WEE) in Market Systems Development.” https://www.semanticscholar.org/paper/Mainstreaming-women%E2%80%99s-economic-empowerment-(WEE)-in-R%C3%BCegg-Carter/e114c42dc8e69e4fc4f304905b94d136152b17b9.

Sandler, B.R., & Hall, R. 1986. The campus climate revisited: Chilly for women faculty, administrators and graduate students. Washington, D.C.: Association of American Colleges and Universities. http://www.aacu-edu.org/Initiatives/psew.html.

Schomer, Inka, and Alicia Hammond. 2020. “Stepping Up Women’s STEM Careers in Infrastructure: Case Studies.” Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/34787. License: CC BY 3.0 IGO.

SEAF. n.d. “Gender Equality Scorecard Manual.” https://www.seaf.com/womens-economic-empowerment-and-gender-equality/gender-equality-scorecard/.

SEforALL. 2017. “The Evidence Base for Gender and Inclusion in Sustainable Energy.” https://www.seforall.org/data-and-evidence/the-evidence-base-for-gender-and-inclusion-in-sustainable-energy.

SEforALL. 2018. “Levers of Change: How Global Trends Impact Gender Equality and Social Inclusion in Access to Sustainable Energy.” https://www.seforall.org/publications/levers-of-change-how-global-trends-impact-gender-equality-and-social-inclusion-in.

SEforALL. 2019. “Gender and Energy Access: Part One – Impacts.” https://www.seforall.org/events/people-centered-accelerator-webinar-series-gender-and-energy-access-part-one-impacts.

SEforALL. 2020. “Energy Safety Nets. Using social assistance mechanisms to close affordability gaps for the poor”. License: Non-Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0). https://www.seforall.org/system/files/2020-02/ESN-SEforALL.pdf.

Shankar, Anita V., MaryAlice Onyura, and Jessica Alderman. 2015. “Agency-Based Empowerment Training Enhances Sales Capacity of Female Energy Entrepreneurs in Kenya.” *Journal of Health Communication* 20 (Suppl 1): 67–75. https://doi.org/10.1080/10810730.2014.1002959.

Shell Foundation. 2017. “Lessons Learned: Gender Inclusion Strategies for SMEs in the Off-Grid Energy Sector.” https://shellfoundation.org/app/uploads/2018/10/Gender-Programme-Learnings.pdf.

Sandler, Bernice, Lisa A. Silverberg, and Roberta M. Hall. 1996. “The Chilly Classroom Climate: A Guide to Improve the Education of Women.” Washington, DC: National Association for Women in Education. http://bcrw.barnard.edu/archive/education/The_Chilly_Classroom_Climate.pdf.

SolarAid. 2017. “FINCOOP—Microfinance for Solar in Malawi.” https://solar-aid.org/fincoop-microfinance-for-solar-in-malawi/.

Stefiszyn, Karen. 2021. “Gender Smart Investing: Addressing the Gender Gap in the Off-Grid Energy Sector in Sub-Saharan Africa.” USAID, Washington, DC. https://www.usaid.gov/sites/default/files/documents/Power-Africa-Gender-Smart-Investing-Feb-2021.pdf.

Toronto Center. 2019. “Removing the barriers to women’s financial inclusion”. Toronto Centre. https://res.torontocentre.org/.

UN (United Nations). 2015. UN Gender Statistics Manual. New York: United Nations.

UNCDF (UN Capital Development Fund). 2020. “How can energy companies improve gender hiring strategies?” https://www.uncdf.org/article/5883.

UNICEF (United Nations International Children’s Emergency Fund). 2018. “Impact Evaluation of the Lumiere Project.” https://www.unicef.org/evaldatabase/index_102944.html.

UNIDO. 2014. “Guide on Gender Mainstreaming: Energy and Climate Change Projects.” https://www.unido.org/sites/default/files/2015-01/Guide_on_Gender_Mainstreaming_ECC_0.pdf.

UNIDO and UN WOMEN. 2013. “Sustainable Energy for All: The Gender Dimension.” https://www.unido.org/sites/default/files/2014-02/GUIDANCENOTE_FINAL_WEB_s_0.pdf.

UN Women. 2001. “Gender Mainstreaming: A Strategy for Promoting Gender Equality.” New York: Office of the Special Advisor on Gender Issues and Advancement of Women.

USAID. 2020. “Gender Mainstreaming in the SHS Value Chain.” Nigeria Power Sector Program. https://pdf.usaid.gov/pdf_docs/PA00XCTZ.pdf.

_____. 2021. “Gender equality and female empowerment.” https://www.usaid.gov/asia-regional/gender-equality-and-female-empowerment

Value for Women. 2018. “A Business-First Approach to Gender Inclusion: How to Think about Gender Inclusion in Small and Medium Enterprise Operations.” https://shellfoundation.

org/app/uploads/2018/10/A-business-first-approach.pdf.

Vivid Economics and GOGLA. 2018. “Employment opportunities in an evolving market Off-grid solar: creating high-value employment in key markets.” https://www.vivideconomics.com/wp-content/uploads/2019/08/job_creation_in_the_og_sector_-_policy_note_1.pdf.

Waldron, Daniel, Alexander Sotiriou, and Jacob Winiecki. 2019. “A Tale of Two Sisters: Microfinance Institutions and PAYGo Solar.” CGAP. https://www.cgap.org/research/publication/tale-two-sisters-microfinance-institutions-and-paygo-solar.

WBG (World Bank Group) and GOGLA. 2020. “Off-Grid Solar Market Trends Report 2020.” https://www.worldbank.org/en/topic/energy/publication/off-grid-solar-market-trends-report-2020.

WHO (World Health Organization). 2006. “Sexual and Reproductive Health and Research.” https://www.who.int/teams/sexual-and-reproductive-health-and-research/key-areas-of-work/sexual-health/defining-sexual-health.

Women Deliver. 2018. “Energizing Change: Women are Key to Clean Cooking.” https://womendeliver.org/2018/energizing-change-women-key-clean-cooking./

World Bank. n.d. “Social Inclusion.” https://www.worldbank.org/en/topic/social-inclusion.

_____. 2002. “Empowerment and Poverty Reduction: A Sourcebook.” Washington, DC: World Bank.

_____. 2012. “World Development Report 2012: Gender Equality and Development.” Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/4391.

_____. 2013a. “Ready for Growth: Solutions to Increase Access to Finance for Women-Owned Businesses in the Middle East and North Africa.” Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/16445.

_____. 2013b. “Integrating Gender Considerations into Energy Operations.” Energy Sector Management Assistance Program (ESMAP); Knowledge Series 014/13. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/17479

_____. 2014. Expanding Women’s Access to Financial Services. Washington, DC: World Bank. https://www.worldbank.org/en/results/2013/04/01/banking-on-women-extending-womens-access-to-financial-services

_____.2018a. “Private Sector Solutions to Helping Smallholders Succeed.” https://documents1.worldbank.org/curated/en/851711521095180329/pdf/124304-WP-PUBLIC-AgriBookMar.pdf.

_____. 2018b. “Yemen Emergency Electricity Access Project.” https://www.worldbank.org/en/country/yemen/brief/yemen-emergency-electricity-access-project.

_____. 2020a. “Promoting Financial Inclusion and Access to Solar Energy Among Women in Yemen.” https://blogs.worldbank.org/energy/promoting-financial-inclusion-and-access-solar-energy-among-women-yemen.

_____. 2020b. “Is Your Bank Officer Gender-Biased? The Case of SME Lending in Turkey.” https://blogs.worldbank.org/allaboutfinance/your-bank-officer-gender-biased-case-sme-lending-turkey.

_____.2021. “Women, Business and the Law 2021.” Washington, DC: World Bank. doi:10.1596/978-1-4648-1652-9.

WEF (World Economic Forum). 2021. “Global gender gap report 2021” Cologny/Geneva: World Economic Forum. https://www3.weforum.org/docs/WEF_GGGR_2021.pdf

wPower. 2018. “Burn Manufacturing Case Study: Where Are the Women in the Energy Sector?” https://www.globalwomennet.org/burn-manufacturing-case-study-where-are-the-women-in-the-energy-sector/.

Wright, Nozipho. 2013. “Village Savings and Loan Associations: Market Potential for Clean Energy Products in Kenya, Rwanda and Tanzania.” http://wmi.uonbi.ac.ke/sites/default/files/cavs/wmi/CARE%20wPOWER%20PROFILING%20STUDY%20FINAL%20REPORT%20%282%29_0.pdf.

WWB (Women’s World Banking). 2018, “How to Create Financial Products that Win with Women.” https://www.womensworldbanking.org/insights-and-impact/how-to-create-financial-products-that-win-with-women/.

Yaccato, Joanne T., and Inez Murray. 2016. “The Paradox of Gender-Neutral Banking: Making the Case for a Gender-Intelligent Business Model.” Global Banking Alliance for Women (GBA). https://www.findevgateway.org/paper/2016/10/paradox-gender-neutral-banking.