

# GENDER EQUALITY IN THE GEOHERMAL ENERGY SECTOR

## ROAD TO SUSTAINABILITY

SUSTAINABLE DISTRICT ENERGY CONFERENCE ICELAND, 2019

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# A FOCUS ON GENDER GAPS-WHY IT MATTERS



Enhance Development Outcomes

Moral Imperative

Risk Management

# OVERVIEW | OUR OBJECTIVES

## 1. Enhancing Data

Identifying and Addressing Data Gaps

## 2. Strengthening Knowledge

Pioneering New Knowledge and Research

## 3. Operational Approaches

Regional Gender and Energy Programs

Shifting to Sector-Wide Engagements

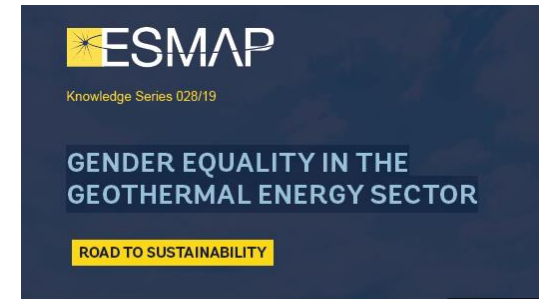
## 4. Building Partnerships

Build Capacity of Gender / Social Organizations, Ministries

Global and Regional Networks

# GENDER EQUALITY IN THE GEOTHERMAL ENERGY SECTOR

- Geothermal energy is a clean and reliable source of heat and electric power supply. For many of the world's low- and middle-income countries, **geothermal power has the potential to contribute substantially to the renewable energy transition.**
- The geothermal sector lacks sex-disaggregated data collection and analysis on the socioeconomic, environmental, and health risks of projects and access to benefits.
- The environmental and social risks posed by geothermal energy projects share common features with those of **mining and extractive projects**, as well as other large-scale energy infrastructure projects.
- The report introduces ways in which geothermal projects can **mitigate risks and open opportunities** to address gender gaps within the project cycle. Made possible through support from Iceland Ministry of Foreign Affairs.



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# SECTION 2: AVOIDING RISKS, OPENING OPPORTUNITIES

- The report outlines the risks and opportunities associated with three major pathways of impact: **(1) changes in land and natural resource use, (2) changes in employment and economic patterns, and (3) environment and health.**
- For each pathway of impact, the report presents key issues related to **project risks and opportunities**, such as integrating women's empowerment and creating equitable livelihoods benefits for both men and women, among others.
- It primarily targets World Bank project teams, project managers, social safeguards specialists, and gender specialists.
- It may also be of interest to other development partner organizations, project developers, investors, governments, nongovernmental organizations.



# 1. CHANGES IN LAND AND NATURAL RESOURCE USE

- Average land requirements for geothermal projects are moderate.
- They vary by project stage from reconnaissance and surface drilling, exploratory drilling, confirmation or appraisal drilling, construction, operation and maintenance, decommissioning and restoration.

## Understanding Cultural Heritage and Social Norms

- Geothermal sites are found in diverse sociological and ecological contexts, often featuring unique topography to which local populations may attach spiritual and cultural significance. For example, Māori in New Zealand, and East Africa.
- The spiritual and healing significance ascribed to geothermal pools, as well as their practical heating properties, may be tied to specific customs of men and women in project-affected communities.

Land Requirements for Energy Production, by Source Type

Primary energy source	Land-use intensity (m <sup>2</sup> /MWh)
Nuclear	0.1
Natural gas	0.2
Coal	
Underground	0.2
Surface (open-cast)	5.0
Renewables	
Wind	1.0
Geothermal	2.5
Geothermal <sup>a</sup>	0.54 to 3.77
Hydropower	10
Solar photovoltaic	10
Concentrated solar power	15
Biomass (from crops)	500

Source: Fritsche et al. 2017.

a. 2008 estimate of the U.S. Bureau of Land Management.

# 1. CHANGES IN LAND AND NATURAL RESOURCE USE

## Land Acquisition, Resettlement and Compensation

- Women may suffer disproportionately from the project if required land-use changes or land acquisition adversely affect household roles and responsibilities. For example, Kenya's Olikaria geothermal area.
- Women may struggle disproportionately during site-acquisition negotiations, condemnation proceedings, resettlement planning, and compensation procedures.



## EXAMPLE-IMPORTANCE OF ADDRESSING PROJECT IMPACTS ON WOMEN

- In Kalinga, Philippines, for example, indigenous women in Western Uma blocked development of a Chevron geothermal energy project, which caused the company to abandon the site.
- The women's grievances included disregard for cultural beliefs linked to the resource; loss of tiger grass, an important cash crop for women; fear of gender-based violence (GBV) from an anticipated increase in military presence to protect assets at the project site; and gender-unequal compensation and benefits, including scholarships and employment opportunities.



# 1. CHANGES IN LAND AND NATURAL RESOURCE USE

## Opening Opportunities to Improve Equitable Outcomes

- Engage with local stakeholders early on before drilling begins. Conduct early consultations with local men and women to understand their cultural relationship with the land and its uses, including customs and norms, which can help to identify appropriate sites. For example, Philippines Geothermal Investment Project.
- Conduct analyses on rates and extent of type land ownership, incidence of titling, and patterns of natural resource use.
- Make adjustments to sale negotiations, compensation, and resettlement actions to ensure equitable outcomes.
- Based on the geothermal resource's cultural significance, consider the appropriateness of different land ownership and management structures involving local men and women. For example, New Zealand Resource Management Act (2001) and co-ownership model.
- Ensure that critical land improvements mandated by the project and additional voluntary land improvements, such as supplying potable water or supporting tourism, provide equitable benefits in the affected communities. For example, Ethiopia Alalobad hot springs.



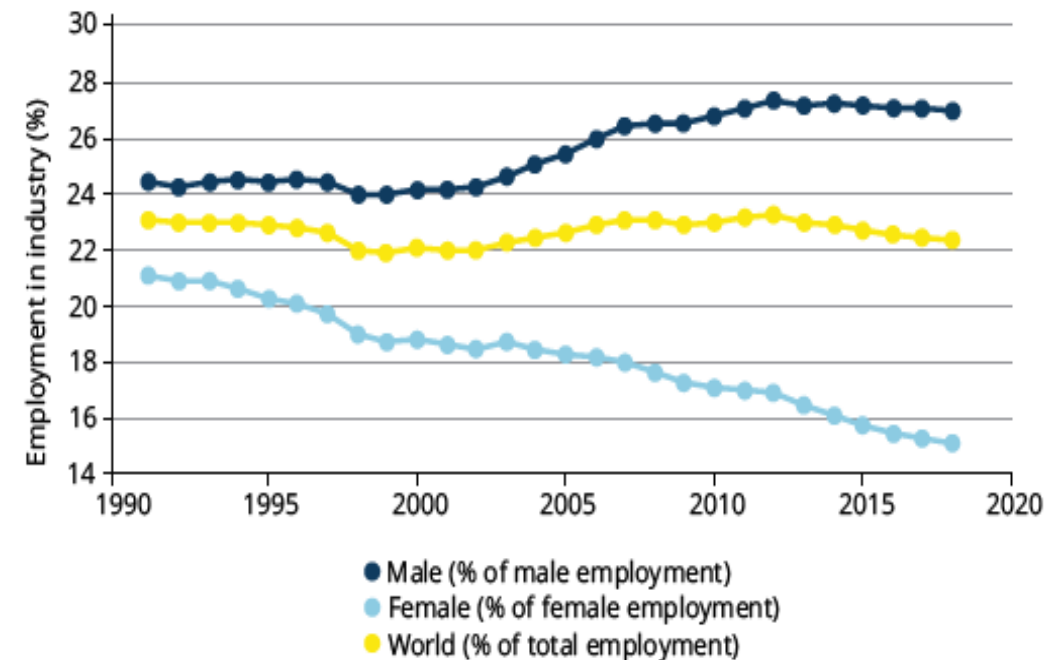


## 2. CHANGING EMPLOYMENT AND ECONOMIC PATTERNS

### Drivers of the Women's Employment Gap

- Geothermal projects generally sustain fewer than one job per megawatt of installed capacity.
- IRENA estimates there are about 93,000 jobs globally.
- Anecdotal reports in the geothermal sector point to significant gaps in employment between men and women, which can have negative spillover effects.
- Social expectations and norms about roles and abilities can discourage women's employment in the industry.
- As women's careers in the geothermal sector progress, they often face the added challenge of reconciling demanding work schedules—including shift work, travel, and posting to remote sites, which is often necessary for advancement within the organization—with competing personal demands on their time, including but not limited to childbearing and caregiving.
- The lack of an inclusive workplace environment—including discrimination, harassment, and gender-based violence (GBV)—can push women away from the sector.

Estimated Share of Working Population in Industry, by Sex



Source: Adapted from ILO 2018.

## 2. CHANGING EMPLOYMENT AND ECONOMIC PATTERNS

### Opening Opportunities to Improve Equitable Outcomes

- Create a safe, inclusive work environment and protocols for occupational safety that respect men and women equally. For example, Reykjavík Energy.
- Consider hiring and training quotas and preferential scoring in procurement and tendering. To avoid backlash, communicate with all stakeholders about the rationale and positive impact for implementing them. For example, Kenya Geothermal Development Company.
- Develop a strategy to enhance women's employment for all direct employment offered. Analyse the functions of worker categories and career development pathways for recruitment, retention, and promotion.
- Seek opportunities to tie project funding to programs that prepare women for promotions in geothermal companies, as well as specialized educational programs.
- From the project outset, identify opportunities linked to direct and cascaded uses of geothermal resources to create jobs for women entrepreneurs, increase women's agricultural productivity, and improve women's overall working conditions. For example, South Africa RE Independent Power Procurement Program and El Salvador LaoGeo.



**Direct Employment Categories:** Earth Scientists, Business and Admin Staff, Engineers, Drilling Operators and Support, Construction Workers and Plant Operators.

### 3. ENVIRONMENT AND HEALTH

- **The environment and health risks of geothermal energy projects may impact men and women differently.** These risks are linked mainly to potential water and air pollution, environmental degradation, and the influx of large groups of migrant construction workers.
- But thoughtful investments in risk mitigation and remediation can enhance, reduce, or even eliminate these concerns.
- Geothermal exploitation can result in the **release of chemicals and pollutants** that, although less toxic than those of fossil fuel plants, can have adverse effects on the surrounding ecosystems and inhabitants.
- The influx of predominantly male construction workers into the local community can increase the risk of gender-based violence (GBV) and human trafficking.
- The **enactment of dominant norms of masculinity** in high-risk occupations can be particularly problematic, as it exposes men to severe risks for injuries and fatalities.

#### IMPACTS OF GEOTHERMAL ACCIDENTS ON MEN AND WOMEN

- In 2017, the Prukut River in Central Java, Indonesia, was twice contaminated from site accidents at the nearby Baturraden Geothermal Development Project, a large-scale, US\$1 billion investment.
- Residents in nearby Karangtengah village previously depended on the river for freshwater and fishing, as well as tourism. Once polluted, the river water could no longer be used to meet villagers' daily household needs.
- The poorest households could not afford to purchase water, and street protests ensued.
- More research is needed on the impacts of geothermal environmental accidents and the impact on men and women in subsequent protests and negotiated settlements.



### 3. ENVIRONMENT AND HEALTH

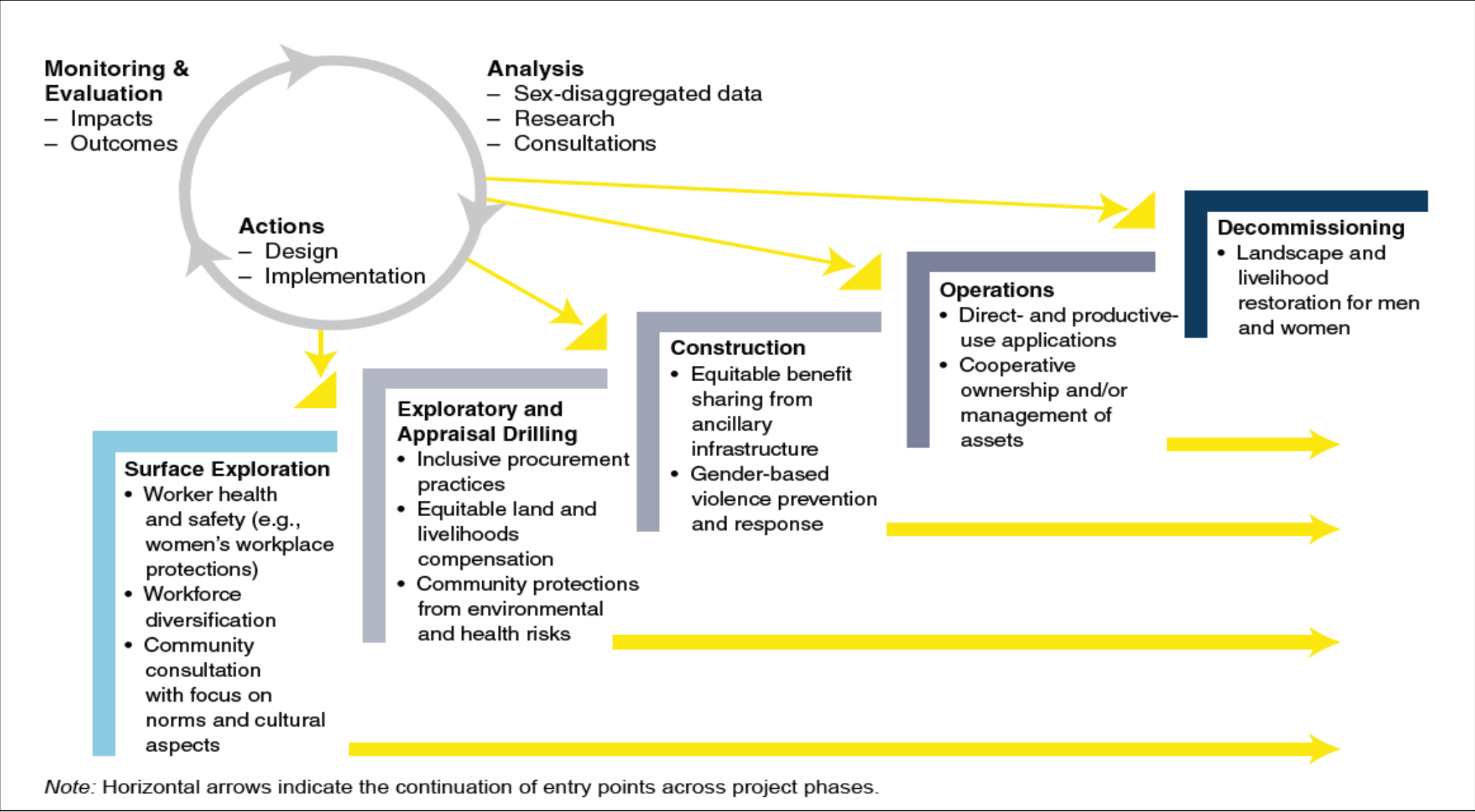
#### Opening Opportunities to Improve Equitable Outcomes

- Raise community awareness about the presence of known toxins in traditionally used geothermal resources, and look for culturally appropriate ways to problem-solve with communities. For example, Prukut River in Central Java site of Geothermal Development Project.
- Conduct consultations with men and women in the affected communities to capture their potentially divergent perspectives on project risks to the environment and human health. Share monitoring data to minimize possible concerns and build trust. For example, mobile applications Oregon USA.
- Design project benefits from direct-use applications of geothermal energy and water supply installations in ways that can reduce women's time burden, enhance livelihoods, and result in better health outcomes.
- Sensitize contractors and the local community to the potential risks associated with the influx of male construction workers, ensure codes of conduct agreements are adopted with workers, and support regular safeguards monitoring and reporting, along with a robust GRM.
- Consider partnering with service providers who can provide health and counselling services and access to contraception.





# SECTION 3: ENTRY POINTS FOR CLOSING GAPS BY PROJECT PHASE



# 1. ANALYSIS: RESEARCH AND CONSULTATIONS

Analytic task	Objective	Time required	Cost level	Expertise required
<b>Preliminary desk review</b>	Provide initial information to allow for identification of gender gaps and mapping of organizations and community norms to inform project design and in-country consultation.	2-4 weeks	Low	Experience in gender and energy
<b>Focus group discussions (FGDs)</b>	Identify issues of importance to local stakeholders and begin process of identifying actions with local buy-in.	1-2 months	Moderate	Local language and knowledge of customs; mastery of participatory methods
<b>Primary surveys</b>	Fill important gaps not addressed by preliminary desk research and first-round consultations; respond to need for robust data and evidence.	1-6 months (longer for longitudinal studies and depending on degree of rigor required)	Moderate-High	Statisticians; enumerators
<b>Baseline report covering background information, risk assessment, remediation options, and development opportunities that consider women and men</b>	Integrate desk research and FGDs to provide a snapshot of current status; raise key issues for project inclusion.	3-6 months	Moderate	Experience in gender and energy

## 2. ACTIONS: DESIGN AND IMPLEMENTATION

### **Worker Health and Safety:**

- Amend existing human resource policies to include specific clauses, complaint/investigative procedures, and protocols for grievance redress. Require workers to sign codes of conduct vowing not to engage in dangerous, unethical, illegal, or abusive behavior and to intercede and report such behaviour if they witness it.
- Create a stand-alone policy promoting a positive vision for gender equality within the institution, and posting/referring to this policy frequently.
- Provide sensitization training on these matters on a regular basis, especially during on-boarding. Follow through on commitments made and track incidents and outcomes systematically.



### **Inclusive Procurement Practices**

- Support bid readiness for women-majority owned firms and small businesses. This can entail both general business development services and offering workshops on the mechanics of finding, scoping, costing, and responding to tenders.
- Check whether any other in-country registry maintains a list of firms majority owned or operated by women. Strike the right balance between reducing administrative burdens and certifying that firms are truly qualified according to the selected criteria.
- Include prominently placed language on tender documents stating that women majority-owned firms are encouraged to apply. This is a zero-cost activity that could also reference other marginalized groups (e.g. people with disabilities and ethnic minorities). For example, Indonesia Sarulla Geothermal Project.

## 2. ACTIONS: DESIGN AND IMPLEMENTATION

### Training for Workforce Diversification

- Before surface exploration and exploratory drilling begins, project teams can plan for reducing the gaps between men and women in on-site technical positions. This can be achieved by creating scholarships, apprenticeships, and mentoring programs for women at all skills levels.
- For example, the Geothermal Training Programme of the United Nations University (UNU-GTP) and Ethiopia case study.

### Ancillary Infrastructure

- Secondary investments in infrastructure, if thoughtfully designed, can benefit men, women, and children in the project-affected communities. Deciding how to prioritize the investments and design, build, and maintain the infrastructure is best handled through consultations and planning that includes women.

### Direct and Productive Use Applications

- Early on, project developers should engage the services of a productive-use expert to determine potential applications in nearby communities, such as electricity, process heat, liquid water, and steam, along with the technical and economic feasibility for secondary businesses, such as greenhouses, irrigation, food processing, and industrial applications.



“There is nothing more satisfying than drilling a well to completion within the planned duration and seeing it productive...

I can't express the excitement and satisfaction when you see steam gush out of the deep well.”-Phyllis Gathone Mathenge



# 3. MONITORING AND EVALUATION

## Worker Health and Safety

Gender Issue Area	Indicator Example	Monitoring Consideration
Lack of protective gear suitable for female bodies and responsive to local customs for modesty	Sex-appropriate occupational clothing available (Y/N)	Health and safety officers report bi-annually or annually on availability of sex-appropriate occupational clothing available at site. Key is also investigating the use of the clothing available and user feedback.
Perpetuation of harassment and gender-based violence (GBV) at project site by workers	Percentage of staff at project site who have completed training on GBV codes of conduct	Reporting bi-annually or annually on percentage of staff at project site who have undergone training on GBV codes of conduct. Training attendance should be monitored through sign-in sheets and tracking of number of workers attending against the number of workers on site at a given time period.

## Procurement Practices

Lack of awareness of geothermal sector opportunities by firms that are majority women owned or operated (e.g. on bids)	Number of information sessions held for women business associations and firms that are majority women owned or operated	Set a target for the number of information sessions to cover and the content (e.g., sector opportunities, risks, bid application process) for firms that are women owned or operated. Report on number of information sessions held bi-annually or monthly, as appropriate, during relevant project cycle stage.
Limited expenditure under project on firms or small businesses that are majority women owned or operated	Percentage expenditure on firms that are women owned or operated	Set a percentage target that seems feasible as part of nonprice factors in bidding evaluation to foster potential increase in expenditure to firms that are women owned or operated. Embed this target as part of other factors that are part of the overall evaluation process.

# 3. MONITORING AND EVALUATION

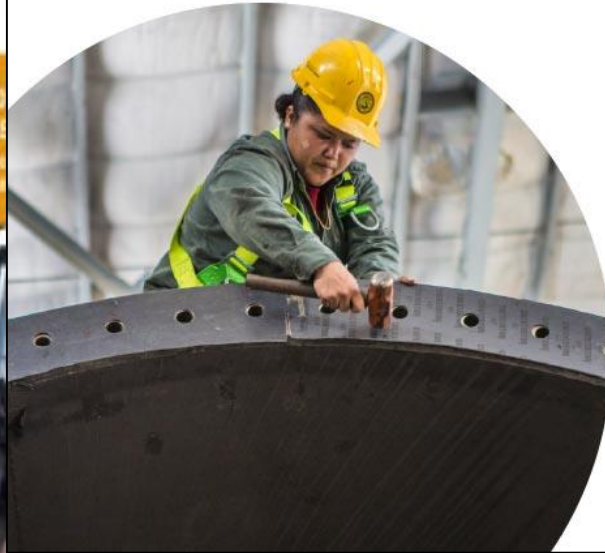
## Workforce Diversification

Gender Issue Area	Indicator Example	Monitoring Consideration
Gaps between men and women in opportunities for training and/or apprenticeships	Number of trainings completed, of which allocated to women (baseline percentage and target)	Assess the training needs between men and women and any gaps between the opportunities given to either. Track progress toward improved parity in the allocation of training opportunities between men and women (e.g., in an institution or company). Include questions on sex in application process, tap diverse networks to advertise opportunities, and possibly earmark percentage of training opportunities for women.
Gender gap in women's employment in the geothermal sector	Percentage of women employed (percentage baseline and target)	Assess the gap between men and women in employment, ideally by grade, role, and department. Track progress through staff survey or other human resource records to track progress toward closing the gap. Consider setting a target and annual reporting against that target. Interventions focused on enhancing women's employment could include looking at such issues as workplace culture, parental leave, and GBV. Ensuring toilets and dormitories have been renovated to accommodate men and women is also important.
Increase ratio of women to men in senior management in (number of years)	Ratio of women to men in senior management (baseline ratio and target)	Assess the gap between men and women in employment, ideally by grade, role, and department. Track progress toward closing the gender gap in leadership. Interventions focused on enhancing women's leadership could include leadership training, reform of human resources policies, and senior leadership commitment through high-level policy or annual certification.

# RESOURCES



**ADVANCING GENDER IN THE ENVIRONMENT:**  
GENDER-RESPONSIVE GEOTHERMAL GENERATION  
Powering energy and social benefits in El Salvador



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## Meet A Young Woman Engineer in an Indonesia Geothermal Power Project

Video | 8 March 2018



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## Tag: Reykjavik Energy

### Closing the energy gender gap


Bjarni Bjarnason, CEO of Reykjavik Energy points out that the traditional energy utility is underutilising a big resource by mostly picking men out of the talent pool. Reykjavik Energy is ...



**GETTING TO GENDER IN ENERGY INFRASTRUCTURE**  
Lessons from Electricity Generation, Transmission, and Distribution



**BUILDING A SAFER WORLD**  
TOOLKIT FOR INTEGRATING GBV PREVENTION AND RESPONSE INTO USAID ENERGY AND INFRASTRUCTURE PROJECTS



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# WHAT IS NEXT



**Two Full Scholarships Allocated for Studies at UNU-GTP through a Partnership with Iceland**

**Workshop in Guadeloupe (March 2019) Advancing Gender Equality in Sector**

**WINGman Special Taskforce in Latin America at GEOLAC and El Salvador with GIZ**



# Thank You!

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