

# GETTING TO GENDER EQUALITY IN ENERGY INFRASTRUCTURE

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## LESSONS FROM ELECTRICITY GENERATION, TRANSMISSION, AND DISTRIBUTION PROJECTS



## ESMAP Mission

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The International Bank for Reconstruction  
And Development / THE WORLD BANK GROUP  
1818 H Street, NW | Washington DC 20433 | USA

Written by: Maria Beatriz Orlando, Vanessa Lopes Janik,  
Pranav Vaidya, Nicolina Angelou, and Ieva Zumbyte

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# 1 | OVERVIEW

**At a moment when accelerating access to modern and clean forms of energy is considered critical to development, gender equality—beyond its intrinsic value as a core development objective—is increasingly recognized as smart economics** (World Bank 2011). Under the United Nations 2030 sustainable development agenda, gender and energy figure among the 17 Sustainable Development Goals (SDGs) for eradicating extreme poverty and boosting shared prosperity. This means that governments and development agencies have a renewed institutional mandate to achieve gender equality (SDG 5). Ensuring universal access to affordable, reliable, sustainable, and modern energy (SDG 7) is recognized as central to making progress on SDG 5. Thus, gaining a deeper understanding of the energy-gender linkages is fundamental to achieving these overlapping objectives.

## **STATUS OF GENDER AND ENERGY SECTOR WORK: WHAT DO WE KNOW?**

**Since the 1990s, most gender-related energy studies have focused on electricity access and cooking energy at the household level** (Clancy, Skutch, and Batchelor 2002; Skutch 1998). There is abundant empirical evidence on the myriad direct and indirect benefits to women resulting from gaining access to household electrification and best practices to overcoming affordability barriers (Barnes et al. 2013; Köhlin et al. 2011). Much has been written on the benefits of high-quality electric lighting in freeing up women’s time use and increasing their mobility, the role of television access in increasing women’s voice and agency in household decision-making, and the importance of well-directed subsidy programs to ensure that women-headed households and other disadvantaged social groups can afford the high upfront costs of electricity connection and the cooking appliances they desire. In short, governments and project teams focused on energy access and clean cooking solutions generally have a good understanding of how to design projects in ways that are gender and socially inclusive.

**Further up the energy value chain, however, there is scant research on the social and gendered impacts of large electricity infrastructure projects, such as hydropower and concentrated solar plants.** As a result, practitioners have less clarity on what practical actions they can take to better integrate gender into their programs. Given the expanded investments in both grid-based and off-grid electrification that will be required to meet the 2030 SDGs, it is imperative that the potential gendered impacts of such projects be better understood so that project teams can avoid or mitigate unintended negative consequences and promote project design features that can produce important co-benefits and gender-equal development outcomes.

**Large-scale electricity infrastructure development projects require investments in upstream power generation plants; high-voltage transmission lines; and downstream delivery systems,** including substations, medium- and low-voltage distribution lines, poles, and transformers. **At each stage of development, such investments can directly and indirectly affect—both positively and negatively—communities living in or near the area where the infrastructure is built.** Some of the known challenges include the risk of gender-based violence (GBV) linked to migration of workers and construction of

ancillary roads,<sup>1</sup> gender-insensitive work environments that discourage women's employment, women's loss of agriculture and livelihoods resulting from land acquisition and displacement, inequitable compensation during displacement, exposure to health risks (e.g., HIV/AIDS and water-borne illnesses), and lack of gender-inclusive participation in project consultations and public meetings (Aguilar, Granat, and Owren 2015; IFAD 2007; Cernea 2000). Conversely, well-planned projects that address potentially adverse social and gendered impacts can have a positive multiplier effect. Known opportunities include gender-sensitive training and skills development, use of project targets and incentives to encourage women's employment, gender-inclusive public consultations and gender analysis as part of social assessments and safeguards policies, gender-equitable compensation decision processes and strategies, ancillary social development investments to close the gender gap, and targeted utility outreach initiatives (ESMAP 2013).

## STUDY OBJECTIVE AND METHOD

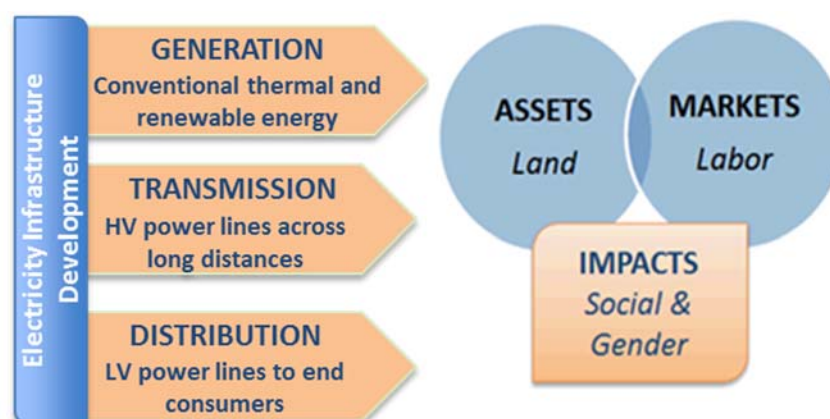
**To date, few robust studies have attempted to evaluate the gender-differentiated, socioeconomic impacts of electricity infrastructure development projects.** Without lessons from rigorous analyses to inform projects, one might expect, based on anecdotal evidence, that women in contexts where gender inequalities persist will benefit less from the new opportunities brought about by the project and suffer disproportionately from any adverse effects. The World Bank Group (WBG) and other leading development agencies have indicated a growing commitment to conduct deeper analyses of the linkages between gender and electricity infrastructure development, including more standardized collection of gender-disaggregated project and monitoring and evaluation (M&E) data.

**To address this knowledge gap, this study set out to examine the social and gender footprint of large-scale electricity generation, transmission, and distribution projects in order to establish a foundation on which further research and replication of good practices can be built.** The main impact pathways analyzed were access to land and labor markets, along with social sustainability considerations (primarily health and education) (figure 1). The study adopted this approach since, according to the *World Development Report 2012*, gender equality in access to land and labor markets matters for women's agency and empowerment (World Bank 2011). In addition, the study considered the role of the energy utilities and businesses to better understand the roles of various stakeholders.

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<sup>1</sup> *Gender-based violence* is defined as the ultimate deprivation of agency, allowed by gender norms that tolerate or promote its use or fail to enforce national legislation where it exists.

Figure 1: Social and Gender Impact Pathways of Electricity Infrastructure: Analytical Framework



The study adopted a mixed-methods research approach, comprising critical in-country field research, along with extensive literature and portfolio reviews. At the outset, the study team identified lack of gender-disaggregated data as a considerable challenge to building the evidence base on gender actions within projects. What was initially viewed as a mainly desk-level effort was subsequently transformed into a qualitative data-collection effort comprising field visits, focus group discussions (FGDs) in the project-affected communities, and interviews with governments and project teams to complement existing data and evidence.

To better understand how infrastructure construction had changed the lives of the local people, the study team conducted qualitative analyses of several projects distinguished by their project type, energy source, and geographical representativeness: the Kali Gandaki “A” (KGA) Hydropower Project in Nepal, the Noor-Quarzazate Concentrated Solar Power (CSP) Plant in Morocco, and the Electricity Sector Support Project in central Senegal. In addition, a quantitative analysis was conducted for India’s Powergrid System Development Project (PSDP) to help determine gender-differentiated labor outcomes in project-affected areas of two states.

Under the WBG portfolio review, 21 out of a total of 327 projects and programs approved by the Board of Directors during FY2000–14 were selected for in-depth analysis. The main selection criteria were (i) relevance to the energy-gender infrastructure focus; (ii) meaningful incorporation of gender and social norms into the project setting context, acknowledging the barriers that women face; and (iii) design of actions to improve gender equality. Specific objectives were to identify good practices and lessons learned from these completed and ongoing projects and programs and provide guidance on how to operationalize those lessons to move the energy-gender agenda forward.

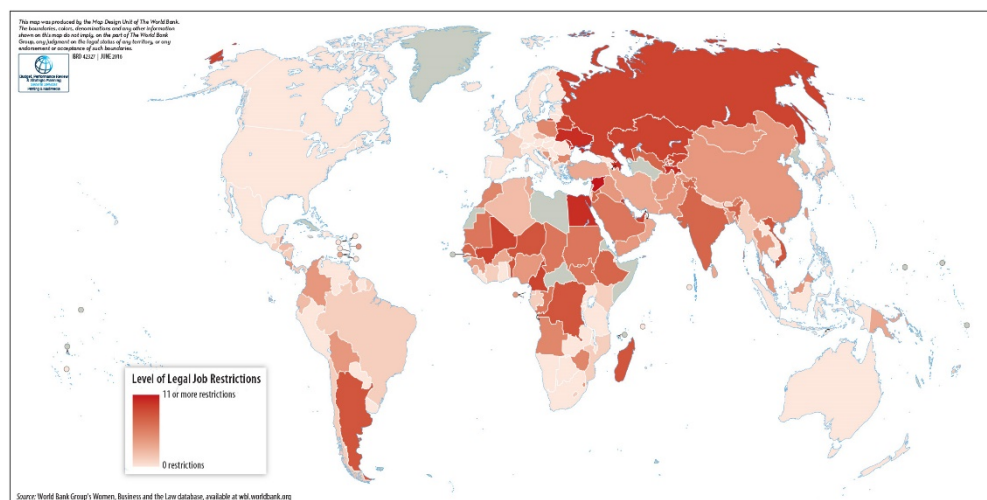
The study’s primary target audiences were energy task teams and social and gender specialists of the WBG and other leading development agencies, as well as energy practitioners seeking better ways to address the gender aspects of energy infrastructure projects throughout the project and lending cycles. Many of the findings and recommendations (e.g., on consultations) also apply to task teams working on large infrastructure projects in transport, water, and other related sectors that share characteristics

with those in the electricity sector. In addition, the study contributes to the policy dialogue of regional development banks and bilateral agencies and may be of interest to private infrastructure companies and the broader international development community.

## ENERGY INFRASTRUCTURE EMPLOYMENT: HOW DO WOMEN BENEFIT?

**The arrival of a large electricity infrastructure project can induce significant changes in local labor markets that may affect men and women differently.** A project's scale and complexity—along with local economic development, labor market conditions, governance structures, and social norms—influence how much local labor can be employed, as well as any spillover effects. New jobs directly created by energy infrastructure projects typically attract men since infrastructure construction is traditionally a male-dominated industry. Women's direct employment opportunities are usually restricted by gender roles and social norms in the local community or country, women's low technical construction and professional engineering skills, low aspirations, and employer bias (Panjwani 2005). Compared to transmission and distribution projects, electricity generation projects generally offer women more direct and indirect employment opportunities, owing to their much longer time frame.

**Figure 2: Heat Map: Level of Legal Job Restrictions for Women**



### Constraints to Women's Employment

**In many countries, women's low level of labor force participation is conditioned by traditional gender roles and social norms at all levels (national, community, and household).** Figure 2 shows the level of legal restrictions on women's employment worldwide. In Morocco, where the labor force participation among working-age women (15–64 years old) averages just 27 percent, employment decisions for two-thirds of women are made by male household members (World Bank 2015a, b). Women in that country are generally restricted to household activities and lack access to education and work outside the home. In India's fast-growing economy, women's labor force participation is on the decline despite increased investment in female literacy and girls' school enrollment (Surie 2016). In fact, improvement in a family's

social status is associated with women’s withdrawal from the labor force (Das and Desai 2003; Das 2006). However, in that country’s poorer rural areas, which feature larger household sizes and a greater share of historically disadvantaged social groups, women’s employment—mainly in the agriculture and informal sectors—can be significantly higher than the national average of 29 percent (Surie 2016).

**In the context of energy infrastructure projects, many women lack qualifying technical and professional skills and are likely to face employer bias if they choose nontraditional careers in STEM fields.** Systematic gendered differences in educational trajectories, along with lack of encouragement from parents and teachers, contribute to girls’ attitudes toward careers in the fields of science, technology, engineering, and math (STEM) and the resulting shortage of qualified women technicians and engineers. Even when women defy their traditional roles and choose professional careers in STEM fields, strong gender biases among employers may prevent women from getting jobs or advancing in their careers (Williams, Phillips, and Hall 2014; Professionals Australia 2015; Moss-Racusin et al. 2012; Reuben, Sapienza, and Zingales 2014).

*In middle school, I expressed a strong interest for professional training in technical sectors. My teachers expressed concern, but I insisted.*

Technical Operator, EDF (EDF subsidiary)

*During the interview, the recruiter asked questions about my physical strength [even though it was not the most important aspect of the job]. I was highly motivated and proposed that they hire me on a trial basis so I could get the opportunity to demonstrate my motivation.*

Logistics Operator, EDF (EDF subsidiary)

**Other major factors that discourage women’s employment in the energy sector are occupational segregation by gender and gender-insensitive work environments, including unsafe working conditions.**

In many cases, the project-related jobs offered to women involve traditionally feminine tasks, such as catering and food supply, financial services, and clerical support. Because large-scale electricity infrastructure projects are often implemented in remote areas, requiring constant travel and relocation, it may be harder for women to take up such jobs given their traditional roles as caregivers and homemakers. Housing and catering conditions at construction sites are often cited as inadequate and discouraging for women. Safety—encompassing regulations and environmental guidelines at construction sites, as well as appropriate healthcare provisions and prevention of sexual harassment—is a significant concern. Women may be put at risk wherever there are no established systems to prevent sexual abuse, alcoholism, and drugs consumption.

**Safety and the risk of gender-based violence (GBV) are of particular concern in the context of hydropower and other large infrastructure construction occurring in remote areas;** construction often involves an influx of male migrant workers, which, in some cases, has increased the risk of GBV for women

and girls in the community. Recent efforts have included working with contractors on codes of conduct and GBV prevention in the community.

### Direct Employment Opportunities

**Evidence from this study's qualitative and quantitative field work shows that direct employment opportunities from energy projects for the local labor force, especially women, have been generally limited and short-term.** A project's type, scope, and difficulty level have accounted for much of the variation in demand for local labor. But evidence also suggests that opportunities to employ unskilled labor have often been underutilized, with infrastructure developers sometimes bringing in their own employees to implement projects (box 1). In Nepal, for example, the KGA Hydropower Project brought little direct employment for the local community, especially women. During project construction and operation, some men were employed, but none of the women were hired. This lack of opportunity for women can be attributed to not prioritizing recruitment of women, as well as the project's policy of restricting employment to only one person per affected household (usually a man).

#### Box 1 Enhancing Women's Access to Jobs Generated by Electricity Infrastructure

**What can be done at the project and sector levels to enhance women's access to job opportunities generated by electricity infrastructure?** Based on the WBG portfolio review and background field work conducted for this study, the following recommendations emerged:

##### Project Level

- **Take women's constraints and occupational segregation by gender into account in the development of training programs.** Lack of technical skills bars both men and women in local communities from taking advantage of electricity infrastructure jobs. Skills development occurs over the life cycle, requiring substantial public and individual investment. At the project level, training programs that promote women's participation are making a difference.
- **Consult with the local community.** Consultation with the local community can generate job opportunities in the local labor market and enhance access to opportunities elsewhere. Connecting communities and providing information on ancillary infrastructure (e.g., roads and ferries) and other resources can harness project benefits for all. Including women in community consultations in culturally appropriate ways is critical to their participation.
- **Seek ways to reduce gender bias in employing women.** In the case of equivalent skills, it is important to break the silos created by occupational segregation by gender from both an equity and an efficiency perspective. Enhancing workers' mobility and expanding choices for both men and women can foster the employment benefits of electricity infrastructure.
- **Pay attention to safety and working conditions at project construction sites and in operational areas.** Relatively low-cost interventions (e.g., separate restrooms and improved lighting) can yield high returns and potentially attract more women to energy infrastructure construction jobs, as well as project operations.

##### Sector Level

- **Focus sector policies on changing legal restrictions to women's employment and eliminating women's skills gaps** through training, employment incentives, and encouragement of STEM education for girls.



**During construction of the Noor 1 CSP plant in Morocco, a small share of local women were employed directly by the project, despite social and gender norms.** The project's recruitment policy aimed to maximize the number of local workers and increase benefits to the local population; however, the share of local employment was lower than expected owing to a mismatch between the project's required technical skills and local workers' low qualifications. Even so, the women that were hired by the project held a wide range of positions within the CSP plant, ranging from catering, administration, and quality control to health and safety, welding, and topography. FGD participants expressed a desire to learn how to get high-quality jobs at the CSP plant and information on required qualifications. They especially wanted young people to learn about white-collar job qualifications so they could direct their studies and training toward developing the relevant competencies.

*The ANAPEC [National Agency for the Promotion of Employment and Skills] does not share information regarding profiles required by employers and does not make any effort to orientation and guidance for job seekers. The agency only demands CVs, either women's or men's.*

Young Woman, Tasselmant village, Morocco

**Construction of the transmission and distribution network under the Electricity Sector Support Project in central Senegal provided no direct employment opportunities for women;** also, few local men were hired and only for short periods. Given the project's relatively narrow coverage area and short duration period, its limited impact on the local labor market is not surprising. Despite the subcontractors' initial expressed interest in employing unskilled workers from the local community, none were apparently hired for project construction, and no positions were offered to women. Gender discrimination is not explicitly prohibited in Senegal, and the law mandates some industry restrictions for women (Camara 2010).

**Analysis of gender-disaggregated labor market outcomes under India's Powergrid System Development Project highlights the methodological difficulties of attributing district- and state-wide employment impacts to one particular project.** The quantitative results showed that the decline in women's labor force participation in the states covered (Madhya Pradesh and Maharashtra) over the five-year period examined (2004–9) was a bit less in project-affected versus nonproject districts. However, the econometric results showed that the project effects on women and men's labor outcomes were not statistically significant.

### **Indirect Employment Opportunities**

**The qualitative field work suggests that, in areas of low economic development, energy infrastructure projects can induce women's economic activity indirectly.** These cases showed that self-employment and traditional occupations that were extensions of women's work within the home provided important gains in household welfare. But these activities' income potential and impact on existing gender norms were limited. In Senegal, for example, the influx of workers into communities provided service-sector opportunities (e.g., hospitality) for women that had better entrepreneurial skills or more resources. **Such service-sector opportunities were reinforced by the improved access to electricity provided by the project.** Similarly, in Morocco, women in the project-affected communities requested training in

traditionally home-based activities (e.g., weaving, knitting, and embroidery). In Nepal, local women began to form farmer cooperatives and special agriculture producer groups after the hydropower project was completed; these groups collectively managed marketing and other produce-related activities.

*I was aware of the presence of external workers as I used to sell breakfast to them and sometimes they also bought take-away breakfast for their co-workers.*

Woman, Nganda town, Kaffrine, Senegal

## Policy Implications

**Gender-sensitive efforts are required to increase women’s employment in nontraditional occupations in energy infrastructure.** On the supply side, these include setting quotas for women in construction and maintenance jobs, encouraging establishment of women’s recruitment bureaus, ensuring separate washroom and toilet facilities for women and men at work sites, and enhancing women’s safety. Such low-cost interventions can yield high returns and potentially attract more women to energy infrastructure construction jobs and project operations. On the demand side, addressing women’s needs for training and skills development requires an understanding of the gender differentials in educational attainment and gender roles in the affected communities and households. The systematic gender assessment for the WBG portfolio review (years 2000–14) concluded that a major avenue for including gender considerations in projects is through the design and provision of vocational training in the community (box 1).

## LAND-RELATED IMPACTS: DISPLACEMENT AND COMPENSATION

**Invariably, energy infrastructure projects require the transformation of a certain amount of land and use of water and other natural resources, which may conflict with existing uses.** The most dramatic land-use change is caused by flooding a reservoir in hydropower projects, although other energy sources may also result in land-use changes. For example, constructing power plants on large tracts of land requires clearing and grading, possibly resulting in soil compaction, alteration of drainage channels, and increased runoff and erosion (EIS n.d.). In addition to permanent impacts, short-term disturbances can result from ancillary investments, such as access roads and storage, along the electricity value chain (Denholm et al. 2009).

## Understanding Gendered Risks

**Women may be disproportionately affected by the accompanying land-use changes since projects may decrease the land available for subsistence agriculture.** In rural areas, women’s subsistence agriculture activities may occur more frequently on unregistered land, as opposed to fields owned by men. Where involuntary displacement and resettlement are required, women often suffer disproportionately from the induced social, economic, and environmental risks. In the case of hydropower projects, new reservoir and water regimes can lead to a change in cropping patterns toward high-value monocultures, which may displace women engaged in small-scale cultivation. Women living or working on land as tenants have even fewer options once the land is no longer available (Joji 1999; Clancy 2012).

**Depending on the context in which the project operates, there is a risk that existing gender inequalities may be aggravated.** Because of inheritance laws or sociocultural norms, women tend to have less access to land ownership or experience legal and practical barriers to land registration and titling. As a result, women and girls are likely to face greater risks during the resettlement process and are less likely to reap the benefits. Furthermore, the compensation decision process tends to ignore the value of women's property rights and important roles in traditional agriculture (Clancy 2012; ESMAP 2013; Mehta 2011, WCD 2000).

### **Need for Gender-Informed Assessments**

**Multilateral development banks, governments, and the private sector have put various safeguards policies and regulations in place to minimize projects' adverse environmental and social impacts** (box 2). Nonetheless, many past projects failed to include gender-inclusive consultations and gender-informed social assessments. In many of the cases examined by this report, social assessments lacked gender-disaggregated data on land tenure, which is needed to conduct a meaningful analysis. In other cases, there has been low awareness of the potential benefits of conducting gender-disaggregated analysis and compensation programs that include women as stakeholders with specific needs. One noteworthy exception was the Nam Theun (NT) 2 Hydropower Project in Lao PDR, whose comprehensive environmental and social mitigation design serves as a global model for large-scale hydropower projects (box 3). **Since men and women are differently affected by large infrastructure projects, gender analysis should be integral to social assessments and safeguards policies.**

## Box 2 Analysis of the World Bank's Safeguards Policies

The World Bank created safeguards policies to ensure that all of the projects and programs it supports are environmentally and socially sound and sustainable. The current umbrella safeguards policy, Operational Policy (OP) 4.01 (Environmental Assessment), mandates that the borrower must carry out a process of environmental and social assessment when a safeguards policy is triggered. Although OP 4.01 does not explicitly include project-level gender assessments, gender is referenced in the context of consultations (OP 4.10, Indigenous Peoples) and vulnerable groups (OP 4.12, Involuntary Resettlement).

A new Environmental And Social Sustainability Framework, approved in 2016, will start in 2018. The new framework establishes 10 Environmental and Social Standards that the borrower and project will meet throughout the project life-cycle, as follows:

- 1: Assessment and Management of Environmental and Social Risks and Impacts;
- 2: Labor and Working Conditions;
- 3: Resource Efficiency and Pollution Prevention and Management;
- 4: Community Health and Safety;
- 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement;
- 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;
- 8: Cultural Heritage;
- 9: Financial Intermediaries; and
- 10: Stakeholder Engagement and Information Disclosure.

Source:[http://consultations.worldbank.org/Data/hub/files/consultation-template/review-and-update-world-bank-safeguard-policies/en/materials/the\\_esf\\_clean\\_final\\_for\\_public\\_disclosure\\_post\\_board\\_august\\_4.pdf](http://consultations.worldbank.org/Data/hub/files/consultation-template/review-and-update-world-bank-safeguard-policies/en/materials/the_esf_clean_final_for_public_disclosure_post_board_august_4.pdf)

## Box 3 Gender Assessment of the Nam Theun 2 Hydropower Project in Lao PDR

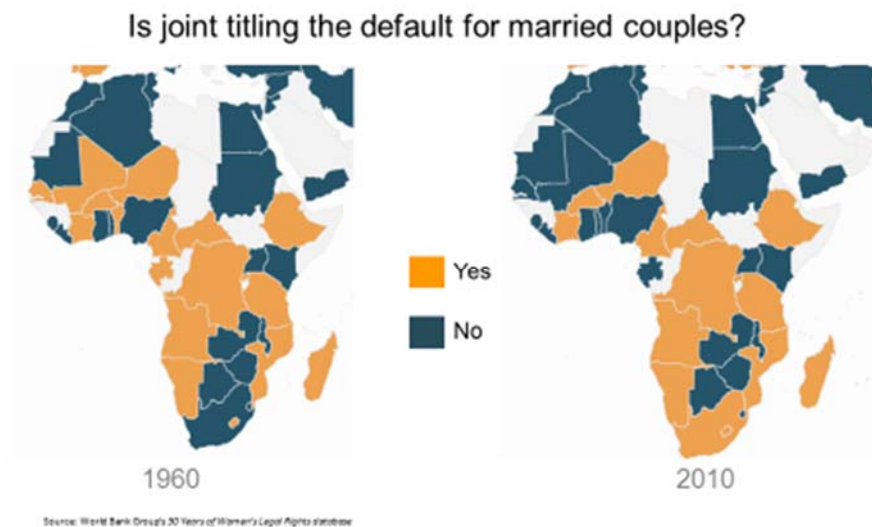
Addressing gender issues was integral to designing the Nam Theun (NT) 2 Hydropower Project, a 1,070 MW effort in Lao PDR initiated in 2010. The gender assessment conducted for the project identified women and girls in marginalized ethnic groups and disadvantaged households with limited access to education, off-farm employment, production markets, cash assets, and sociopolitical empowerment. The assessment concluded that these groups would face greater risks during the resettlement process and thus would require ongoing intensive attention and support. The project's comprehensive environmental and social mitigation design can serve as a global model for future dam construction projects.

## Best Practice Recommendations for Designing Gender-Inclusive Projects

Practical measures can be taken at the project level to avoid or mitigate gendered land-related impacts, as follows:

- **Arrange meetings at a time convenient for women to attend and in venues where they feel comfortable and free to engage in discussion (e.g., women-only focus groups).** To ensure that women’s inputs are sufficient to meaningfully influence project design, women may need special arrangements to facilitate physical access owing to childcare and transportation needs or interference with domestic duties. Also, the language used in meetings should be accessible to women, and use of female facilitators and women interpreters should be considered.
- **Provide sufficient cash compensation to replace lost land and other assets at full replacement cost in local markets.** Also, infrastructure and public services should be provided in resettlement sites or host communities, as needed, to improve, restore, or maintain accessibility and service levels. Because women’s rights and lives are more often rooted in natural resources than marketable commodities, they tend to appreciate the non-quantifiable value of resources more than men. When confronted with displacement, women may prefer non-cash compensation.
- **Consider disbursing the cash amount of compensation to both spouses and take into account other adult female household members.** Cash compensation should be handed to the household head in the presence of the spouse. Alternatively, the compensation amount should be transferred to joint bank accounts. Women residing within larger extended families—such as widows living with their fathers or fathers-in-law—may also be entitled to compensation and rehabilitation assistance as independent households.

Figure 3: Changes to Joint Titling for Married Women in Africa,



**During the land-acquisition/resettlement process, grant property titles to both men and women, either separately or jointly, to ensure that underrepresented rights-holder groups, including women, are not excluded from the land-title registration process.** Granting property titles to women or jointly to couples can increase women's voice and agency (e.g., bargaining power in family decisions), which, in turn, can affect women's choices regarding labor force participation or fertility. Understanding a country's existing policies and practices in relation to marital property regimes can provide project planners a better baseline for understanding how to consider joint titles and benefit-sharing during project design (Figure 3).

## **RISK PREVENTION AND SOCIAL SUSTAINABILITY**

**Well before energy infrastructure work gets under way, a project may already be having negative impacts involving health risks, which may affect men and women differently.** The most immediate health risks are transmission of HIV/AIDS, water-borne illnesses, and occupational safety. Numerous case studies suggest that these risks and their gendered impacts are commonly overlooked during the design phase of energy infrastructure projects. Women may be more adversely affected by the inflow of migrant workers, which is often accompanied by increased incidence of HIV/AIDS and other sexually transmitted diseases (STDs) due to new demand for sex workers, potentially involving sex trafficking and GBV (ADB 2008; IOM 2010; Selvester, Cambaco, and Bié 2011; Hurwitz 2013; Tilt, Braun, and He 2008). Water-borne illnesses, affecting men and women about equally, are linked to a lack of sound environmental and social management involving specific energy-generation sources (e.g., water pollution in hydropower dam reservoirs) (N'Goran et al. 1997; Wijesundera 1988). Occupational segregation by gender suggests that men are more likely to suffer from occupational health risks, which, if not prevented or mitigated, can result in accidents or fatalities. **Careful implementation of safety measures and having adequate sanitary facilities in the project area can help prevent occupational health risks, as well as the spread of disease.**

**The background field work conducted for this study shows that affected communities realize the potential health risks that energy infrastructure projects may be bringing.** In Nepal, for example, FGD participants expressed their concern about the potential spread of disease under the KGA Hydropower Project. In Morocco, participants in both FGDs and consultations voiced strong concerns about the influx of foreign workers under the Noor 1 CSP Project, along with other concerns, including air pollution, wastewater discharge, and road traffic.

*During the project, 40,000 people [were brought] here, which increased the number of people coming in and...the number of hotels/lodges in the area. Naturally there was a lot of interaction between locals and outsiders, which resulted in prostitution and an increased number of HIV and AIDS cases.*

Shaligram Neupane, Local Leader, Beltari, Nepal

**Ensuring safety and prevention of health risks should be an integral part of project design.** Some energy projects have added STDs, health education, and prevention of GBV as project design components (box 4). For example, in Indonesia, an impact analysis conducted for the Upper Cisokan Pumped Storage Hydro-Electrical Power Project suggested that (i) an influx of workers would likely

increase public health risks for both construction workers and the local population and (ii) relocating households during resettlement would have potential health impacts. A gender strategy was then prepared that supported implementation of an HIV/AIDS prevention component.

#### Box 4 GBV Prevention and Large-Scale Energy Infrastructure Projects

An initial step to prevent gender-based violence (GBV) in large-scale energy projects is **establishing codes of conduct for energy employees and contractors**. Signed and agreed to being upheld by all staff involved in construction, these codes of conduct should outline unacceptable behavior and consequences for harassment and GBV.

**Social prevention campaigns could also be implemented in the project area.** An important aspect of such campaigns is to engage communities and civil society in raising awareness about violence and its prevention. Participatory processes to design and evaluate violence prevention programs and mechanisms can result in more effective solutions overall. Women themselves can propose strategies for improving their safety in the project area and can influence program design.

**Lessons from large infrastructure projects in transport and other related sectors can also provide useful guidelines** on how to prevent GBV in energy projects. Situational prevention of GBV, including improved lighting in public spaces, safe access to restrooms, and moving around large areas in groups, can be effective and also provide a better work environment.

#### Promoting Better Educational and Health Outcomes

**Increasingly, energy infrastructure projects are devoting more attention to ensuring a project's social sustainability.** Beyond providing the affected community adequate compensation, negative externalities (e.g., livelihood losses resulting from gradual environmental degradation or changes in culture and community relations that increase unrest or conflict) may remain unaccounted for, depending on the context in which the project operates. Innovative compensation measures and benefit-sharing schemes, including local infrastructure improvements, education and skills training, and health services, can partly minimize these adverse effects. Targeting these activities to reach the affected community's most disadvantaged groups, including women, can help address gender gaps in human and social development outcomes, as well as reduce social exclusion.

**Providing education and skills training in the surrounding impact area can help build trust and partnerships.** Beyond basic livelihood restoration efforts focused only on the project-affected people, providing education and vocational training opportunities for the larger community can serve to reduce gender gaps in skills and access to jobs. For example, in Morocco, the Noor 1 CSP Project aimed to boost direct and indirect employment by training local job seekers and the local population across a range of occupations (ACWA Power 2015). The Office of Professional Training and Work, which coordinates training for local job seekers, focuses on providing skills required in the CSP plant and trains the local population in income-generating activities (e.g., running small shops and restaurants). Although the activities offered appear to perpetuate occupational segregation by gender, it is noteworthy that, in a

country context where so few women participate in the workforce, this project has been able to employ some women directly, owing, in part, to its gender-sensitive work environment.

**Project investments in social development and sustainable activities can target areas where gender gaps are the most pressing.** For example, in the Ghassate commune surrounding the Noor 1 CSP Project in Morocco, where girls and women tend to lag behind men in educational attainment, the Moroccan Agency for Solar Energy (MASEN) built a secondary-level girls' boarding school. In India, the Rampur Hydropower Project, as part of its local development efforts, implemented a new technical education program for ambitious local youth. The program sponsored 195 candidates, including 31 females, to acquire technical skills in the Indian Training Institutes. Eighty-nine percent of all candidates completed courses, and 55 percent, including 13 females, subsequently found employment with contractors.

**Addressing the specific needs of women and youth requires an understanding of gender differentials in educational attainment and gender roles within the household and community.** In the case of the NT 2 Hydropower Project in Lao PDR, a gender assessment and gender action plan were the starting point for providing skills development and training opportunities that were meaningful to both men and women.

**If well designed, the ancillary investments of energy infrastructure projects in health promotion and provision can contribute to local development efforts.** Investments in clinic construction and supply of mobile healthcare units provide local communities greater access to health services, which can lead to better health outcomes (Köhlin et al. 2011). Maternal health, especially, may be positively enhanced if women community members have better access to prenatal care and choose to deliver their babies in newly accessible health centers with qualified personnel (box 5). Failing to consult with women and men in the community about their health needs prior to project development can lead to missed opportunities, leading to later community disappointment or resistance to projects.



## Box 5 Projects with Integrated Health Services Promote Trust and Better Outcomes

The **Trung Son Hydropower Project**—one of Vietnam’s first large-scale infrastructure projects to integrate health services into its activities—has clear objectives of improving the health conditions of workers and the local community. The center is fully equipped with medical devices and medicines, an ambulance, and doctors and nurses who provide round-the-clock services. Previously, villagers had to travel 60–70 km (about 40 miles) across mountains to receive medical care. The new health center, conveniently located near their village, makes access to medical services safer and easier. To ensure sustainability of the local health system, the hydropower company works closely with local health authorities to implement health promotion plans and improve the capacity of local health clinics. The company has provided support to build or renovate community health centers and supply them essential medicines. Annual training is also provided for health professionals at the commune and village levels.

Before India’s **Rampur Hydropower Project** was constructed, villagers in the hilly state of Himachal Pradesh had to travel 8–10 km to reach the nearest medical facility, and poor transportation added to the challenge of accessing services. Early on, the project gained the trust and acceptance of the local affected communities by supplying them medical camps and mobile health vans that provided basic services and free medicine. Twice a week, a team of doctors, nurses, and attendants visited the villages (one hour per village), providing treatment and referral services. The medical camps and health vans also increased public awareness about basic hygiene and nutrition. Among the 60,000 people who benefited, slightly more than half were women. Women below poverty line and their children were also provided financial assistance during pre- and post-natal periods.

*Sources:* [http://blogs.worldbank.org/eastasiapacific/vietnam-brightening-people-lives-through-integrated-healthcare-in-a-hydropower-project?CID=ECR\\_FB\\_worldbank\\_EN\\_EXT](http://blogs.worldbank.org/eastasiapacific/vietnam-brightening-people-lives-through-integrated-healthcare-in-a-hydropower-project?CID=ECR_FB_worldbank_EN_EXT);  
<http://documents.worldbank.org/curated/en/548631468001761453/pdf/101039-WP-P095114-PUBLIC-Box393257B-Rampur-Hydro-Report.pdf>; Reddy, Mittal, and Gaba 2015.

*The bus fare apart, half a day [was] required in terms of time, causing discomfort to the patient. Now with the health vans coming and holding camps and check-up of patients, we get treatment and free medicines...at our doorstep!*

Pooja of Bakhan village, Kharga Panchayat, affected area, Rampur Hydropower Project, India

### Opening Opportunities by Connecting to Services and Markets

**Projects with well-designed ancillary investments that integrate the results of gender-inclusive community consultations and gender strategies can produce important co-benefits.** Roads, bridges, ferries, and clean-water supply systems built in tandem with energy infrastructure enable communities to access products, labor markets, and educational and health services. For example, in Vietnam, access roads and bridges constructed under the Trung Son Hydropower Project now provide a comfortable means of travel for hundreds of households who previously used boats to cross the river. Also, children now go to school safely, without having to climb through the hills, and farmers and traders have better and faster access to markets to sell their products. In Nepal, some health progress made by the KGA

Hydropower Project can be attributed to the project's access road, along with better electricity access. More than half of FGD participants believed the project had contributed to increasing women's mobility thanks, in large part, to the access road and ferry service.

### Understanding Long-Term Impacts on Gender Norms

**This study found that the empirical evidence on changes in gender norms due to an energy project are practically non-existent, but some case studies suggest potential directions and pathways of change.** Not surprisingly, the literature review revealed links between new access to electricity provided by an energy infrastructure project and changes in gender norms (Köhlin et al. 2011; Clancy 2013). Beyond electricity access, other project pathways most likely to indirectly influence gender norms are compensation packages (gender-sensitive or not), investments in ancillary infrastructure, and other local-area development activities.

**If women can take advantage of project-initiated development activities or ancillary infrastructure to pursue education, jobs, or entrepreneurship, norms and attitudes toward gender equality may become more supportive within the community over time.** For example, the KGA Hydropower Project in Nepal indirectly helped to change social norms in the affected community by connecting households to information and resulting economic opportunities. Thanks to the project access road and ferry service, women gained improved access to information and jobs, which, over the past decade, has moved the prevailing social dynamics toward more egalitarian standards. Multiple follow-on initiatives (e.g., irrigation, water, health, agriculture, awareness-raising and capacity-building, and community mobilization) have contributed to increasing women's social capital and empowering them to become more mobile and able to make decisions independently.

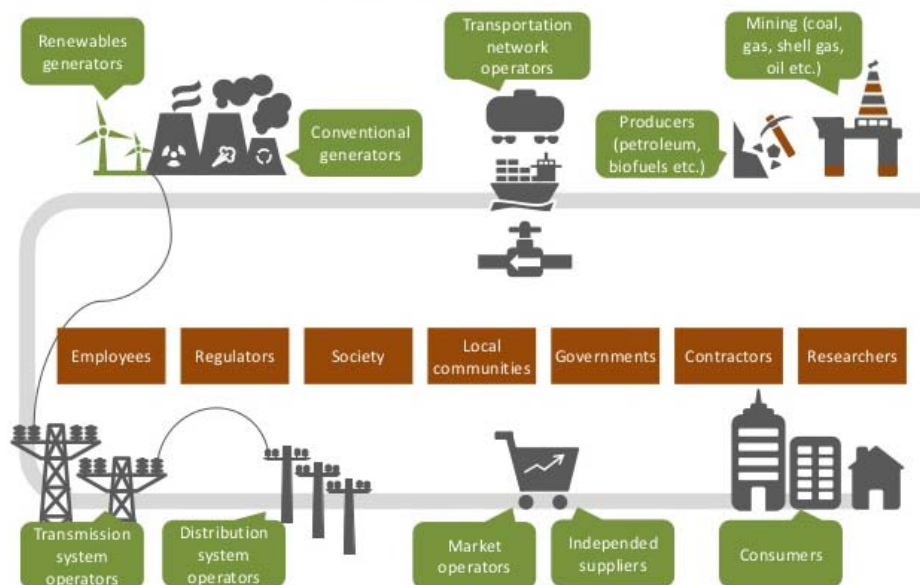
**However, not all social changes in a community have the potential to alter gender norms toward more egalitarian rules or expand women's agency.** Large inflows of male migrants seeking jobs may result in local women retreating further into the home, while an increased number of sex workers are put in vulnerable situations. Furthermore, women's expanded access to jobs and greater assets may challenge existing gender norms and male authority, leading to GBV (box 4). Attitudes toward gender equality depend heavily on the context in which they operate, and even positive change can sometimes be followed by a backlash (World Bank 2013). Generally, more egalitarian gender norms set in over the medium or longer term once communities realize the benefits that accrue from the new infrastructure or development programs. How ancillary investments, as well as local-area development activities and compensation, alter gender norms in the affected communities over time (both positively and negatively) are not well understood and thus warrant further research.

## ROLE OF THE ENERGY UTILITIES

**The predominant role of the energy utility companies in the power sector uniquely positions them to identify and address gender issues in the delivery of services and within their own organizations.** To gain insights on how the utilities approach gender issues and their potential role in promoting gender equality, a background study was commissioned. The findings showed that, from the utilities' perspective, gender is a many-sided issue that can be variously addressed. The energy-sector value chain covers an

array of stakeholders, with the utilities often playing a bridging role between project developers, energy businesses, and electricity consumers (Figure 4).

**Figure 4: Stakeholders along the Energy Value Chain**



Source: Milkeviciute 2014.

**The electricity companies consider engagement with the project-affected communities as essential, but initiatives aimed at addressing gender issues are still rare.** Most consultations with the affected communities do not unveil gender gaps or how to address them. Key constraints include limited knowledge of local languages, lack of partnerships with local organizations, and lack of women representatives within the power company who could establish direct relationships with the affected communities. Women’s low level of direct employment by the project is mainly limited by a lack of technical and professional expertise and the country’s sociocultural and gender norms that discourage women from working in the sector.

**That said, the utilities in some projects have been quite effective in engaging with the project-affected communities.** In the case of the NT 2 Hydropower Project in Lao PDR, for example, the power company hired gender specialists to support and work closely with government agencies led by the Lao Women’s Union. This partnership ensured that the project’s gender-sensitive social development and resettlement action plans were implemented and that women participated in all stages of the project cycle. Projects that take gender dynamics into account may also be able to promote citizen engagement (e.g., in the prevention of electricity theft), leading to better business performance.

### **Organizational Gender Approaches within Energy Companies**

**Within the energy companies, the main factors encouraging gender policies are national regulatory frameworks with clear objectives on gender, corporate social responsibility (CSR) policies, gender awareness within the utility, and the utilities' demand for labor and specific skills.** The United Nations 2030 SDGs also provide a renewed international framework for strengthening the inclusion of men and women in economic development. International safeguards standards and national regulations provide the utilities frameworks and guidelines for assessing the impacts of projects and developing mitigation and benefit-sharing plans. Results of the commissioned energy utilities study suggest that CSR strategies are increasingly embedded in the international development agenda and are based on the principles of sustainability, human rights, social and gender inclusion, and nondiscrimination. Most of the electricity companies researched have integrated the main development goals and/or international conventions into their CSR policies (EDF 2009; ECOTEC 2007).

**However, for large corporate groups, effort is required to align CSR practices among all subsidiaries.** For example, until just recently, the social responsibility of EDF France was dispersed among its subsidiaries and associates, using various strategies and practices. To better align social responsibility practices within the business worldwide, EDF France and most of its associates have begun signing unified CSR agreements, which require the group to comply with the Universal Declaration on the Elimination of Discrimination against Women, as well as ensuring professional equality through monitoring and enhancing nondiscrimination initiatives in career opportunities, access to management positions, and remuneration.

**Interviews with electricity utility companies suggest that enforcement of specific social and gender principles is challenging when contracting service providers and suppliers because of diluted responsibilities and procurement policies.** Values, missions, and CSR strategies are enforced through companies' codes of conduct and are transferred throughout the supply chain via contracts with service providers and suppliers, companies' involvement in industrial initiatives, and auditing. Suppliers and contracted companies may not always have the human and financial resources to adapt to specific policies required by the head company, though global principles, such as "human rights," "respect," "nondiscrimination," and "free of harassment," are generally part of contracts.

### **Promoting Gender Equality in the Energy Utilities**

**Historically, women's representation in the energy sector has been low in both developing and developed countries, as suggested by the disaggregated data.** A recent study by the United States Agency for International Development (USAID) found that, among 14 electricity utilities in 4 developing regions (Eastern Europe, Middle East, South Asia, and Sub-Saharan Africa), women comprise an average of just 13 percent of the distribution utilities' workforce, compared to about 20–30 percent for utilities in Europe, Canada, and the United States (USAID 2015). Interestingly, the study found that in East Asia and the Pacific, the range of women's representation is 9–40 percent, explained, in part, by changing social and cultural norms, along with a cascading effect; that is, as more women begin working in the electricity sector, they act as role models, opening opportunities for many more women to follow. Further research is needed to better understand the dynamics of this process.

*We need to reflect the society in which we operate and its diversity. It goes beyond gender; it is more about fostering diversity in the company. It brings more skills and facilitates exchange and knowledge transfer within the company and between the company and its environment. You need diversity if you expect to reach all components of a society.*

Director, P. T. Paiton Energy (ENGIE subsidiary)

**This study identified the following key areas where initiatives are needed to attract more women to the energy sector:**

- **Promoting girls' education in STEM fields to build long-term capacity that levels the playing field for women.** To achieve this long-term goal, a growing number of electricity utilities are forming partnerships with high schools and universities. Women employees of the utilities act as role models to promote girls' interest in STEM education and introduce them to potential future employment opportunities.
- **Creating a gender-sensitive work environment.** The utility companies need to ensure safe working conditions for women and encourage their professional advancement. Primary issues are preventing and addressing sexual harassment and providing coaching in career advancement within the company.
- **Designing innovative approaches to reduce occupational segregation by gender.** Increasingly, the operational units of large-scale infrastructure companies, mainly in developed countries, are taking the social and environmental impacts of their business practices into account in order to promote sustainable development in the project-affected communities. Some companies that have experimented with innovative recruitment and training approaches have successfully moved women into better-paying, nontraditional technical jobs that proved more cost-effective for the utility.
- **Increasing women's greater representation in the utility companies, particularly in executive and management positions.** Women's greater representation within the utility companies, particularly in executive and management positions or as board members, can (i) increase women's overall well-being and share within the enterprise, (ii) be tied to stronger company profits, and (iii) perhaps facilitate a stronger push for change at the operational field level.<sup>2</sup>

### **Policy and Project Implications**

**Promoting gender balance in the energy sector—both in field operations and within the utility companies themselves—is a multifaceted issue.** At the operational level, utility consultations in project-affected communities that ensure women's equal participation can improve energy delivery, citizen engagement, and business performance, as well as indirectly achieve gender equality. The findings show that successful projects include socially-inclusive and gender-balanced outreach campaigns. In addition,

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<sup>2</sup> Providing evidence to support this hypothesis was beyond the scope of this study.

they engage gender specialists and form partnerships with local organizations to ensure women's participation at each stage of the project cycle. Longer-term centralized strategies and policies are required to level the playing field for women in energy-sector recruitment and hiring. The study findings suggest that women's greater representation in executive and management positions within the utility companies may facilitate a stronger push for change at the operational field level; this topic thus warrants further research.

## MOVING THE ENERGY-GENDER AGENDA FORWARD

**This study provided a unique opportunity to reflect on progress that large electricity infrastructure projects have made to improve gender responsiveness and social inclusion while identifying key challenges and opportunities to reduce gender disparities and improve overall development outcomes.**

The meaningful integration of gender throughout the project cycle can both enhance project sustainability and promote gender-equal development outcomes, in turn, contributing to achieving the 2030 SDGs and the twin goals of poverty reduction and shared prosperity.

**The findings confirm that projects involving resettlement or land-use changes must consider gender differences during the consultation process and design and implementation of compensation plans to ensure that women and men benefit from (and are not harmed by) the new infrastructure.** Women's control over land assets can enhance household welfare, women's cash incomes and spending on food, and children's health and educational outcomes. Women-headed households, who represent a significant share of the poor, can benefit enormously from the security, status, and income-earning opportunities that secure rights to even a small plot of land can provide. Ancillary design features, appropriate to client demand and readiness, can also provide important project co-benefits.

### What Should Projects Do?

Below are some general recommendations that project teams can consider at key points in the energy infrastructure project cycle to promote positive gender-equal outcomes and avoid missed opportunities.

*Preparation: Gender Assessments.* Not only is it important to do a thorough assessment using gender-disaggregated data collection (WCD 2000). It is also critical to ensure that the findings are used to inform the project design (IEG 2016). Gender assessments should strive to understand who has access to and control of the household energy and how the project will impact men and women's gender dynamics.

The first most important step is to conduct an initial gender assessment and provide inputs on gender gaps relevant to the project for either the poverty and social impact analysis (PSIA) (in the case of Development Policy Financing) or the environmental and social impact assessment (ESIA) (in the case of Investment Lending). This gender diagnostic and assessment work should be conducted by gender or social experts with strong background on gender. Conducting gender-inclusive consultations in the local dialect through female facilitators and women-only discussion groups will give local women a platform for voicing their opinions.

*Implementation: Gender Action Plan (GAP).* Designing programs and activities with inputs from local women and men will ensure that the GAP reflects their separate wants and needs so they can make use

of likely project benefits (e.g., productivity uses of electricity or harnessing water from reservoirs for fisheries or even promoting tourism).

Having a gender-inclusive grievance redressal mechanism can encourage local women to voice their concerns via women officers who are available during times that are convenient to them. To ensure that project benefits reach women, as well as men—particularly in socially conservative areas where implementing agencies lack gender capacity—engaging gender-sensitive nongovernmental organizations (NGOs) and local groups as partners during consultations, outreach, and implementation can be especially valuable.

*Evaluation: Tracking Gender Indicators to Improve Results.* Progress, lessons learned, and intermediate results, as well as gender-based outcomes, should be documented. The lessons of gender mainstreaming can be integrated into other energy operations within the country and thus feed into ongoing dialogue with the government and utilities. The most important step is to integrate gender under the ESIA framework for baseline and impact analysis (e.g., gender-differentiated impact analysis, including GBV) and agree on the M&E framework with gender-sensitive indicators.

Action plans should include gender-equality targets and the M&E framework to measure women’s participation and benefits in project activities. The gender and social exclusion analysis (GSEA) framework can help in determining indicators and outcomes for the three domains of change: (i) access to services, (ii) changing gender norms, and (iii) increasing women’s agency. Potential indicators can be included for time-energy use, access to information (e.g., health) via television and radio, external income and businesses, educational gains, or jobs in nontraditional sectors. Enacting concessionaire agreements on gender plans and monitoring, along with an effective monitoring unit that keeps track of gender-disaggregated data, can help to ensure follow-through of long-term M&E commitments.

## Looking Ahead

**Past energy infrastructure projects have often acknowledged gender-inclusive participation and gender-disaggregated M&E, but few have really pushed for it.** Gender may have been mechanically included during the project design phase, with little or no formal follow-up required. In many projects that included women-only consultations, it is not apparent how women’s views were taken into account or influenced project design and implementation. More recently, significant progress has been made toward integrating gender considerations into electricity infrastructure projects; however, not all social changes in a community have the potential to alter gender norms toward more egalitarian rules or expand women’s agency.

**The road ahead demands more rigorous analysis and systematic collection and sharing of data to inform projects and country strategies to avoid the potential for backlash that could potentially deprive women’s voice and agency.** In addition, a more in-depth understanding is needed of the utility’s role in engaging women in the energy workforce and along the energy value chain. The redoubled efforts of the WBG and other multilateral development banks, governments, and the private sector, together with NGOs and other local partner organizations, are showing that the energy-gender agenda is moving in a positive direction.

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