



TECHNICAL
REPORT

POWER WITH FULL FORCE

Getting to Gender Equality in the Hydropower Sector

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Abbreviations

CEO	Chief Executive Officer
EDI	Equity, Diversity, and Inclusion
EDGE	Economic Dividends for Gender Equality
EPM	Empresas Públicas de Medellín
ESMAP	Energy Sector Management Assistance Program
FGD	Focus Group Discussion
FLOW	Future Leaders of Waterpower
GWNET	Global Women’s Network for the Energy Transition
IEA	International Energy Agency
IHA	International Hydropower Association
IRENA	International Renewable Energy Agency
LGBTQ+	Lesbian, Gay, Bisexual, Transgender, Queer and others
OECD	Organization for Economic Co-operation and Development
SDG	Sustainable Development Goal
STEM	Science, Technology, Engineering, and Mathematics
SELWN	Sarawak Energy Leading Women Network
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
WBG	World Bank Group
YPH	Young Professionals in Hydropower

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

Glossary

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).
Feminism	“Belief in and advocacy of the political, economic, and social equality of the sexes expressed especially through organized activity on behalf of women’s rights and interests” (Merriam-Webster, n.d.).
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.
Gender Bias	Gender bias is behavior that shows favoritism toward one gender over another. Most often, gender bias is the act of favoring men and/or boys over women and/or girls (Rothchild 2007).
Discrimination	Can be interpreted for the purpose of this report as a violation or limitation of a person’s rights (human or other legal rights) simply because of who they are and/or what they believe; discrimination, among other harmful impacts for the individual and community, perpetuates inequality (Amnesty International 2023).
Gender Equality	Equal rights, responsibilities and opportunities of 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 and others 1999). Equity recognizes the potential of each individual regardless of their gender and requires that equality between genders is achieved in an environment that is adequate, safe and that each gender can enjoy in dignity.
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 and distribution of power between male and female, to achieve gender equity and equality.
Gender Parity	Refers mainly to the ratio of female versus male in a specific setting (EIGE n.d.) and differs from gender equity because it looks at the baseline and the final result, rather than processes necessary to achieve gender equality.
Gender Roles	A set of social norms that are considered appropriate for a specific gender group.
Life Cycle	Socially, the life cycle is the age-related sequence of stages a person passes through from birth to death. Life cycle definition recognizes that humans are natural biological organisms that are born, mature, and die.
Masculinity	Masculinity can be defined as what a society tells about men and “how to be a man”. The term should not be used as a synonym for men or male. It refers to the social meaning of manhood, which is constructed and defined socially, historically and politically, rather than being biologically driven. There are many socially constructed definitions for being a man and these can change over time and from place to place (UN Women 2014).
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).

(continues)

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.).
Social Norms	Collectively agreed standards and rules that most members of a group or society adhere to and accept.
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). Access to opportunities and resources, to decision making (processes), control over such assets inside the home or in public life and ability to meaningfully engage, contribute to and benefit from economic and social developments are all characteristics of power (ElGE 2023). Each of the components are traditionally reserved for men, requiring organized action to ensure women can gain and maintain control over their own lives and make choices without fear. Such action defines the empowerment of women (and girls; especially when referring to education).
Work–Life Balance	The amount of time an individual spends doing a job compared with the amount of spent time doing things they enjoy.

Foreword

Hydropower, when developed in a sustainable manner, is an important renewable resource that can deliver energy at affordable and competitive prices while helping countries meet climate change targets.

However, while the hydropower sector is expected to employ 3.7 million people in 2050, the share of women in the sector's labor force is only 25%. While studies have shown that building an inclusive and balanced workforce that offers equal opportunities for both men and women is economically and socially beneficial, the hydropower sector does not leverage the talents and skills of diverse individuals.

The employment landscape in the energy sector is predominantly male dominated, including the renewable energy industry. Although the renewable energy sector employs more women than the oil and gas sector, their representation still falls below their share in the overall economy. Additionally, the hydropower sector presents unique barriers for women, due to its established nature and an aging workforce, it is often perceived as less dynamic and has a conservative corporate culture. Furthermore, gender biases, the labor-intensive, technical nature of hydropower and the requirement for frequent travel to remote sites pose challenges for women in balancing work and family responsibilities.

To overcome these barriers, the hydropower sector must address existing challenges, access a diverse talent pool, and explicitly endorse gender equality. Advancing gender equality in the hydropower sector has the potential to contribute not only SGD 5 (gender equality) improving women's lives but also SGD 8 (decent work and economic growth) and enhance business performance.

In pursuit of this goal, the World Bank's Energy Sector Management Assistance Program (ESMAP) conducted a comprehensive study on women's labor participation in the hydropower sector. This publication provides a condensed overview of the study's findings, presenting a baseline assessment of gender equality in hydropower and offering best practice approaches to promote gender equality within the sector.

The study draws upon an extensive information gathering and analysis effort, including literature reviews, online surveys, interviews with stakeholders, and case studies. It highlights the main barriers faced by women in the sector and presents key recommendations to advance gender equality in hydropower. These recommendations are applicable at the institutional level within the sector and can also be integrated into project design and implementation by the World Bank's stakeholders.

Identifying and understanding the main barriers to achieving gender equality in the hydropower sector is a critical step toward progress. Among these barriers, we found gender biases, a low proportion of women with relevant STEM skills, a bias by senior management favoring men,

and an unwelcoming workplace environment. These barriers affect women's entry, retention, and progression within the sector and require comprehensive and targeted interventions presented through the recommendations.

By embracing these recommendations and taking concerted action, the hydropower sector can pave the way for a more inclusive and equitable future. Gender equality is not just a matter of justice and fairness but a strategic imperative that drives innovation, productivity, and sustainable development. We hope that the insights and recommendations presented in these pages contribute to the advancement of gender equality in the hydropower sector, enabling it to realize its full potential as a catalyst for a low carbon energy transition.

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Executive Summary

To fulfill its crucial role in the transition to low carbon energy systems, the hydropower sector must be able to access the broadest possible pool of talent. That necessitates expanding education and training programs aimed at building an inclusive and balanced workforce to ensure that the creation of new, high-quality jobs benefit men and women equally.

To assess the current status of women's participation in the hydropower sector, the World Bank's Energy Sector Management Assistance Program (ESMAP) performed this study with a twofold purpose. First, to establish a baseline for gender equality in hydropower and report on women's employment in the sector; and second, to identify best practice approaches to promote gender equality. The conclusions of this study are based on an extensive information gathering and analysis effort composed of a literature review, online surveys, interviews with stakeholders, and case studies. The study identifies the main barriers and presents key recommendations with a view to advance gender equality in the hydropower sector. These recommendations can be replicated by the sector and World Bank clients at the institutional level, as well as during project design and implementation.

Among the findings of this study, lack of gender diversity is recognized as one of the barriers to the attainment of gender equality. A survey carried out with professionals working in the hydropower sector in the process of this research from 2021 to 2022 shows that, while diversity is generally perceived as important, it is significantly more important for women (Figure ES.1). As this study will also show, equality not only contributes to a sense of personal security and wellbeing, including job safety, but can also inspire more women to seek and commit to jobs in the hydropower sector. Other studies have shown that gender equality promotes gender diversity at the workplace (Giannetti and Wang 2022), altogether increasing the benefits for the organization and the employees. In fact, gender diversity benefits the quality of the environment at work while it serves as a platform from which to hear about different opinions, workstyles, and ideas. Organizations such as McKinsey (2020) have studied the impacts of gender and diversity across a range of different organizations. One of the most

TABLE ES.1

Survey Results: Share of Women in the Hydropower Sector



**Share of Women in the
Hydropower Sector**

25%

Source: World Bank data.

important McKinsey findings over the past decade has been the strong relationship between gender and diversity in executive teams and the likelihood of financial outperformance.

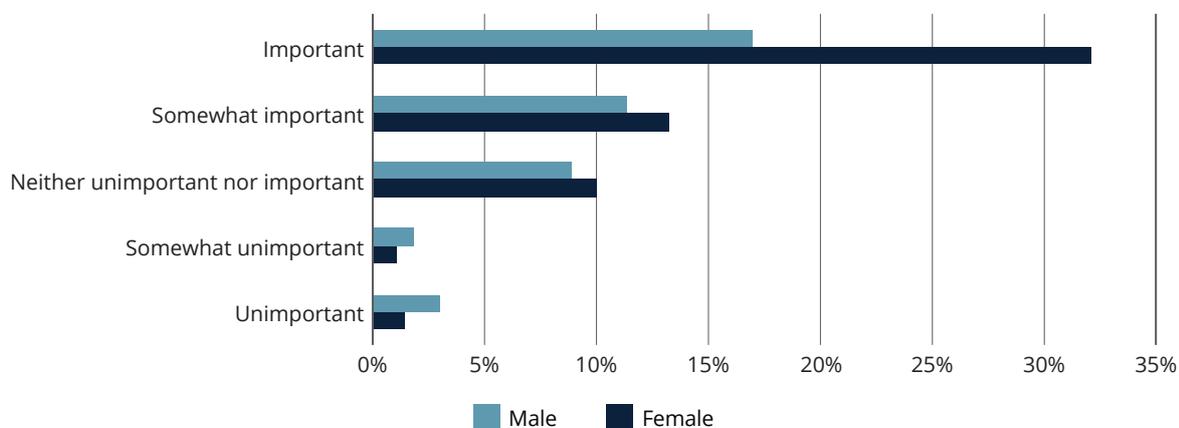
Representation of Women in the Hydropower Sector

The results of the corporate survey showed that at 25 percent, the share of women in hydropower is lower than in the renewable energy sector overall, where 32 percent of jobs are held by women (IRENA and ILO 2021). The individual survey results, Table ES.2, also revealed that of the women in hydropower companies, 21 percent are in technical positions (engineers, environmental scientists, and field-based roles) and the remainder in nontechnical positions (administrative, commercial, sales, marketing, human resources, and finance). There are thus four times as many women in nontechnical roles as in technical roles.

Nontechnical positions are key to the functioning of any company and are not intrinsically less important than technical positions. However, women have already almost reached parity in

FIGURE ES.1

Perception of the Importance of Gender Diversity (for Self), by Sex/How Important is Gender Diversity in the Workplace to Your Company, to You?



Source: World Bank data.

TABLE ES.2

Survey Results: Distribution of Women by Type of Role



Source: World Bank data.

these types of positions, so this report will focus on that large gender gap—21 percent versus 79 percent—between technical and nontechnical positions. Furthermore, technical career paths are most likely to lead to senior management positions: this may be one explanation for the underrepresentation of women in mid-level and senior management positions as shown in Table ES.3. Another explanation is that women may be less likely to receive promotions than their male peers.

A comparison between female and male respondents' self-reported current career levels for different age groups shows that the shares of men and women in entry- and mid-level positions are almost equal in the Under 25 age-group. The survey shows that as they get older, men are more likely to achieve career progress than their female colleagues. In the 55 to 65 age group, the share of men in executive positions (24 percent) is more than double that of women in the same positions (11 percent).

TABLE ES.3

Survey Results: Distribution of Women and Men in Managerial Positions in Hydropower Companies

ROLE	SHARE OF WOMEN (%)	SHARE OF MEN (%)
Boards of Directors	19	81
Senior executive positions (CEO, VP, Chief Financial Officer, for example)	24	76
Mid-level management positions (directors of units, for example)	29	71

Source: World Bank data.

Main Barriers to Achieving Gender Equality

Given the hydropower sector's timid efforts to advance gender equality, women are still underrepresented, especially in senior management and executive positions. Table ES.4 shows the barriers to gender equality in hydropower (market sounding 2022), as selected by female and male respondents to the survey. It was notable here and elsewhere in the survey that men were more likely to identify barriers that fall at least partly under women's own control, such as the fact that few women study STEM subjects, or women's relative lack of awareness of or interest in the sector. Women, on the other hand, were more likely than men to focus on barriers outside their control, such as bias and cultural norms holding them back. This "bootstrap mentality" of some men toward gender equality was visible throughout the survey and also in some comments received when the study was announced.

Some of these barriers result in fewer women entering the hydropower sector, whereas others lead to fewer women staying or progressing once in the sector. Although some differences between countries, companies, and generations exist in terms of the relative significance of these barriers, remarkably similar experiences were shared by women of all ages and from countries around the world through the survey and interviews.

TABLE ES.4

Perceived Barriers to Women’s Participation in the Hydropower Sector, by Sex

	SELECTED BY WOMEN PARTICIPANTS	SELECTED BY MEN PARTICIPANT
1	Low proportion of women with relevant STEM skills	
2	Lack of female role models in different types and levels of roles	Lack of awareness among women of opportunities in the hydropower sector
3	Lack of awareness among women of opportunities in the hydropower sector	Lack of interest among women in the possibility of working in the hydropower sector
4	Bias by senior management in the hydropower sector in favor of employing men	Lack of female role models in different types and levels of roles
5	Workplace environments that are unwelcoming to women	

Source: World Bank data.

The literature review, online surveys, interviews, and focus group discussions revealed five main barriers to gender equality in the hydropower sector:

1. **Low proportion of women with relevant STEM skills:** In most countries, women are still underrepresented in science, technology, engineering, and mathematics (STEM) degree programs; on average only 20 to 30 percent of STEM students are female. Widespread traditional views persist of the hydropower as an industry reserved for men: families invest less in girls’ schooling (Shahidul and Zehadul Karim 2015) and actively discourage girls from attending schools that will put them in competition with men. In more conservative environments, where a girl is expected to marry, attending schools that are regarded as meant for men, or too masculine, can even call into question a girl’s reputation. At the same time, the community and the sociocultural environment, including the education sector, do little to change such attitudes, and at times actively contribute to it, expecting a girl to drop out (as she will marry) and giving more attention to teaching boys (Shahidul and Zehadul Karim 2015). Thus, girls are faced with a twofold challenge when selecting schools. First, they need to convince their family that their support will bring benefits. Second, they need to navigate through an educational system that provides very little (if any) equity, and few adequately gender-responsive facilities or teaching methods. Such a discouraging context results in very limited numbers of women in STEM programs and allows the persistence of forbidding or intimidating aspects of the field, and barriers faced by women who would otherwise be promoted to higher and leadership positions. The final result observed is a shortage of qualified women available for employment in the hydropower sector, creating at the same time a pipeline challenge: fewer women than men enter the sector at a junior level, leading to fewer women being considered for more senior positions as they progress. This is compounded by the other key barriers.
2. **Lack of female role models:** The lack of female role models in hydropower makes it difficult for women to envision a career in the sector or to find mentors and sponsors within their places of work or organizations. Both women (51 percent) and men (39 percent) ranked this as one of the top barriers to gender equality in the sector.

3. **Bias by senior management in the hydropower sector in favor of employing men:** Prevailing perceptions of gender roles prevent many women from entering and/or staying in the hydropower sector; they vary, including the view that women are not as strong as men, or not as analytical, among others. These perceptions contribute to gender inequality in several ways, including by preventing women from seeing hydropower as a viable career option and by generating negative assumptions about their ability to perform once they are in the sector. Hydropower as an industry is viewed as less suitable for women because it is labor-intensive, technical, and engineering-focused.
4. **Lack of awareness among women of opportunities in the hydropower sector:** Women are not always aware of the extent to which they can benefit from the formal and informal systems, behaviors and values a company encourages its employees to represent and embody, including dissemination and gender-neutral advertising practices. When a company understands and implements gender equality policies that result in closing the gender gaps, such as promotions, spaces for leadership, and decision-making, among others, it makes for a better atmosphere and work environment. Moreover, a healthy workplace environment can help to improve performance, health, and satisfaction.
5. **Workplace environments that are unwelcoming to women:** Opportunities for women to work on these facilities are often constrained by practical difficulties that are interwoven with social and cultural expectations. These remote locations may be considered unsafe for women (and sometimes actually are), especially if women are only present in small numbers, and appropriate facilities and safety equipment for women are still lacking. The fact that these locations are at times unsafe for women (but safe or safer for men) gives a signal to women that this is a sector that has little interest in adapting for working women; on the contrary, the sector evidently expects women to adapt to it, and indeed only enter it if and when they are ready to accept any consequent challenge to their safety, family life, parenthood or wellbeing.

There is a commonality to all the barriers listed above. The reason behind them is the initial context of inequality that results in (predominantly male) decision-makers defining the space for the engagement of women: in the family, community, public sphere, and industry. However, the systems, norms and decision-makers are in reality eminently able to enhance the safety of workspaces, ensure that awareness of opportunities increases, ensure that the existing female workforce in the industry is given space to lay claim to its achievements and lead others to similar successes; ensure a learning environment welcoming to girls interested in STEM, and a career path just as stable for mothers as it is for fathers. This situation inevitably underlines the current preponderance of men in decision-making positions (for example, see here for parity of women and men in economic decision-making positions), and thus their vital role in achieving gender equity.

Recommendations

This study shows that, in order to achieve equality in the hydropower sector, it is necessary to ensure equity in skill building (that is, gender-responsive teaching and facilities) and in the implementation of hydropower projects. This could be

achieved by, for example, considering family unity, ensuring that remote field work maintains standards of safety for women, ensuring continuous education and awareness among staff of a respectful working environment, ensuring the presence of female role models in industry and academia and so forth. Section 4 of this report, proffers a series of recommendations to address gender inequalities, including several initiatives and actions to be supported by various stakeholders. From among these, the following are five key recommendations proposed to address the gender gaps and barriers that persist:

- 1. Remove barriers to education that constrain the number of women who pursue STEM degrees:** Many interview participants and survey respondents considered the fact that women are still a minority in STEM programs a major barrier to equality in the sector. Since hydropower requires a variety of STEM skills, it is difficult for hydropower companies to recruit more women if too few are graduating with the required degrees. Creating a welcoming environment and normalizing women studying STEM subjects would give women more opportunities to leverage learning and skills in rewarding careers (Scheiber & Tomiotto 2018). If the number of qualified women entering the hydropower sector is to increase, then it will be vital to actively encourage women and girls to study STEM subjects by ensuring their access to information, raising awareness of their own potential in the sector, ensuring welcoming and gender-inclusive teaching environments, and hiring female teachers.
- 2. Identify gender gaps in the workplace and enact policies to close them:** The first step in addressing gender inequality in the hydropower sector is for stakeholders (governments, academia, utilities, companies, and civil society) to acknowledge that it exists. The second step is to investigate it. The third step is to undertake gender mainstreaming, which is a mechanism for gender to be systematically assessed and integrated into corporate decisions and processes. Assessing how an organization's operations affect women and men differently and implementing more inclusive workplace policies is important to materially improve women's employment opportunities and experiences.
- 3. Raise awareness to promote hydropower as an appealing career for women:** The 2020s present a massive opportunity for the hydropower sector not only to assert its position as a driver of the energy transition but also to shake off its image as an old, traditional, male-dominated sector and spark the imaginations of environmentally conscious current and future generations. It has the opportunity to become a frontrunner in gender equality by telling the stories of the women working within it, encouraging them to share with the wider world their adventures, their enthusiasm, and their pride as hydropower ambassadors. Many actors can participate in the promotion of hydropower as an attractive sector for women to pursue careers in; first and foremost, among these actors is the hydropower industry itself.
- 4. Provide mentoring, role models, networking, and leadership opportunities for women:** Mentoring is an effective and increasingly popular mechanism through which to promote women's professional development, by helping women build important soft and hard skills, expand their networks, interact with role models, find acceptance and affirmation, and ultimately achieve career success as leaders in the sector. The sector

decision-makers should ensure that women in the sector are the leaders of change. It is important to keep in mind that female colleagues in hydropower are in the best position to lead progress toward gender equality and diversity, having for years been affected by their absence (see Figure ES.1 above). Existing female professionals in the sector are able to identify the gaps, design solutions and educate the sector about the importance of equity and equality: in particular, the short-term and long-term benefits for the company, employees and the community. Thus, each hydropower company (but also related STEM programs at the universities) can benefit from the potential currently latent within their workforce, create opportunities for them to guide the change, and at the same time inspire more women to join the workforce in hydropower.

5. **Include more men in the gender inequality discussion and encourage them to be proactive in reducing the gap:** Closing gender gaps in the hydropower sector requires the efforts of many stakeholders. The results have shown once again that it is imperative for men to act as allies and to form part of the solution to achieve gender equality in hydropower. Since men continue disproportionately to influence workplace environments, their recognition of gender biases and their leadership in promoting gender equality can have a powerful impact. It is important for the industry and stakeholders to acknowledge that gender gaps exist, gather necessary data, implement concrete measures, evaluate their effectiveness, and share evidence regarding what works.

Organizations seeking inspiration on how to enact these recommendations can look toward the regional network for practitioners in the energy sectors in South Asia (WePOWER). It was established by the World Bank in 2020 in order to increase opportunities for women in energy projects and at the corporate utility level. STEM education, recruitment, development, and retention were the four main pillars (World Bank 2020a).

It is important to note that the data from the individual survey is based on self-assessment. This study principally reflects perceptions and observations. Although these are valuable, future work could establish objective realities of the sector based on comprehensive data collection from human resources (HR) departments of hydropower industry players.

The hydropower sector around the world has already made some strides in improving working conditions for women and men, and several examples are given as case studies throughout this report. Many women interviewed during the study expressed great enthusiasm for their work and this study highlights the opportunity for the hydropower sector to reassert its position in the global energy transition and become a gender equality frontrunner.



ONE HYDROPOWER AND GENDER

Purpose and Approach of the Study

The World Bank is committed to gender equality. The institution is acutely aware that to reduce poverty, and to share prosperity, work toward gender equality is needed. Evidence shows that women play an important role in improving societies and ensuring a better future. To cite a single counterfactual example, if Latin American and Caribbean female labor income had not risen during the first decade of the 21st century—if it had remained constant—then by 2010 extreme poverty in the region would have been 30 percent higher than was in fact recorded (World Bank 2012). Moreover, interventions that result in crucial development impacts, such as poverty reduction, are more effective when deliberately structured along the women's life cycle.

Women face barriers throughout their lives, resulting in gender gaps in education, skills, labor force participation, wages, wealth, and agency. It is particularly relevant for the energy sector to pay attention to this issue, given that it needs to attract more talent to overcome the challenges the industry experiences. Increasing women's participation at all levels will benefit societies, but actions to narrow gaps should carefully consider constraints women face from early childhood and through education. Globally, women are underrepresented in science, technology, engineering, and mathematics (STEM) jobs because, at its simplest—but for a multiplicity of reasons—too few women study STEM subjects. Meanwhile, STEM jobs (not least across the energy sector) are the cornerstone of countries' economic and social prosperity. In other words, beyond the resulting income disadvantage for women because they have less access to these careers, the gender gap in STEM, and related technical pursuits, is also a missed opportunity for economies and development (Hammond et al. 2020).

The energy sector and its subsectors such as hydropower have been working across thematic areas to identify gender gaps and barriers in different contexts. As presented in this study, the limited labor and decision-making participation of women in the hydropower sector is a consequence of gender biases, a lack of training opportunities for women, inadequate policies to attract, retain and promote women, workplace inflexibility, unequal pay, and lack of role models.

In addition, the current and relevant jobs in the hydropower sector should be aligned with the Climate Change priorities in order to overcome the global crisis from whose impacts no country is immune (World Bank n.d.). As governments and other relevant stakeholders are working to adopt more clean and sustainable sources of energy, hydropower gains space as a critical active actor beyond providing reliable electricity access: it is a channel through which to address and mitigate the effects of climate change.

Under the Paris Agreement on Climate Change, 196 parties have committed to limiting global warming to well below 2°C by 2100, preferably to 1.5°C (UNFCCC n.d.) to avoid the worst effects of climate change, and over 100 countries have committed to achieving net zero emissions by 2050. Reaching these targets will require rapid decarbonization of the global economy. Renewable energy generation, and hydropower in particular, will be a key

enabler of this decarbonization effort. Hydropower, sometimes called “the forgotten giant of the renewable sector” (IEA 2021), represents approximately 16 percent of global electricity generation and almost two-thirds of renewable electricity generation today. Hydropower generation must double by 2050 to meet the goals of the Paris Agreement (IEA 2022).

As the number of jobs provided by the renewable energy sector is expected to grow from 12 million to 43 million by 2050 (IRENA and ILO 2022), it is important that companies can access the broadest possible pool of talent, which includes both women and men, and that the creation of new, high-quality jobs, including in remote areas where economic opportunities are scarce, benefits men and women equally. In recent years, several organizations have published studies on women’s participation in the renewable energy sector, spurred by the sector’s current and prospective rapid growth. These indicate that globally, women make up only about one third of the workforce in this sector (NASEO 2019 and IRENA 2019).

No global baseline study has been done on women’s participation in the hydropower industry, despite its unique characteristics and its significance in terms of installed capacity and electricity generation compared to other renewable energy technologies. Recognizing this gap, the World Bank’s Energy Sector Management Assistance Program (ESMAP) performed this study with a twofold purpose: first, to establish a baseline for gender equality in hydropower and report on women’s employment in the sector. A baseline serves to identify gender equality gaps, justify actions to address these, and to assess progress over time. Second, the study aims to identify and promote concrete best practice approaches to advance gender equality that can be replicated by the sector and World Bank clients at the institutional level, and during project design and implementation. For this study, the hydropower sector is understood to include all actors involved in the planning, design, construction, and operation of hydropower plants, thus including the manufacturing of electromechanical equipment and associated equipment (controls, governors, digital equipment), as well as civil works. The actors include not only utilities and the private sector, but also government departments, research and development institutions, and academia.

This report is the result of an extensive information-gathering exercise, which included a literature review, several online surveys, interviews with stakeholders, and the development of case studies. Targeted stakeholders were drawn from various parts of the hydropower sector and included representatives of operators, consultants, equipment manufacturers, and nongovernmental and governmental organizations. It is important to note that the data collected during the study is based on self-assessment. This study therefore does not aim to be exhaustively comprehensive; in the main, it reflects perceptions and observations. Future work could establish objective realities of the sector based on comprehensive data collection from human resources departments of hydropower industry players. Unless indicated otherwise, all statements herein are based on the analysis of the literature review, the survey, and the interviews conducted.

The survey was carried out from 2021 to 2022. It was promoted through several mailing lists from WB clients. It was advertised repeatedly on relevant social media channels. The project team also made a concerted effort to identify additional stakeholders and sent out targeted emails. Finally, requests to fill in the survey were spread during global events,

including at the 2021 World Hydropower Congress, and related social media channels, by the project team members and their colleagues.

The individual surveys received over 900 respondents, of whom 52 percent were women. Only two percent of the respondents were under the age of 25; 19 percent were aged 25 to 35 years; 28 percent aged 35 to 45; 24 percent 45 to 55; and 27 percent 55 to 65. These data were combined with the data received through the corporate survey, for a total of 65 corporate responses.

Characteristics of the Hydropower Sector

The hydropower sector is particularly worthy of study because it has several unique characteristics that may represent additional barriers to entry for women when compared to the renewable energy sector overall. These include the following:

1. Hydropower is an old, well-established technology with an aging workforce (NREL 2019), and this can lead to the perception that it is not very dynamic. Hydropower companies tend to be older and larger than solar or wind energy companies and display more conservative, less inclusive corporate cultures (Scheiber and Tomiotto 2018).
2. While renewable energy technologies such as wind and solar have relatively straightforward construction and operational frameworks, hydropower tends to be a much more labor-intensive, technical, and engineering-focused industry.
3. Technical roles during construction and operation in the hydropower sector can require frequent travel to or long periods at very remote sites (several months, often several years). Due to prevailing gender norms, combining such roles with family life remains more difficult for women than for men.
4. Hydropower's image has been tarnished by projects that have not respected the basic principles of sustainable development, causing environmental destruction and displacing communities without their consent or appropriate compensation. As a result, hydropower may be less attractive than other subsectors in renewable energy to people who wish to make a positive impact on society. A study by Pew Research has suggested that women are more motivated than men by "making a meaningful contribution to society" and "having a job focused on helping others"; therefore, this negative image of the hydropower sector may have a greater deterrent effect on women than on men (Funk and Parker 2018).

The hydropower sector must seek to dispel these negative images given its importance in achieving climate change and sustainable development targets, and its need to access the widest possible pool of talent to play its role effectively. Hydropower project development, implementation, and operation support several of the United Nations Sustainable Development Goals (SDGs), including SDG 6 (ensure access to water and sanitation for all), SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), and SDG 13

(climate action). The following positive characteristics, in particular, should be better known among the general public:

1. The transition to net-zero energy systems cannot be achieved without hydropower. In their energy outlooks, both IEA (IEA 2022) and IRENA (IRENA 2020) pointed to growth required in the hydropower sector to meet climate change goals. It is a low-emissions, reliable, flexible, and low-cost energy provider. Unlike variable renewable energy sources, hydropower can be dispatched, which means it can provide power on demand and help ensure grid reliability.
2. Hydropower offers exciting challenges. It encompasses a wide range of fields and themes, including bespoke engineering, economics, social issues, water management, biodiversity, automation, and digitalization. Few industries require the breadth of expertise that hydropower needs.
3. The hydropower sector, with its long history and, in some cases, large projects and infrastructure that can last over a century, provides stable, decent employment, including in remote areas where few other economic opportunities are available. According to IRENA, 2.2 million people worked in hydropower in 2020, and the sector will employ 3.7 million people in 2050 (IRENA and ILO 2022).

Hydropower, with its potential to contribute to global, sustainable development, like any other sector, can intensify its positive impact by explicitly endorsing gender equality as expressed in SDG 5, the only SDG that “sits at intersection of economic, social and environmental issues” (UNWOMEN 2022). Gender is a *commitment within a commitment* of all SDGs, reflecting its significance for local and global, lasting economic and social development. Working toward purposes and objectives of SDG 5, the sector can release a potential that is traditionally silenced within women, hence increasing overall opportunity for development.

Gender in Hydropower

Employment in the energy sector continues to be male-dominated, both in industrialized countries as well as low- and middle-income countries. While the renewable energy sector employs a larger share of women than the oil and gas sectors (32 percent versus 22 percent) (IRENA 2019) women’s share of employment in the sector still falls below their share in the economy at large, which stands at 40 to 50 percent in most OECD countries (Pearl-Martinez 2015). For example, in the United States, women make up 31 percent of the hydropower workforce (NREL 2022).

Within the renewable energy sector, women are particularly underrepresented in roles related to STEM (28 percent) and more likely to be employed in administrative roles (45 percent) (IRENA 2019). This pattern appears to be consistent throughout the world, although the total share of women in renewable energy varies among regions. For example, a study of renewable energy companies in Spain found that most women in the sector worked in sales and distribution,

followed by administrative positions, and finally engineering and technical roles (IRENA 2019). Findings from Ethiopia, Kenya, and Zambia showed that in these countries, women constitute 21 percent of the overall workforce in energy utilities but just 15 percent of technical staff. In Pakistan, the share of women was found to be lower: four percent in the overall workforce and two percent in technical positions (World Bank 2020).

Advancing gender equality in the hydropower sector is important for several reasons (the definition of gender used in this study can be found in Box 1.1). Not only does women's employment improve the lives of women: a study by the OECD has shown that in low- and middle-income countries, women tend to invest a greater share of their incomes in their families and communities than men (OECD 2010). Attracting more women to the hydropower sector has the potential to support not only SDG 5 (gender equality), but also SDG 8 (decent work and economic growth).

In addition, a range of academic and corporate studies have demonstrated that greater gender diversity—indeed, diversity in general—leads to improved business results. More women in business leadership results in better and more efficient decision-making, less risk taking, greater innovation, greater corporate responsibility, improved use of available talent, and higher profits (GWNET 2019b). In general, businesses with female leaders have higher rates of survival overall and were better able to weather the financial crisis of 2008 than the average (GWNET 2019b). During the COVID-19 crisis, women-led S&P 500 companies performed better and were considered less of a credit risk than those led by men (Saville 2021).

BOX 1.1

DEFINITION OF GENDER IN THIS STUDY

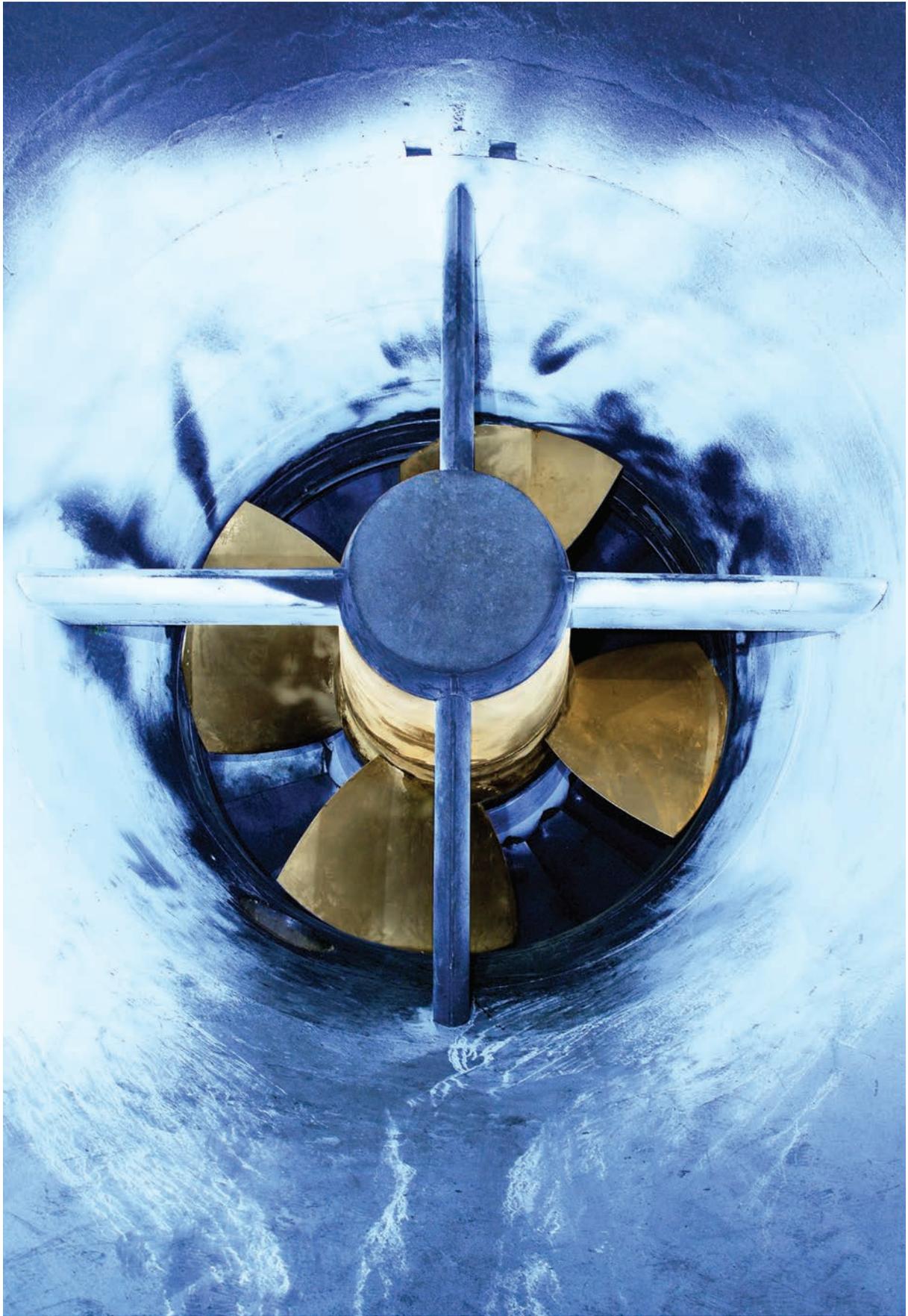
Gender refers to the social, behavioral, and cultural attributes, expectations, and norms associated with being male or female.

For this study, 'gender equality' focuses on the representation and roles of people identifying as male or female in the hydropower sector. Although the position of the LGBTQ+ and other diverse communities in renewable energy certainly warrants additional research, many of the recommendations in this report have the potential to improve working environments not only for women, but also for the LGBTQ+ community and other minorities, and, for that matter, men (World Bank 2016).

Furthermore, women's participation in the workforce is good for the economy as a whole; the Council on Foreign Relations estimates that closing the gender employment gap could add \$28 trillion to global gross domestic product (GDP) (Council on Foreign Relations 2021). Recognizing this, many nongovernmental organizations (NGOs) and networks have been created to promote and facilitate the employment of women specifically in the energy sector. Among these are: the Global Women's Network for the Energy Transition (GWNET); ENERGIA International Network on Gender and Sustainable Energy; the Women in Sustainability (WiS) initiative in India; the global organization, Women in Renewable Energy (WiRE); and WePOWER in South Asia.

However, the World Economic Forum (WEF 2021) has reported that the COVID-19 pandemic has reversed some of the gains made toward gender parity in labor force participation because of the disproportionate additional care burdens women have had to shoulder during lockdowns and the relative precariousness of many women's jobs. As more women tend to work non-regular contracts (for example, as cleaners and in hospitality), their employment is more vulnerable. In the United States, Germany and Australia, the unemployment rates of women rose more than the unemployment rates of men between December 2019 and April 2020 (WEF 2020). Not only have more women than men lost their jobs or had to quit, but the data also showed a sharp decline in the share of women hired for leadership roles. Similar observations were reported by UN Women (UN Women 2020), which also predicts that gender poverty gaps will worsen by 2030. As the COVID-19 crisis abates, employers, including in the hydropower sector, should make a renewed commitment to gender equality and community resilience by providing stable, crisis-proof employment to women.

As noted previously, in low- and middle-income countries, hydropower companies also have the potential to provide local opportunities for women. They may offer access to training and employment to support the operation of hydropower plants, and hydropower projects also increase economic activity in nearby communities by generating demand for services such as catering and childcare or enhanced tourism opportunities. This can help lift communities out of poverty, especially in remote locations. Improved infrastructure around hydropower plants, including access roads, improved access to water for households and irrigation, and better electricity supply, can also boost local economies and security for women and children. These can be specific provisions of benefit-sharing agreements or Social Development Plans that are built into the design of hydropower development projects. However, in many cases, these new opportunities, including jobs and financial compensation, end up primarily benefiting men. As women tend to suffer disproportionately from involuntary displacement caused by hydropower dam construction, companies should make a concerted effort to ensure women benefit from these projects to the same extent as men (Baruah 2016; IDB 2014 and ESMAP 2018).





TWO
WOMEN'S
EMPLOYMENT IN
THE HYDROPOWER
SECTOR

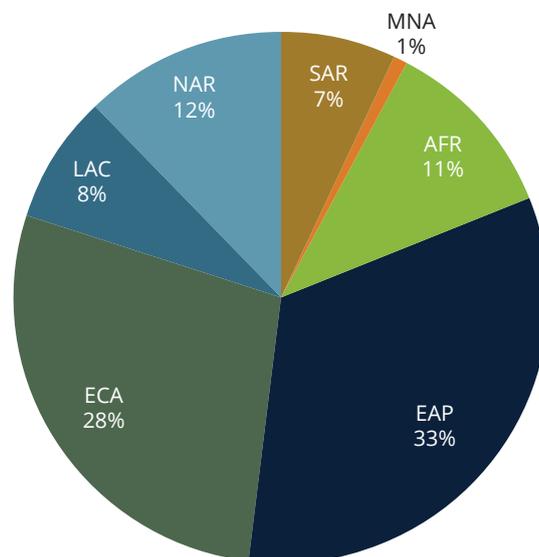
A Baseline Perspective

This section presents the global baseline that resulted from online surveys and a series of interviews and focus group discussions. The online surveys were carried out to collect quantitative data regarding the representation of women in the sector, as well as qualitative and quantitative insights about perceptions of gender equality and job satisfaction among women and men. In addition to the 468 women and 432 men working in the hydropower sector who completed the individual survey, 65 companies offered data on the gender balance of their staff through the corporate survey. Demographic information on the survey respondents is presented in Figure 2.1, Figure 2.2, and Table 2.1.

The interviews and focus group discussions, in which 40 women and 9 men participated, yielded more qualitative information on the barriers to women's entry into and advancement in the hydropower sector, and on policies and initiatives that have successfully supported women in the sector. Among the participants, all parts of the hydropower sector were represented, as well as academia, international organizations, and associations.

FIGURE 2.1

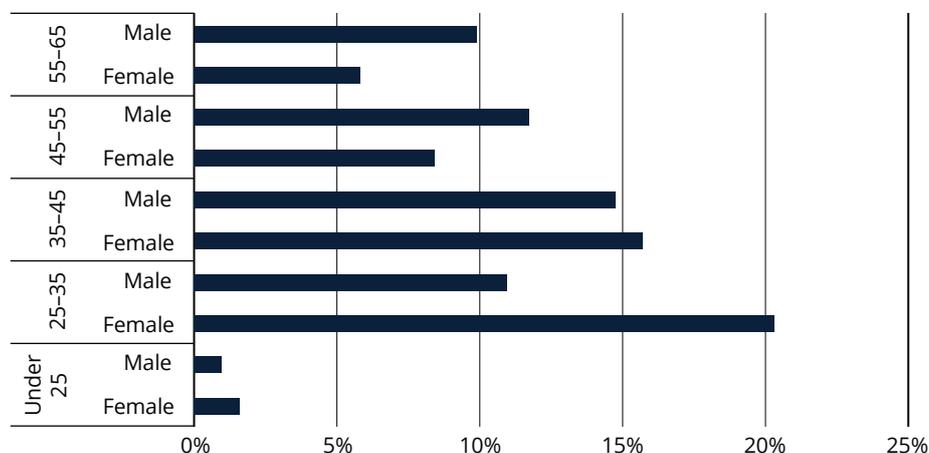
Distribution of Survey Participants in Hydropower Subsectors, by Regions



AFR – Africa; EAP – East Asia and Pacific; ECA-Europe and Central Asia; LCR – Latin America and the Caribbean; MNA – Middle East and North Africa; NAR – North America; SAR – South Asia

FIGURE 2.2

Distribution of Respondents, by Age Group and Sex



Source: World Bank data.

TABLE 2.1

Distribution of Survey Participants in Hydropower Subsectors, by Sex

	MANUFACTURING	SERVICES	UTILITIES	CONSULTANCY	OTHER	TOTAL
Male	10%	7%	19%	7%	6%	49%
Female	11%	8%	17%	7%	7%	50%
Other	0.3%	0.3%	0.2%	0.4%	0%	1%
Total	21%	15%	36%	15%	13%	100%

Source: World Bank data.

Representation of Women in the Hydropower Sector

The corporate and individual surveys showed that at 25 percent, the share of women in hydropower is lower than in the renewable energy sector overall, where 32 percent of jobs are held by women (IRENA and ILO 2022). Moreover, only 21 percent of these women have technical and engineering roles, with the remaining 79 percent in nontechnical positions (administrative, commercial, sales, marketing, human resources, and finance).

Nontechnical roles (including administrative and services, and so forth) are key to the functioning of any company and are intrinsically no less important than technical roles

(such as active engineers, mechanics, and so on). However, women have already almost reached parity in nontechnical positions, so future efforts to encourage women to enter the sector should be focused on opening up opportunities for women to pursue technical careers, including STEM, where there is still a large gap.

Moreover, during their career within the sector, women face a variety of constraints that tend to block off access to opportunities commonly open to men. GWNET (2019) signals that one explanation for this is that few women in hydropower companies are on the technical career paths that are most likely to lead to senior management positions. Another explanation for the underrepresentation of women in mid-level and senior management positions is that women may be less likely to receive promotions than their male peers. To understand the career trajectories of women in hydropower, survey respondents were asked how often they had been promoted throughout their career in the sector. Figure 2.3 presents the responses of women and men in all age groups. At the beginning of their careers (under 25 years) women tend to be promoted faster than men; however, as these employees get older, men obtain promotions more frequently than women. In the 45 to 55 age group, fewer than one in four female respondents (23 percent) had received more than two promotions over the course of their hydropower careers, compared to more than half (54 percent) of male respondents. In the 55 to 65 age group, only eight percent of female respondents had been promoted six to 10 times, compared to 23 percent of male respondents. Age group is being used here as an indicator of overall work experience, since many people enter the hydropower sector in intermediate or high-level positions after beginning their careers elsewhere, and thus can hold high-level positions after relatively few years of experience in the sector. These results show that women reported not achieving the same career progress as men of the same age. Though not fully comparable because of differences in methodology, these findings are aligned with those of McKinsey’s regular reports on Women in the Workplace. The latest of these found that in US companies, almost half (47 percent) of entry-level positions are held by women, but that men consistently receive more promotions, so that the share of women shrinks with every step up the corporate career ladder (McKinsey & Company 2021).

TABLE 2.2

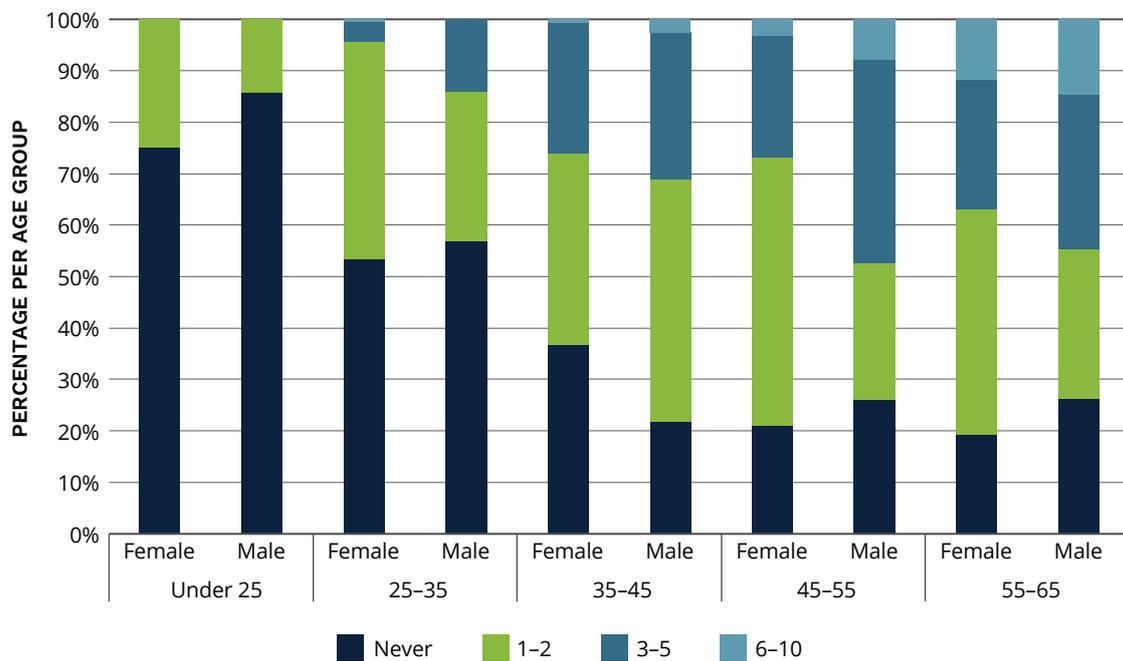
Survey Results: Distribution of Women and Men in Managerial Positions in Hydropower Companies

ROLE	SHARE OF WOMEN (%)
Boards of Directors	19
Senior executive positions (CEO, VP, Chief Financial Officer, for example)	24
Mid-level management positions (directors of units, for example)	29

Source: World Bank data.

FIGURE 2.3

Frequency of Promotion, by Age Group and Sex



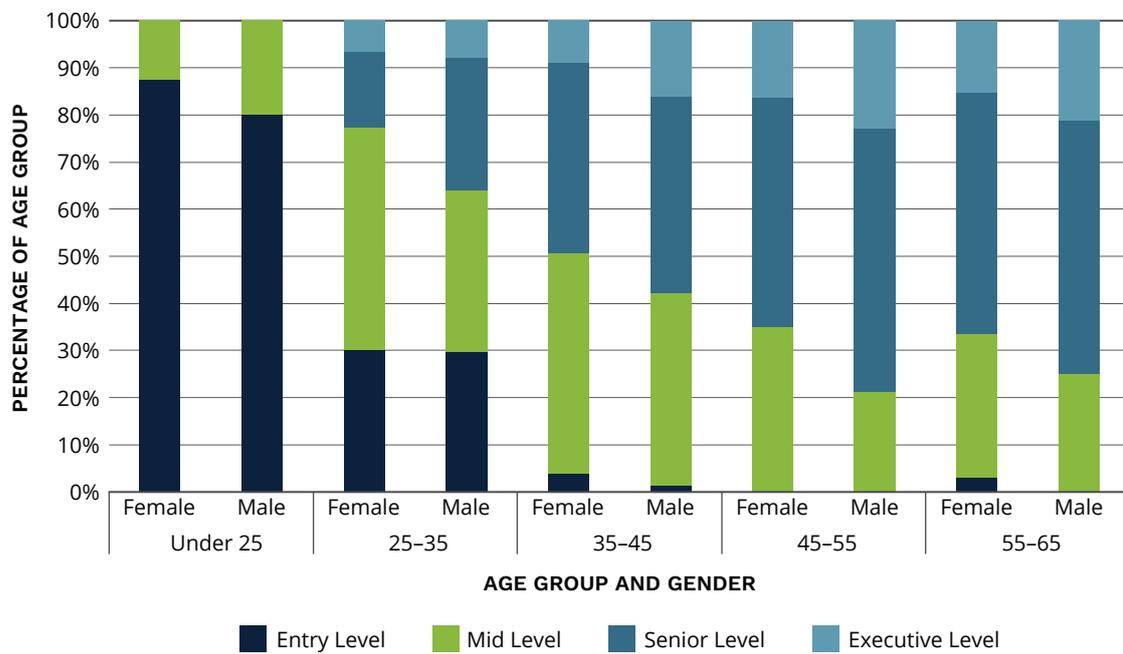
Source: World Bank data.

As seen in Table ES.1, the survey results show that women remain underrepresented at the mid-level and senior management levels of hydropower companies, as well as on boards of directors as only 29, 24 and 19 percent of those positions respectively are taken by women.

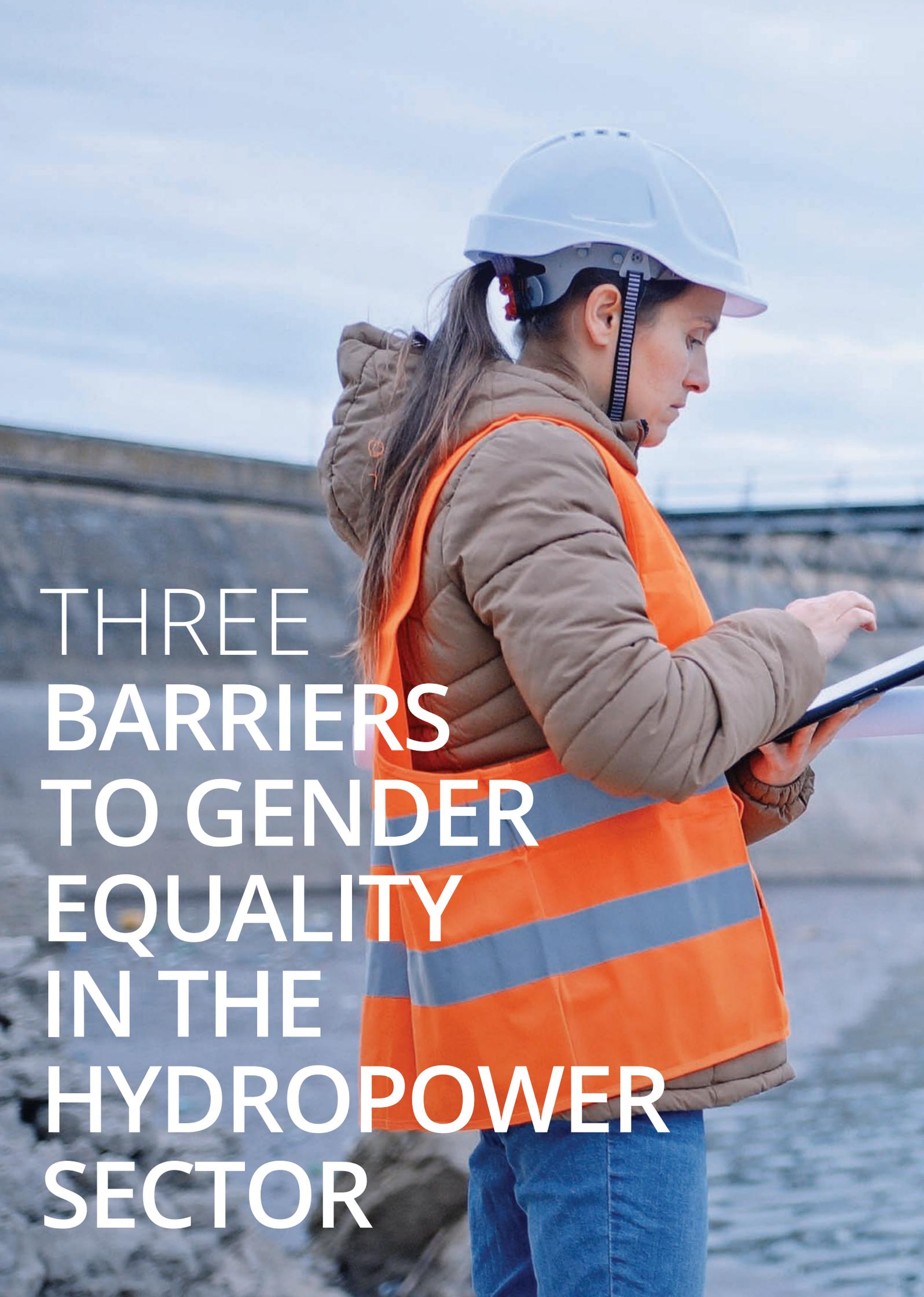
When comparing female and male respondents' self-reported current career levels for different age groups, a similar picture emerges (Figure 2.4). Although in the under-25 age group, the shares of men and women in entry- and mid-level positions are almost equal, the data show that as they get older, men are more likely to achieve career progress than their female colleagues. In the 55 to 65 age group, the share of men in executive positions (nine percent) is more than double that of women in the same positions (four percent).

FIGURE 2.4

Self-Reported Career Level of Survey Respondents, by Sex and Age Group



Source: World Bank data.



THREE
BARRIERS
TO GENDER
EQUALITY
IN THE
HYDROPOWER
SECTOR

Overview of Barriers

Despite efforts by the hydropower sector to advance gender equality, women are still underrepresented in the sector, especially in technical, senior management, and executive positions. **This section examines the causes of this gender gap.**

The literature review, online surveys, interviews, and focus group discussions revealed five barriers to gender equality in the hydropower sector: (i) social attitudes and educational systems traditionally giving preference to the education of men, resulting in a low proportion of women with relevant STEM skills; (ii) a lack of female role models in different types and levels of roles; (iii) a lack of awareness among women of opportunities in the hydropower sector; (iv) bias by senior management in favor of employing men; and (v) workplace environments that are unwelcoming to women.

Table 3.1 shows the barriers to women’s participation in hydropower most commonly selected by female and male respondents to the survey. For both women and men, the limited number of women with relevant STEM skills is the predominant barrier to women’s access to the sector. It was notable here and elsewhere in the survey that men were more likely to identify putative barriers which are partially of women’s own creation, such as the fact that few women study STEM subjects, or women’s relative lack of awareness of or interest in the sector. Both men and women recognized that the hydropower workplace is not a welcoming one for women. Women do not attribute that to any lack of technical or other skill, but rather that the work environment simply favors men. By contrast, as shown in other studies, men see the profession and environment as inappropriate for females (Peterson 2010). Meanwhile, women were more likely than men to focus on barriers outside their control, such as bias and cultural norms holding them back. This “bootstrap mentality” of some men toward gender equality was visible

TABLE 3.1

Top Five Perceived Barriers to Women’s Participation in the Hydropower Sector, by Sex

	FEMALE	MALE
1	Low proportion of women with relevant STEM skills	
2	Lack of female role models in different types and levels of roles	Lack of awareness among women of opportunities in the hydropower sector
3	Lack of awareness among women of opportunities in the hydropower sector	Lack of interest among women in the possibility of working in the hydropower sector
4	Bias by senior management in the hydropower sector in favor of employing men	Lack of female role models in different types and levels of roles
5	Workplace environments that are unwelcoming to women	

Source: World Bank data.

throughout the survey and also in some comments received when the study was announced (see also Box 3.1).

Some of these barriers result in fewer women entering the hydropower sector, whereas others lead to fewer women staying or progressing once in the sector. Though some differences exist between countries, companies, and generations in terms of the relative significance of these barriers, **the experiences that women of all ages and from countries around the world shared through the survey and interviews were remarkably similar.**

This study also confirms that, although many of the challenges encountered by women in hydropower are similar to those women face in other parts of the renewable energy sector, several key differences between hydropower and other renewable energies constitute distinct barriers to gender equality. These distinct barriers are: (i) the large size, long history, and conservative nature of many hydropower companies relative to other renewable energy companies, which result in slower progress on diversity and inclusion; (ii) hydropower's reliance on heavy machinery and industrial facilities, which may be viewed as less suitable workplaces for women than most renewable energy facilities; and (iii) the requirement for technical staff to spend long periods at remote sites during the construction and subsequent operation of hydropower facilities.

Gender Bias, Perceptions of Gender Roles, and Gender Norms

"In our culture, there are careers for men and careers for women."

– Interviewee

Gender roles related to the position of women in society, as well as ingrained social perceptions of the ability of women to perform technical jobs or be effective leaders, form a significant barrier to women entering and succeeding in the hydropower sector. Gender roles are a social construct, yet they affect not only how men view and treat women and their own perception of what is appropriate for men, but also how women perceive

other women and themselves. Such perceptions are reflected in norms (traditional, religious, but in secular laws too), dictating what is acceptable for women to do or how to behave, or what it means to be a man. When these norms define one gender in a manner that limits another's ability to safely enjoy their rights and freedoms—to control their own bodies and lives—the result is gender inequality.

Many female interviewees recounted that their choice of a career in hydropower was viewed by their communities as incompatible with traditional views of gender roles. Interviewees reported having been told that "women do not understand technology" or that engineering "is a job that women cannot do." Others said that there is a bias against hiring women because managers assume that they will not be able to combine work with family life.

“One plant manager did not allow a girl to join the team even though she scored the highest on the entry exam; he said she was not selected in case she settled down or decided to have a family.”

– Interviewee

Survey respondents and interviewees also mentioned that it is often assumed that women will not enjoy or be capable of performing more hands-on engineering jobs in hydropower plants, as the work will be too hard, too dirty, or too dangerous. It is not just men who make such assumptions: 25 percent of female and 28 percent of male survey respondents considered “lack of interest among women” one of the key barriers to attaining gender equality in the hydropower sector.

Though the reasons mentioned above may be valid for some women and men, other results uncovered in this study indicate that this is not the full picture of barriers women face. Several female interviewees mentioned that their male colleagues often make assumptions about their capacities. These societal assumptions about what women are capable of appear to affect women’s confidence in ways that are more likely to go unrecognized by men. Whereas 37 percent of female respondents to the survey thought “Low level of confidence by women in their ability to obtain work in the hydropower sector” was a significant barrier to women entering the sector, only 25 percent of men agreed.

Many studies describe the ways in which gender norms prevent women from attaining leadership positions in certain fields, including sectors adjacent to hydropower, such as engineering (Funk and Parker 2018; McKinsey & Company 2021). Studies have found that women in STEM fields are much more likely to experience gender discrimination than women in non-STEM fields, especially if they work in a male-dominated environment (Funk and Parker 2018). Studies have found that in performance reviews, women are much more likely than men to receive critical feedback related to their personality (for example, that they are too abrasive or emotional), and less likely to receive constructive feedback (Snyder 2014). Traits that are often viewed as positive in men (such as aggressiveness in negotiations) are viewed as negative when they are displayed by women (Snyder 2014). Women engineers working in male-dominated environments are often given menial or administrative tasks instead of being involved in what is perceived as “real” engineering work. This contributes to large numbers of women engineers leaving the profession (Scheiber and Tomiotto 2018).

The findings of these previous studies are consistent with the feedback received during interviews and focus group discussions on this study. For example, several women participating in this study said that when they joined meetings, clients assumed they were support staff rather than engineers; in addition, participants reported that the quality of their work was regularly assumed to be lower than that of their male colleagues, that they received less credit than their male colleagues, or that female managers are often not taken seriously by the men they lead. One participant said that whereas men may get promoted to coordinating roles in her company, women only take up those roles informally, without additional recognition or compensation.

The STEM Field: the Apparent Last Frontier for Women in Hydropower

Average STEM Class:
20–30% female students

Average Engineering Class:
15–20% female students

The design, construction, operation, and maintenance of hydropower facilities require a range of technical and engineering skills: for example, mechanical, electrical, civil, hydraulic, geotechnical, and environmental engineering. As mentioned previously, though the hydropower sector also offers many technical (including STEM and other highly skilled jobs) and nontechnical

opportunities, career paths are often limited for nonengineers or nontechnical staff as most leadership positions require technical skills.

A combination of women's self-perception and societal perceptions of women's limited competence in technical occupations has been frequently identified in academic literature as a barrier to women's entry into STEM programs at universities (Riach and Rich 2006). Studies have shown that at age 15, although girls perform similarly or better than boys in science subjects, far fewer women than men pursue STEM degrees. Paradoxically, the same study also found that the smaller a country's overall gender equality gap, the less likely girls were to outperform boys in STEM and to graduate with STEM degrees. In some of the most gender-unequal countries, including many in Eastern Europe and the MNA region, girls both performed better in STEM subjects and were more likely to pursue STEM degrees (Stoet and Geary 2018). The Science Report of the United Nations Educational, Scientific and Cultural Organization (UNESCO), entitled *Towards 2030* (UNESCO 2015), reveals that the share of women graduating in the fields of engineering, physics, mathematics, and computer science remains low in many industrialized countries. The roughly 20 percent share of women among engineering graduates in Canada, Finland, Germany, and the United States is typical, and has been relatively stable for 20 years (IRENA 2019). However, several interviewees provided anecdotal evidence that the share of women studying engineering is increasing. Numbers vary per country, but it is as high as 32 percent in Portugal (Trading Economies 2022). Developing countries still appear to outperform industrialized countries in terms of attracting women to STEM; according to the World Bank (Hammond and others 2020), women in low-income countries are only seven percent less likely than men to enroll in tertiary programs in engineering, manufacturing, and construction, compared to 15 percent and 17 percent in upper-middle-income and high-income countries, respectively. The findings of the survey conducted for academic institutions for this report suggested that women made up 20 to 30 percent of students in all STEM programs, and 15 to 20 percent of students in engineering programs.

The low share of women graduating with engineering degrees was one of the most significant barriers to gender equality, according to survey respondents: 54 percent of men and 47 percent of women considered it crucial. In the interviews and focus group discussions, this "pipeline

“I did not know mechanical engineering existed as a program—a teacher in high school recommended it to me, otherwise I would never have found out about it.”

– Female Interviewee

problem” was invariably raised: if only 20 percent of engineering graduates are women, how can engineering departments in hydropower companies be expected to hire more than 20 percent women? It must be noted here that though the lack of women studying STEM is a large part of the problem standing in the way of gender equality in hydropower, it does not mean companies bear no responsibility for the gender gap. First, as the corporate survey for this study revealed, women occupy on average just 10 percent of technical roles in hydropower companies. Second, companies could do more to raise awareness of the opportunities available in hydropower

and encourage more women to pursue engineering and other STEM degrees (specific recommendations for this can be found in chapter 4).

“Mechanical engineering is not very well-known and doesn’t sound as appealing as some other programs within engineering—for example, environmental engineering attracts a lot more women.”

– Interviewee

Interviewees and focus group discussants claimed that the reasons fewer women pursue STEM degrees were mainly cultural—girls are still less likely to be encouraged to show an interest in technology than boys. Raising awareness of opportunities in STEM for girls needs to start in primary education as, depending on the country, children reach the first decision point as early as age 10, in effect choosing between two directions: STEM versus humanities/social sciences (OECD 2021). Later, when selecting a degree program, girls may also find STEM programs off-putting because they know they are unlikely to find many female peers. The choice of any traditionally male-dominated profession means a predominance of male candidates for any given job, and

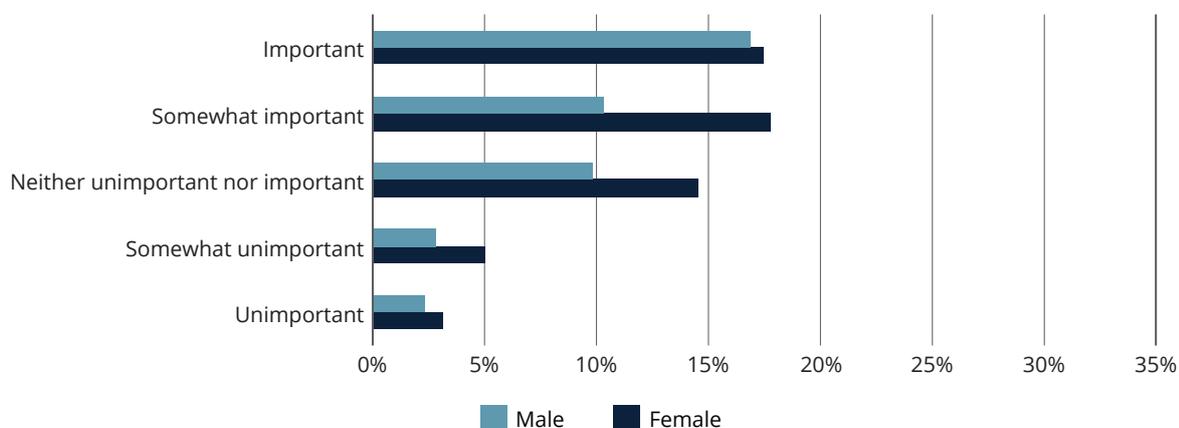
thus the prospect of unrelenting competition with male fellows. Some studies suggest that women deploy various coping strategies in order to gain acceptance in that kind of work setting. At times, women are in effect obliged either to display very low technical self-confidence, or, by challenging male coworkers and masculine work culture, to exhibit behavior that lacks ostensible gender-appropriateness (Peterson 2010). In the survey conducted for this study, 25 percent of female students indicated that they had been made to feel as if they did not belong in their classes because of their gender. As one student respondent said: “the majority of people in high positions and for keynote speakers in conferences or meetings are male, which creates a very intimidating environment for females.”

The survey asked the respondents about the importance of gender diversity at different levels. The World Economic Forum and other organizations sustain and show with evidence that there is a correlation between diverse leadership and financial performance for companies. These findings make gender diversity far more than a theoretical aspiration: it is needed quite simply to increase efficiency.

Figure 3.1 shows respondents’ perceptions on the importance of gender diversity for their

FIGURE 3.1

Perception of the Importance of Gender Diversity for the Company (and CEO), by Sex



Source: World Bank data.

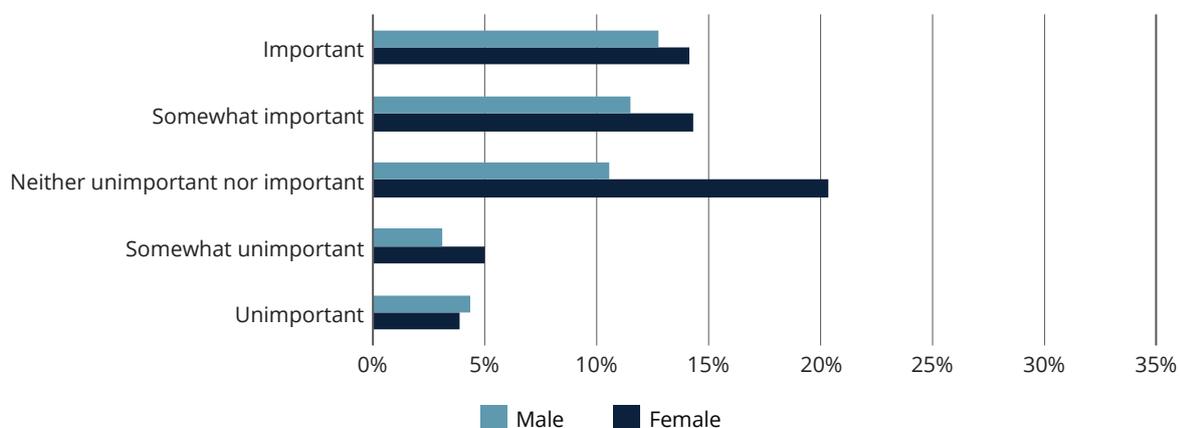
companies. Overall, women perceive gender diversity to be important for their workplace and its CEO. Men, by contrast, are far less convinced.

The survey also elicited respondents' opinions about their line manager. Figure 3.2 shows that a notable proportion of both women and men think that their manager sees gender diversity as an important issue. However, a relative preponderance of women thought that their manager was fairly uninterested in the issue ("somewhat unimportant"). Slightly more men than women were of the opinion that their line manager had no time for gender diversity at all.

Gender diversity should be important for companies because they are very likely to fail if policies that foster the participation and inclusion of women are not implemented. The survey

FIGURE 3.2

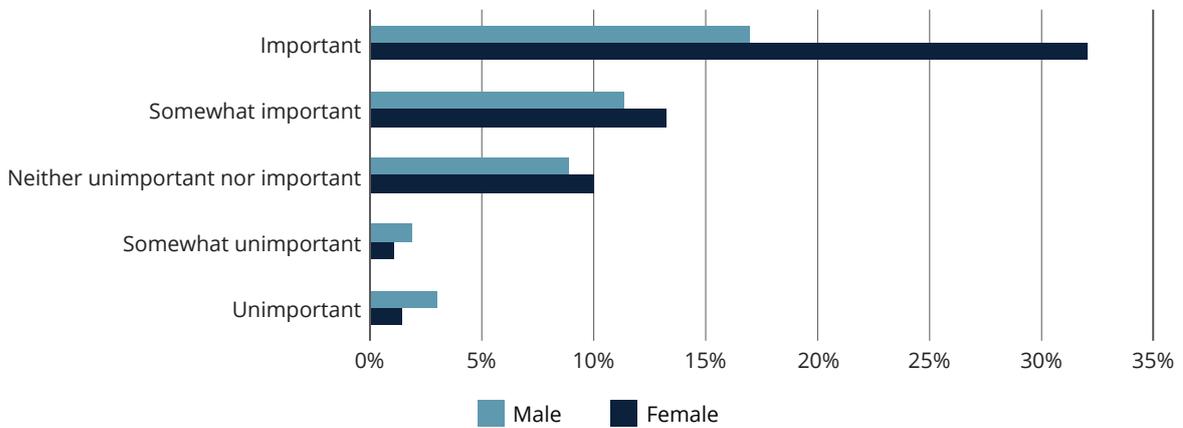
Perception of the Importance of Gender Diversity for Line Manager, by Sex



Source: World Bank data.

FIGURE 3.3

Perception of the Importance of Gender Diversity (for Self), by Sex/How Important is Gender Diversity in the Workplace to Your Company, to You?



Source: World Bank data.

elicited the respondents' own perceptions about the importance of gender diversity. Figure 3.3 shows that in most cases women and men consider gender diversity to be an important matter; however, most of the respondents who consider the issue unimportant are men.

Perceptions of the Hydropower Sector and Workplace Environments

This amounts to a barrier created by the perception among many women and men that workplace environments in the hydropower sector are relatively unsuitable for or unwelcoming to women, in comparison to other renewable energy subsectors, or that women are simply not interested in hydropower. This section explores these perceptions and to what extent they are accurate.

Lack of Awareness Among Women of Opportunities

“Lack of awareness among women of opportunities in the hydropower sector” was chosen by 14 percent of male respondents and 14 percent of female respondents to the survey as one of the main barriers to greater participation by women. This issue was also raised by interviewees and focus group participants; although this is of course anecdotal evidence, most women reported having ended up in hydropower unintentionally, whereas men were more likely to state that they had deliberately pursued a career in the

“Hydropower can be controversial, so the companies hide a little bit; they do not actively promote what they do.”

– Interviewee

sector. Many interviewees thought that public awareness of the hydropower sector, its contributions to society, and the opportunities it provided were too low.

Explanations offered for this lack of awareness ranged from the fact that hydropower facilities tend to be in remote areas where they are visible to few people; that the sector has a poor reputation for sustainability and social practices, which, even though this reputation is largely due to a small number of high-profile poorly executed projects, still means a majority of companies

prefer not to draw attention to themselves; and that hydropower, as a very old sector and the first large-scale renewable energy technology, “has become complacent” and has never attempted to market itself as effectively as other renewable energy technologies have. As a result, more than one participant said that hydropower did not have the same appeal as solar or wind energy. This may make it less successful than other sectors in attracting women engineers, who are in increasing demand as more companies adopt gender quotas.

No conclusive explanation was found for why awareness of the opportunities available in hydropower appears to be low among women. However, potential reasons proposed by interviewees included the fact that opportunities tend not to be widely advertised, and women’s lack of access to certain informal, professional, and familial networks (as compared to men) decreases their awareness of employment opportunities in the sector. Earlier studies reported similar findings, namely that rather than being disseminated through formal channels, information about employment opportunities in renewable energy often travels through familial and professional networks that are accessible only to men (IRENA 2019).

It is important to raise awareness of the opportunities available to women in the hydropower sector, since, as discussed previously, diversity is good for business, and most of the women working in the hydropower sector who participated in this study agreed that it is a great career option for women. All female interviewees and focus group discussants were enthusiastic about their work and thought more women should join the sector. Furthermore, women are anticipating working in the sector in the future. Figure 3.4 shows that women are more optimistic about their permanence in the sector while men are more likely to think they will leave the sector in the future.

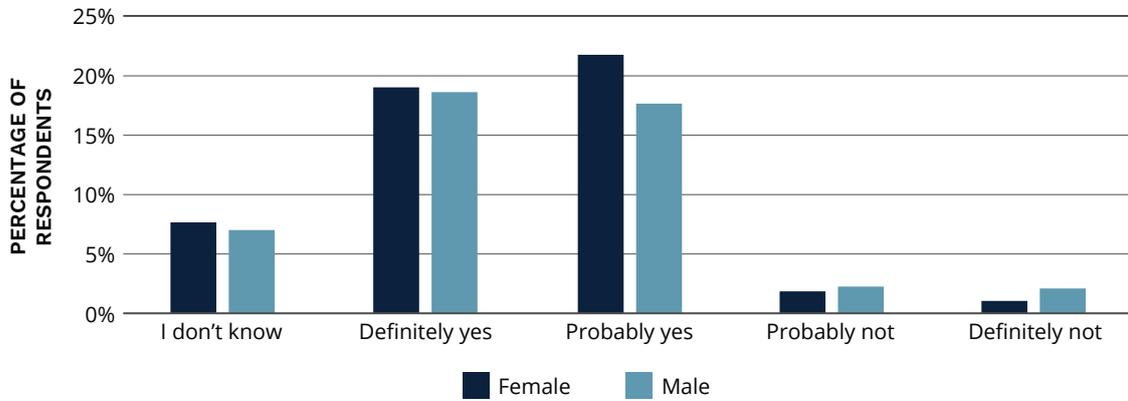
Figure 3.5 shows how women and men perceive the sector as welcoming and inclusive. In general, women consider more frequently than men that the sector is less inclusive than other renewables sectors. By contrast, more men than women consider that the sector is more inclusive than other industries in the sector.

Hydropower’s Distinct Barriers: Gender Bias in Male-Dominated Sectors

The hydropower sector has several unique characteristics that constitute potential distinct barriers to gender equality. When asked about their perception of the gender inclusiveness of hydropower compared to other sectors, 28 percent of female and 16 percent of male

FIGURE 3.4

Anticipation of Work in the Sector in the Future, by Sex



Source: World Bank data.

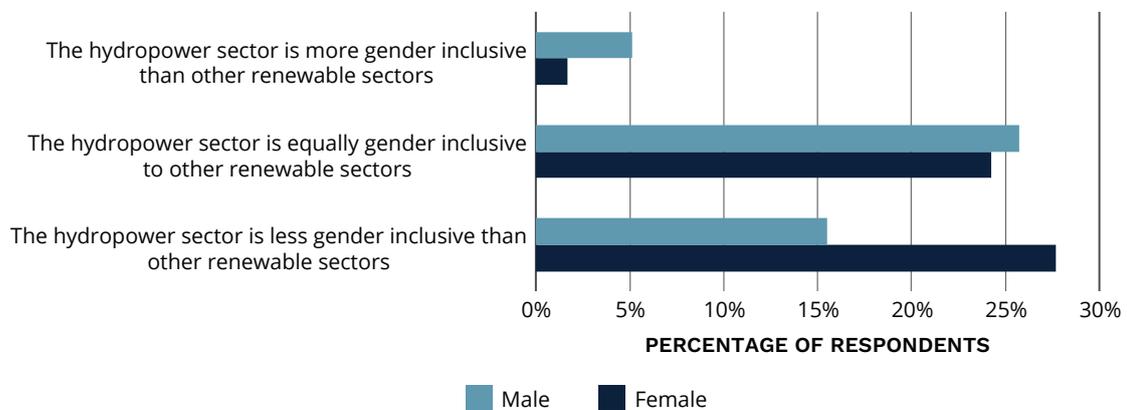
28% of Female respondents and 16% of Male respondents think that the hydropower sector is LESS gender-inclusive than other renewables sectors

survey respondents stated that they thought the hydropower sector was **less gender-inclusive** than other renewable energy sectors.

Respondents also witnessed inequality within their own organizations. Figure 3.6 shows the perception of the gender gap related to opportunities. The majority of respondents think that women get more

FIGURE 3.5

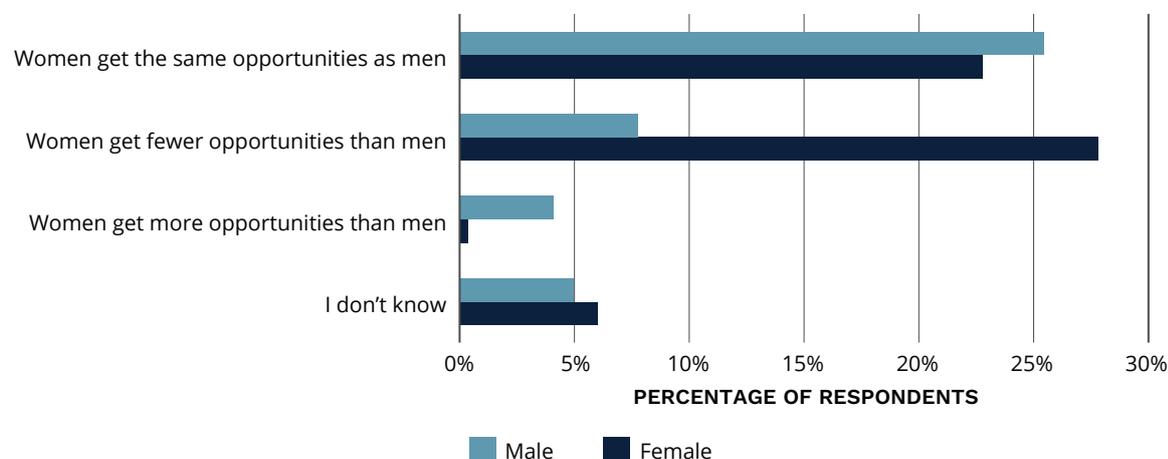
Perceptions of Gender-Inclusivity in the Hydropower Sector, by Sex



Source: World Bank data.

FIGURE 3.6

Perceptions of the Gender Opportunity Gap in Hydropower Companies

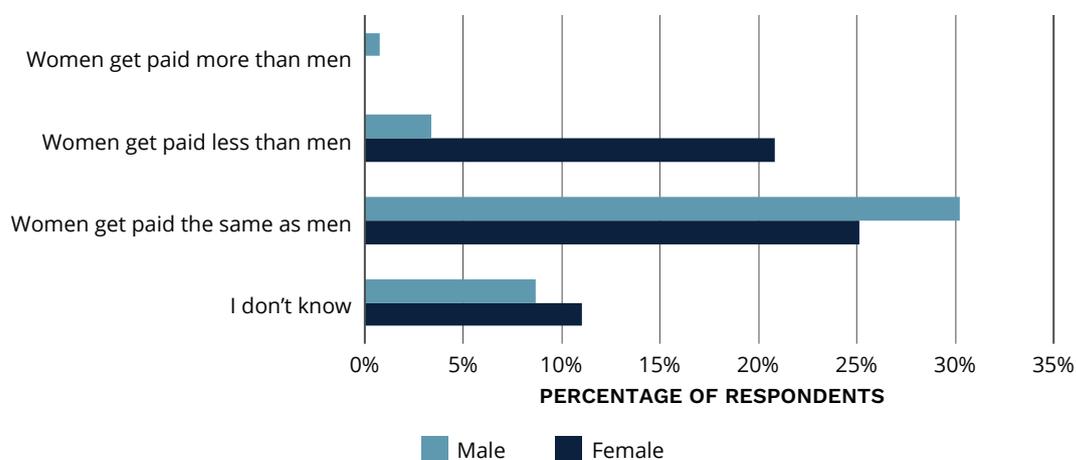


Source: World Bank data.

opportunities than men (four percent vis-à-vis almost zero for female respondents). In addition, male respondents also answered more frequently that they think women get the same opportunities as men (26 percent compared to 23 percent for females). The majority of respondents who signaled that women enjoy fewer opportunities than men were women (28 percent in contrast to eight percent for male respondents). Similarly, figure 3.7 shows the perceived gender wage gap. In general, men think their female co-workers get paid the same as or more than men; meanwhile, women consider that women are underpaid compared to their male colleagues.

FIGURE 3.7

Perceptions of the Gender Salary Gap in Hydropower Companies



Source: World Bank data.

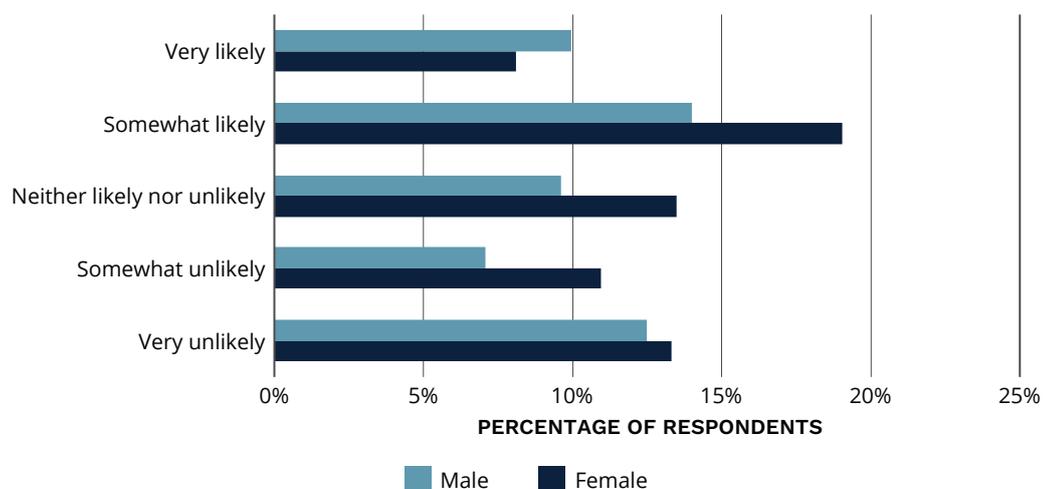
“Bias against hiring women” was one of the key barriers to achieving gender equality in the sector according to 13 percent of women respondents; and 40 percent of women reported they believed their gender had at some stage played a role in them being passed over for a promotion, a raise, or another opportunity. Figure 3.8 shows the respondents’ perception of their own professional opportunities. In general, men answered more frequently that they think they will likely achieve a senior management or director-level position in their company (10 percent in contrast to eight percent for women). Women also think more often that it is unlikely or very unlikely that their career will grow in the hydropower companies (11 and 13 percent versus 7 and 12 percent for men respectively). In a text field asking why they had chosen those answers, 11 percent of those women filled in some variation of “because I am a woman.”

These findings are in line with those of previous studies on the renewable energy sector and the wider labor market (GWNET 2019b). Although women and men are hired into entry-level jobs at almost the same rate, the share of women starts dropping off at the level of the first promotion (for every 100 men promoted to a managerial position, only 86 women are promoted). McKinsey & Company have called this phenomenon the “broken rung” (as opposed to the “glass ceiling”), and it reveals that women encounter the biggest obstacles to advancement much earlier in their careers than normally expected (McKinsey & Company 2021).

The awareness gap between men and women was also highlighted by earlier research, which found that 75 percent of women perceived barriers to gender equality in the renewable energy sector, versus only 40 percent of men (IRENA 2019). In the wind industry, 76 percent of men thought men and women were paid equally, against only 45 percent of women (IRENA 2020). Previous studies also found that men are much less likely than women to view the lack of women in the sector as a problem, and are also less likely to see the hiring of more women as a solution to the talent shortage (GWNET 2019b). In a sector dominated by men, if men do

FIGURE 3.8

Perceptions of Professional Growth Opportunities in Hydropower Companies



Source: World Bank data.

BOX 3.1

THE MYTH OF THE REVERSE GENDER GAP: MEN'S OPPOSITION TO GENDER INITIATIVES

Although the findings of this report, and the statistics on the share of women in hydropower, provide clear evidence that the sector is still a long way away from achieving gender equality (though it is certainly improving), less than 5 percent of male respondents to the survey thought that in their current company, women actually get more opportunities than men (see Figure 3.6). The announcements of the study and the survey itself also attracted strongly worded criticism from men who thought that international organizations' focus on gender issues was exaggerated.

This shows that even in sectors where women are still vastly outnumbered, some people believe that efforts to enhance gender equality "have gone too far," tipping the balance in favor of women to the detriment of men. As said before, the evidence does not support this, and these reactions tell us that in addition to battling indifference, gender equality efforts in some instances must overcome active opposition.

not recognize a problem or if they think the extent of the problem is exaggerated (see Box 3.1), it is much less likely to be addressed effectively. Because men strongly influence workplace environments and decision-making, it is important for them to become active supporters of gender equality. Men standing up for women's rights and challenging their own attitudes and behaviors, or those of others, can have a powerful impact (Engineers Canada 2022).

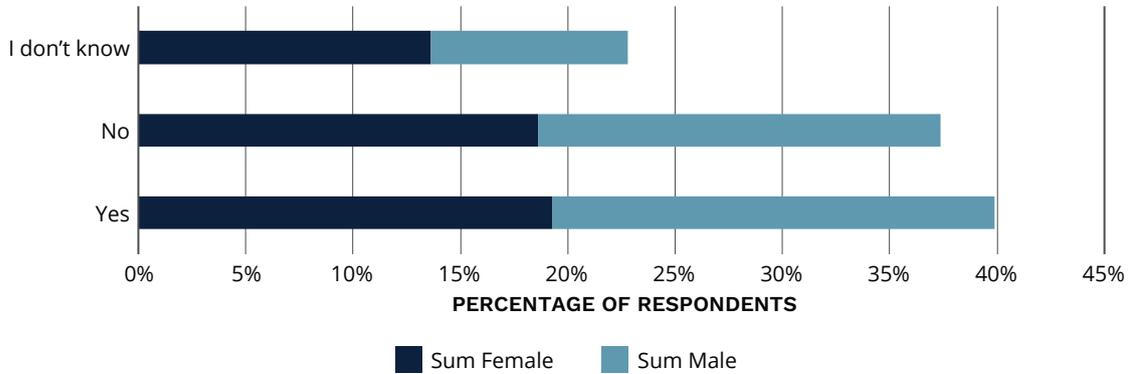
Timid Efforts to Improve Women's Participation: Gender Policy Implementation Limitations on Work-Life Balance Benefits

Despite the awareness gap mentioned, hydropower companies appear to be making efforts to support employees with families through the adoption of work-life balance policies and benefits, and to support women specifically through gender-sensitive training and mentoring programs.

When asked about the governance on gender policies implementation, as shown in Figure 3.9, 40 percent of respondents reported that their company had an official **gender policy**

FIGURE 3.9

Companies That Have an Official Gender Policy, by Sex



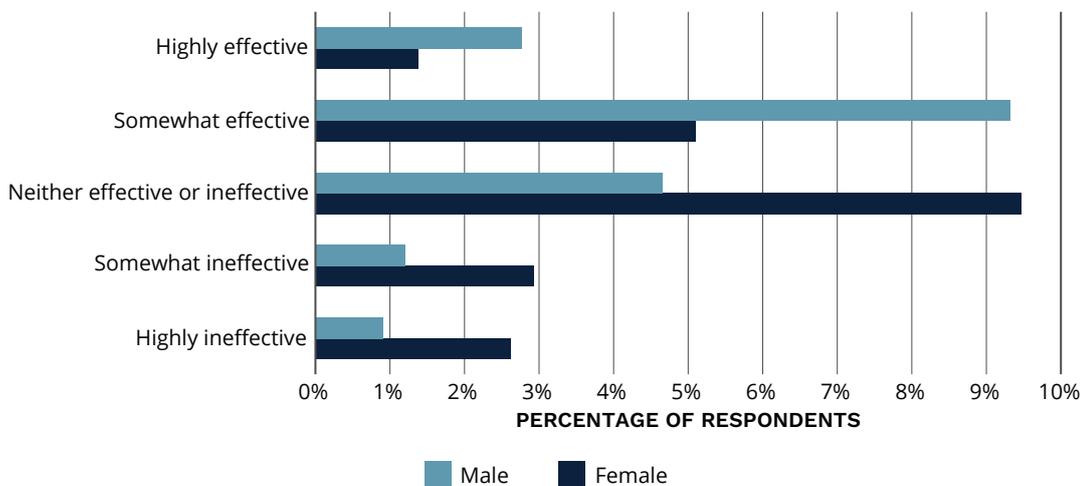
Source: World Bank data.

(19 percent women and 21 percent men). Importantly, 23 percent of respondents (14 percent women and 9 percent men) did not know if their companies or organizations had a gender policy.

However, of the respondents who reported that such a policy existed in their company, Figure 3.10 shows that only 1 to 5 percent considered the implementation of those policies to be effective—a big contrast to men’s opinions that between almost 3 to 9 percent considered policies highly or somewhat effective. Several interviewees stated

FIGURE 3.10

Efficiency of Gender Policies at Workplace, by Sex



Source: World Bank data.

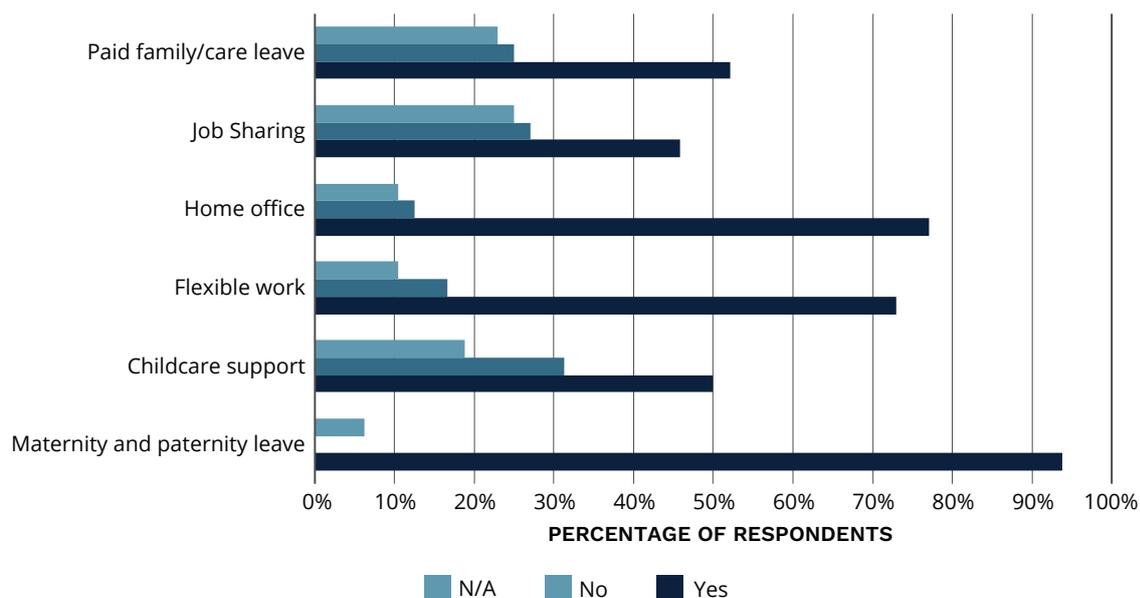
that though many companies adopt policies, these are not always enforced or even implemented. These numbers indicate that there is room for improvement as they are lower than those found in a global corporate diversity survey by the Boston Consulting Group, which reported that 21 percent of women found their companies' diversity programs helpful (Boston Consulting Group 2019). To advance gender equality, 51 percent of respondents (26 percent women and 25 percent men) said their company offered programs, such as gender sensitivity training for men and women, and support groups and mentoring for women. Where these were available, 65 percent of women and 38 percent of men said they had participated in the programs, and 83 percent of women who had participated said the programs had been helpful.

When asked about the work-life balance benefits provided by their current employers, 94 percent of respondents indicated they had access to maternity and (or) paternity leave, 77 percent had the option to work from home, and 73 percent benefited from flexible hours (see Figure 3.11). However, just 52 percent of respondents have access to paid family/care leave, and half of the respondents receive on- or off-site childcare support, all of which indicates that there is still room for improvement. It should be noted that in many countries, the provision of paid parental leave is by federal mandate.

Overall, many survey respondents appeared to be satisfied with the benefits and support offered by their companies. In the text field provided under "Other," more than 11 percent wrote that they thought their company was already doing well. Some respondents, however, thought that hydropower companies offered less flexibility than companies in other sectors. "Flexible working hours" also appeared at the top of survey respondents' wish list for

FIGURE 3.11

Benefits Available to Full-Time Employees



Source: World Bank data.

COVID-19 Impact

46% claimed that it led to a better work-life balance

25% said it made it worse

additional benefits to improve their work-life balance. This may be partly a response to changes brought on by the COVID-19 pandemic; 46 percent of respondents found that working from home during the pandemic had improved their work-life balance, and the majority of those expected these changes to become permanent. Though some women in the interviews spoke of difficulties in

balancing the demands of work and family life when working from home, in the survey, approximately the same share of women and men noted the improvement. However, 25 percent of respondents reported a worsened work-life balance since the start of the pandemic, and 40 percent of them expected this change to be permanent.

Unwelcome Workplace Behaviors

“It is very difficult for a young woman to walk into a room full of middle-aged men who know each other, and then speak up. That scares women off, when what they should really do is jump in.”

– Interviewee

Despite these efforts by hydropower companies, many women who participated in the interviews and focus group discussions stated that they had, at times, **felt unwelcome in their workplaces**. During the interviews, anecdotes shared ranged from women being talked over or ignored during meetings, the quality of their work being questioned, and male colleagues questioning whether a female colleague deserved to be paid as much as she was, to being subjected to sexist jokes and sexual harassment. Several participants reported female engineers being mistaken for administrative assistants when entering meetings, which reflects an unconscious bias that engineers must be male. One woman said that women entering the sector need to be “emotionally

ready” to address harassment. In the survey, 29 percent of female respondents said they had encountered sexual harassment or inappropriate behavior at their current company. Only 15 percent of those women said they had filed a complaint and just half of those complaints had been handled satisfactorily.

The fact that most women had not filed an official complaint may be because of a lack of formal grievance mechanisms, a lack of trust in these mechanisms if they are in place, or a fear of retaliation. In addition, several women said that even if their own companies had effective gender policies, they frequently had to work with clients who did not have to comply with these, and as a result found themselves in uncomfortable or even unsafe situations when encouraged to accompany clients to bars and other venues after work hours. Though these situations may be experienced as inappropriate and uncomfortable by both male and female employees, it may be more difficult for female employees to decline such invitations. This indicates that although hydropower companies have made

commendable efforts to attract and support women employees, there is still a way to go to ensure that workplace environments are welcoming and safe for everyone. In fact, the process should have begun by first ensuring that women can join a working environment that is safe for them. If such an environment is not enabled and created, then the belief that the woman has to sacrifice her dignity and be ready to be exposed to unwelcome behavior (including accepting or pretending to ignore harassment, sexual abuse and exploitation), the awareness and perception of the industry as unfriendly to women will not change—resulting in rather few of them choosing to gain the STEM skills needed for entry.

Lack of Female Role Models in the Sector

In addition to societal attitudes discouraging women from entering technical fields, previous studies have found that one of the key reasons women do not choose to pursue or remain in STEM careers is a lack of female role models and mentors (González-Pérez and others 2020). The findings of the present study confirm that this holds true for the hydropower sector: overall, female survey respondents selected “lack of female role models” as the second most important barrier to gender equality (in fact, it was chosen as a key barrier by 14 percent of women and 12 percent of men). In the interviews and focus groups, many women said that when they were younger, they did not know of any women engineers and therefore did not consider engineering a viable career path for themselves. In both the survey and the interviews, several women stated that they could not imagine ever attaining a senior management role because “there are no women at the top management level or on the management board.” Therefore, it is important to ensure that stories of successful women in hydropower are widely shared.

“If you are the only woman surrounded by men, it can be difficult to tell whether disparities are the result of patterns of gender bias or just something personal or incidental.”

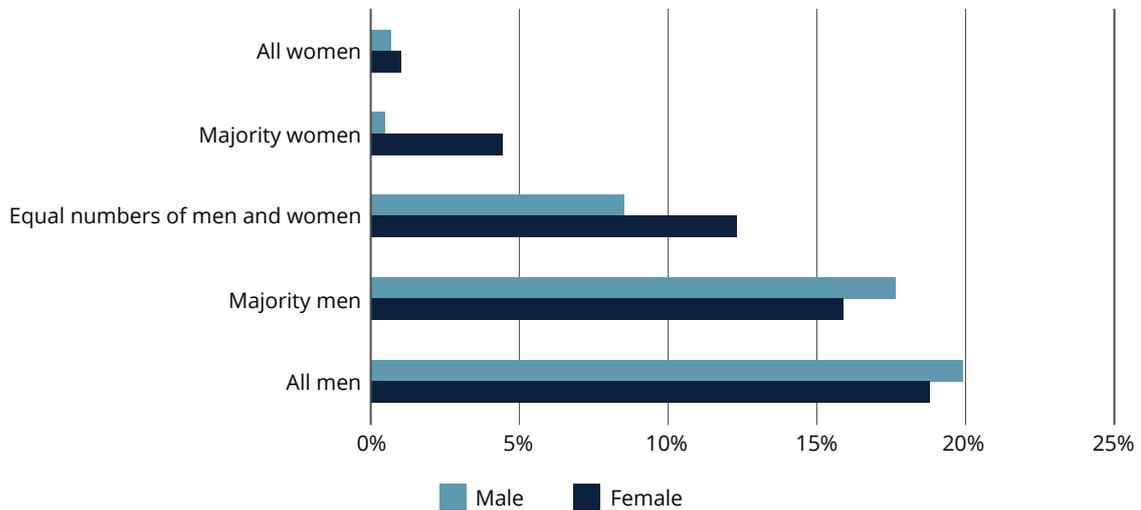
– Interviewee

In previous renewable energy sector-wide surveys carried out by GWNET and IRENA (GWNET 2019b and IRENA 2019), many women indicated that when working in a male-dominated environment, access to women’s networks and women mentors is key. Women need access both to peers who are in a similar position to themselves and more senior role models and mentors who have already experienced more of the career ladder and can offer advice. Women mentors can provide role models, as well as help mentees feel less isolated, build their confidence, and navigate the internal politics of their organizations (GWNET 2019a and GWNET 2019b). In addition, it is important for women in the sector to have a peer group because, as one interviewee said, “if you are

the only woman surrounded by men, it can be difficult to tell whether disparities are the result of patterns of gender bias or just something personal or incidental.” Effective

FIGURE 3.12

Career Progress: Survey Responses, by Sex, to the Question “What Was the Gender of the Senior Staff Members Who Supported Your Career Progress?”



Source: World Bank data.

mentoring results in higher chances of promotion, and thus men and women should have equal access to such opportunities. One academic interviewed for this study stated that young women sometimes do not continue their studies in engineering because they miss having a peer group of women.

Given the smaller number of women respondents in high-level positions, both male and female survey participants indicated that their career progress had been supported primarily by male senior staff (see Figure 3.12). It demonstrates how important it is for gender equality that men also get involved in sponsoring and mentoring women in their organizations. Though male mentors are less likely than female mentors to be able to offer useful advice on navigating male-dominated environments, men can provide other, equally valuable support, such as encouraging women to pursue promotions, helping them build their networks, and otherwise helping with career development. The data presented in Figure 3.12 shows that more men than women take on these roles.

Remote Locations and Lack of Flexibility

Hydropower projects are often located in remote or poorly accessible areas, and jobs often require extensive travel or extended stays away from home (from several months to several years) that are difficult to combine with personal life (IDB 2014). Although not all hydropower

“The general view in society about remote hydropower sites is that a woman cannot survive in such an environment.”

“The stereotype is that women engineers cannot handle field work.”

– Focus group participants

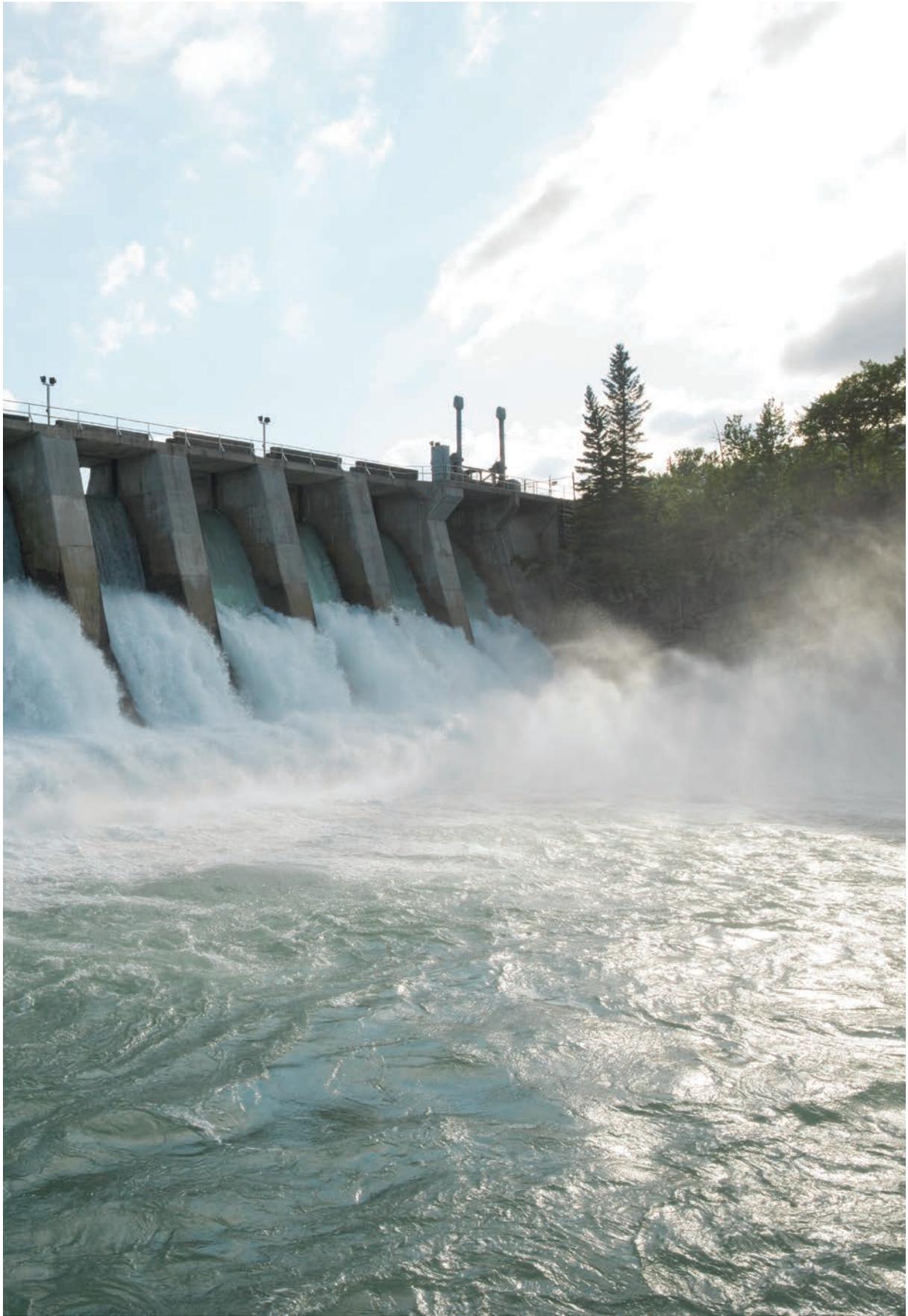
jobs include stays on site, many participants in the interviews reported feeling pressured to spend at least some time on site and that they thought not doing so could be detrimental to their careers. Several female interviewees also recounted that overprotective family members objected to them choosing a career that would require travel to remote sites as they thought these environments would be unsuitable or unsafe for women.

Frequently reported issues related to on-site work include a lack of separate women’s sanitation facilities or of uniforms and other equipment specifically designed for women. Being forced to use ill-fitting personal protective equipment decreases women’s comfort levels and increases the risk of workplace injuries (IDB 2014; NYCOSH 2014). This was confirmed by the women interviewed for this study. In addition, one woman

recounted an anecdote about being excluded from participation in repairs in parts of hydropower plants that were difficult to access because of the lack of toilets for women.

Though hydropower sites now commonly provide separate accommodation and other facilities for women and men, they still very rarely offer childcare, which means that women with young children cannot bring them on site and are forced to spend long periods away from them. Although this is true for men as well, women are disproportionately affected, as they are more likely to be the primary caregivers. In addition, remote sites are likely to have limited access to schools, meaning that women with school-age children also have to choose between switching positions and working off-site and being separated from their children for long periods of time. At the same time, the health services (existing or established for the purpose of the hydropower project) rarely include the female staff, nurses and specialists in female health and sexual and reproductive health.

In addition, fears of sexual harassment and gender-based violence are particularly relevant on male-dominated, remote sites (IDB 2014; World Bank 2018). This was also reported by interviewees, who said that having a larger number of women on site and having women in leading positions and in security teams is likely to improve safety.





FOUR RECOMMENDATIONS

Interviewees in this study testified that the hydropower industry has already made great strides in addressing the barriers to gender equality as described in Chapter 3. This chapter presents successful approaches and proposed actions to address the remaining gaps.

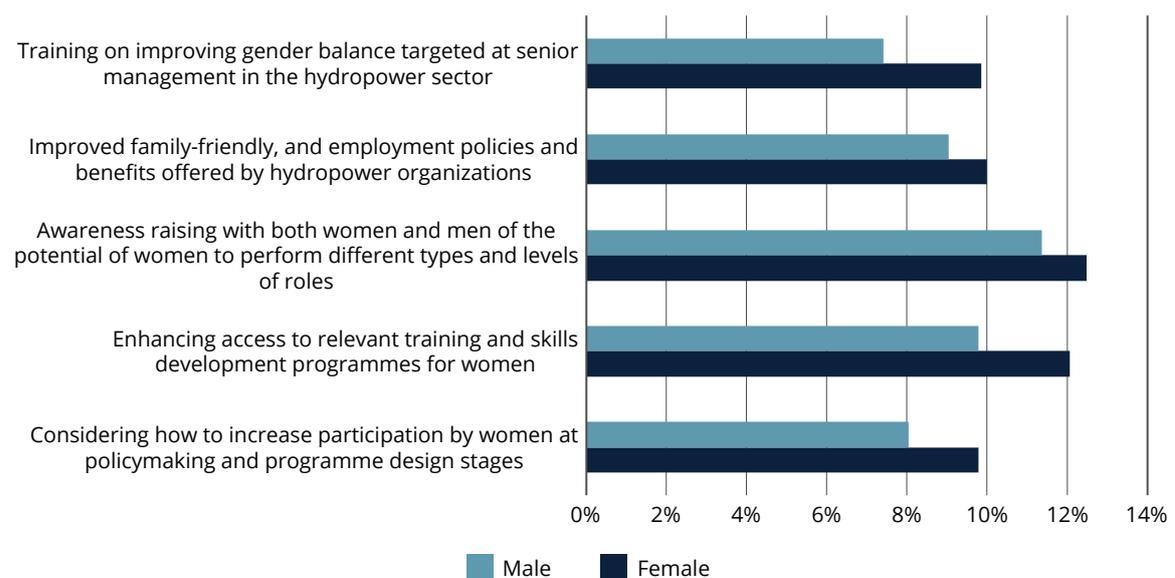
Several measures to improve the participation of women in the hydropower sector were suggested to survey participants. Figure 4.1 shows the ranking of these measures according to how many participants thought they were useful. Both men and women consider that awareness raising of women’s potential to perform different types and levels of roles is vital for companies seeking to attract, retain and promote women. Figure 4.2 shows the results when analyzing these answers by age group: women and men under the age of 25 consider awareness training to be important for companies, and although in general interest in these activities falls off with increasing age, men over the age of 55 tend to consider awareness activities as a good practice to reduce the gender gap.

Based on the survey results, information gathered in interviews and focus group discussions, as well as studies consulted for the different parts of the energy sector (IRENA 2019, IRENA 2020, Friedrich-Ebert-Stiftung and TERI 2021), five main, distinct, actionable recommendations to address barriers to gender equality in the hydropower sector are presented below.

As an example, the World Bank established a regional network in 2020 for women practitioners in the energy sectors in South Asia (WePOWER) with the objective to increase opportunities for

FIGURE 4.1

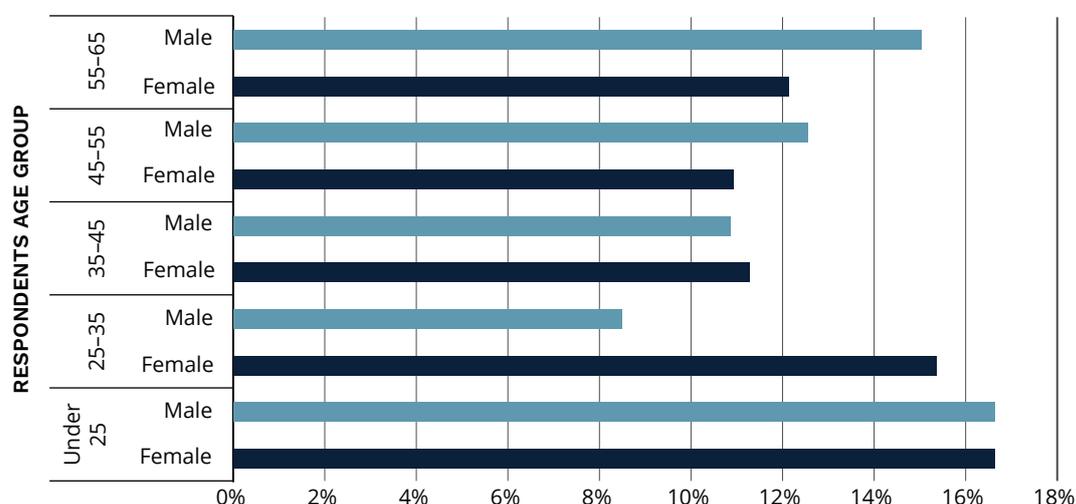
Main Suggested Measures Needed to Improve Participation by Women in the Hydropower Sector, by Sex



Source: World Bank data.

FIGURE 4.2

Interest in Raising Awareness of the Potential of Women to Perform Different Types and Levels of Roles, by Sex and Age



Source: World Bank data.

women in energy projects and at the corporate utility level. STEM education, recruitment, development and retention were the four key pillars (ESMAP 2020) (See Box 4.3 for more information).

Organizations that implement these recommendations, however, must take care not to overburden female employees, especially if they are few. Women's ability to do their job can be hampered if they are forced to spend much more time than their male colleagues attending career fairs and organizing mentoring programs, or sitting on equality committees, hiring committees, and interview panels.

Start With Education and Implement Actions to Remove Constraints for More Women to Pursue Stem Degrees

As seen in the previous chapter, many interview participants and survey respondents considered the fact that women are still a minority in STEM programs the major barrier to equality in the sector. Since hydropower requires a variety of STEM skills, it is difficult for hydropower companies to recruit more women if too few are graduating with the required degrees. When respondents were asked to list measures to improve participation of

women in hydropower, the second most popular option was enhancing access to relevant training and skills development programs for women. A few interviewee participants did note that while the share of women studying engineering is slowly increasing, they are not necessarily staying in engineering after leaving university.

“If more women study engineering, by definition the hydropower gender balance will be improved.”

– Survey respondent

Normalizing women studying STEM subjects would give women more opportunities to leverage learning and skills in rewarding careers (Scheiber & Tomiotto 2018). The careers offered by hydropower and other infrastructure projects offer women the potential to generate substantial income and lift their families out of poverty, the opportunity to design the infrastructure that spurs countries’ socioeconomic development, and the opportunity to serve as role models for future generations of young women who are interested in STEM-related careers (Schomer and Hammond 2020). It also offers the hydropower sector an

opportunity to draw from a larger talent pool and therefore take full advantage of the innovation and creativity that new, alternative voices would bring.

Many actors can have a role to play in encouraging more women to study STEM subjects, as listed below.

Universities and Other Educational Institutions

- Introduce initiatives specifically designed to attract women. Two such actions are described in Box 4.1.
- Employ qualified women to teach STEM. The impact of such action has a great potential to break down the negative stereotypes and encourage more female students.
- Promote STEM to younger women, for example by reaching out to local schools, providing women speakers at school events, and offering orientation platforms for younger students.
- Ensure any outreach materials for STEM programs reflect the departments’ desired gender balance. Develop outreach materials that appeal to all genders. Include information on the advantages of STEM-related jobs, such as salary levels, typical career paths, opportunities for advancement, benefits, and emphasize the interesting fields you get the opportunity to advance.
- Ensure that education material addresses the attitudes and beliefs that limit the hydropower-related professions to any gender. As this study reflects, both men and women are confident in the skills they offer to the sector: the barriers to realization of their full potential are social constructs.
- Collect sex-disaggregated data on STEM enrollment, set enrollment targets and establish key indicators to follow the progression of women in STEM, such as examining whether drop-out rates for women are higher than for men and putting into place action plans to address this.

BOX 4.1

EXAMPLES OF UNIVERSITY INITIATIVES TO ATTRACT MORE WOMEN TO STEM

Nepal Engineering College is a not-for-profit social academic institute that provides degree programs in engineering and technology. It aims to reach Nepalese students from a wide range of backgrounds to provide high-quality, accessible, and affordable technical education.

In 2002, recognizing that very few women were choosing to study engineering, it established a scholarship specifically for young women aiming to study at the college.

It now prioritizes female enrollment and aims to increase the share of women among its students from 9 percent in 2000 to at least 20 percent. These efforts have produced remarkable results: the share of women in civil engineering undergraduate programs increased from 11 percent in 2010 to 25 percent in 2020. For the graduate program on Interdisciplinary Water Resource Engineering, which was launched in 2007 under the Crossing Boundary project (financed by the Netherlands), women are encouraged to enroll through the provision of women-only scholarships.



Photo credit: Sabitri Tripathi, Nepal Engineering College

The **100 Women Campaign** is a joint initiative of five universities in France and Switzerland that aims to show young people—and especially young girls—the broad range of exciting professional and personal paths that women in the region have taken. Through videos, in print, and through talks and other events, it showcases the stories of 100 women who completed training or pursued careers in traditionally male-dominated fields.

Providing young women with role models removes one obstacle preventing them from enrolling in STEM programs and pursuing a career in science. The goal is to dispense with the misconception that women who make these career choices are exceptions to the norm.

- Inspire female students in STEM to specialize in hydropower by forming partnerships with local hydropower operators, organizing field visits, and encouraging women from these companies to give talks on their careers.
- Monitor the effective measures and engage with female students (including those who abandon studies) to be able to identify the possible barriers in a timely manner, and design solutions with the participation (if not under the leadership) of female staff and students.

Schools (Primary and Secondary)

- Expose girls from a young age to examples of successful women in STEM to expand their view of possible future career paths. This could be done by inviting women in the hydropower sector to “career day” activities or to act as judges or speakers at science fairs or other science-focused activities.
- Work to debunk the myth that women are not as good as men at STEM subjects by identifying and addressing unconscious biases in staff, teaching materials, and other students.
- Encourage young girls to pursue STEM courses in school and show them what STEM career opportunities exist.
- Create opportunities to work with the parents and parents’ associations to identify barriers within the families, risks of (harmful) practices that may interrupt girls’ education, or attitudes that can put them off STEM.
- Educate the community about the benefits of girls’ education.
- Promote equality in educational material—make sure that traditional gender stereotypes can be questioned and dismantled in the safe space of a classroom.
- Commit to regular safety audits of the school (facilities and teaching methods) safely engaging with the girls and parents, to ensure timely recognition of potential barriers.

Hydropower Operators, Consultants, and Equipment Manufacturers

- Connect and network with academic institutions to jointly develop gender-sensitive curricula and attitudes.
- Encourage employees to participate in programs such as career days to share their experiences with young women to put a human face on the hydropower sector.
- Sponsor scholarships for women.
- Provide internships with a focus on women so that they can acquire valuable work experience and better understand all that a career in the sector offers.
- Include women employees and leaders in recruitment drives and give them preference for speaking slots at conferences and media appearances, though without unduly increasing their burden (GWNET 2019b).
- Establish frequent engagement with female employees and experts to ensure that their feedback on progress toward gender equality is guiding the design and implementation of gender policies and strategies.

Identify Gender Gaps in the Workplace and Enact Policies to Close Them

The first step in addressing gender inequality in the hydropower sector is to acknowledge that it exists. The second step is to investigate it. Companies can accomplish this by collecting anonymous disaggregated data to reveal disparities between men and women, such as the gender profile of certain functions (engineering, management, or administration), differences in salaries, or differences in the level of stress men and women deal with. For instance, for Canadian health services, evidence showed that men and women respond differently to managerial support, job control, job insecurity, and life stress levels (Padkapayeva et al. 2018). Higher levels of supervisor support resulted in lower stress levels for women, but for men the effect was the opposite; lower job control increases women's stress levels but not men's; and higher job insecurity was associated with higher life stress among men than women. This kind of investigation should be based around continuous or regular risk assessment, looking at risks for personal, physical, and mental wellbeing, as well as job security, with full gender- and age-disaggregated data analysis. Safety audits, led by the specialists in construction camps, and especially in remote areas, should be standard practice, ensuring that women have the minimum prerequisites for a dignified life (for example: a private sleeping space; gendered, lockable washrooms at a safe distance, and so forth).

The next step is to design and undertake gender transformative actions or gender mainstreaming (see Box 4.2) to close gender gaps and empower women. That demands a mechanism for gender to be systematically assessed and integrated into corporate decisions and processes. For example, as construction sites are traditionally male-dominated, they may only be equipped with one set of sanitary facilities. Considering gender from the start means that a separate facility for women would be planned and budgeted for in the project.

The final step is to adopt, implement, enact and monitor concrete policies and actions to close the gender gap, starting with a commitment to gender equality at the highest level within a corporation or institution. Good examples of how companies have enhanced gender equality, including through diversity commitments, goals, and actions can be found in the case studies on Engie Brasil (Box 4.4), Empresas Públicas de Medellín (Box 4.6), and Hydro-Quebec (Box 4.7).

Identifying gender gaps and adopting and enacting policies to close them is an opportunity for the hydropower sector to shed its reputation of being male-dominated and maximize the benefits that diversity brings to the sector.

Policies to Close Gender Gaps: The Importance of Work–Life Balance

Closing gender gaps starts with implementing policies to recruit more women. However, this is not sufficient to retain women in the sector. One means of accomplishing this is by

BOX 4.2

DEFINITION OF GENDER MAINSTREAMING (UN WOMEN)

“A process that systematically integrates gender perspectives into legislation, public policies, programs, and projects. This process enables making women’s and men’s concerns and experiences an integral dimension of the design, implementation, monitoring, and evaluations of policies and programs in all political, economic, and societal spheres with the goal of achieving gender equality” (UN Women 2012 and World Bank 2015).

Moreover, ESMAP offers a variety of tools to support projects that would like to increase women’s participation in the Energy sector. One of those available resources, the *Women’s Employment in Energy Sector Utilities Toolkit*, is designed to serve as a “one-stop shop” for advice and resources on how to bolster women’s employment in energy utilities. It contains links to free, publicly available tools and resources aimed at addressing the barriers identified in the Stepping Up Women’s STEM Careers reports. The toolkit contains four modules, each thematically focused. The first module addresses setting up a data-driven program and strategy with achievable targets; modules 2 to 4 focus on overcoming barriers to increased women’s employment according to the stage of a woman’s career (ESMAP n.d).

improving working environments for women. This broadly equates to recognizing that women still typically carry most of the domestic burden, including childcare duties (as well as other care duties, for example, for aging parents). It also requires enhancing work–life balance and flexibility in working conditions for both women and men, which was a recommendation voiced frequently in both the survey and the interviews.

The goal of enhancing flexibility in the workplace should be to prevent women’s careers from being hampered by motherhood more than men’s careers are hampered by fatherhood (IRENA 2019). There are many types of flexible work (UK Gov 2022):

- Flextime or flexitime: The employee chooses when to start and end work (within agreed limits) but works certain core hours, for example 10 a.m. to 4 p.m. every day.

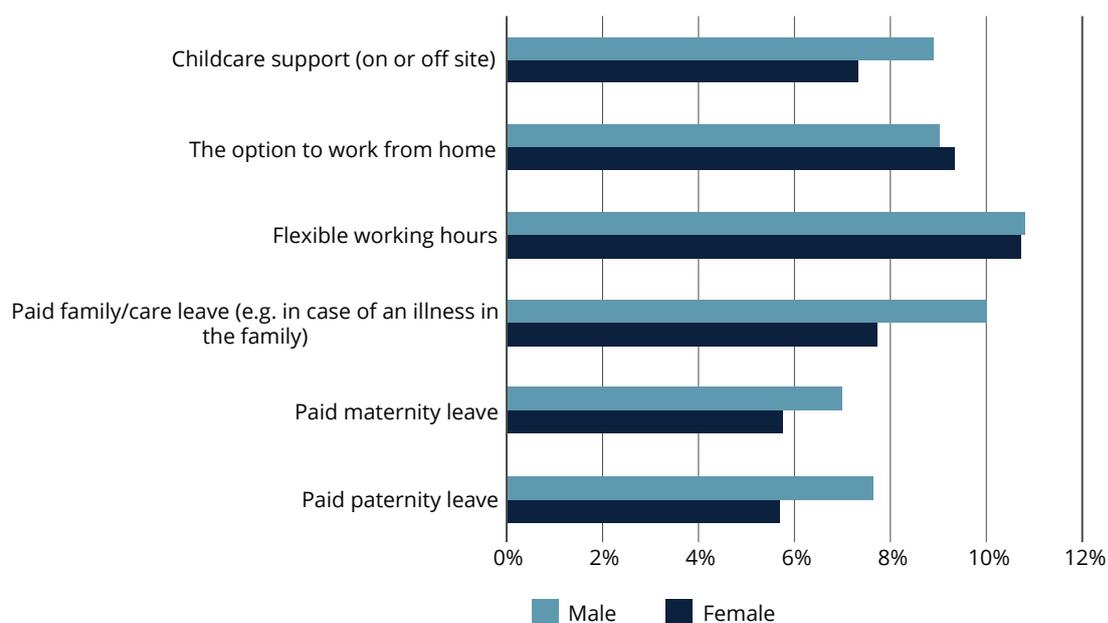
- Part-time work: Working less than full-time hours (usually by working fewer days).
- Working from home: Performing some or all work at home or anywhere else other than a company's office locations.
- Job sharing: Two people sharing a single job and splitting the hours.

Other measures to improve work–life balance include on-site childcare and maternity and paternity leave. Regarding childcare, the remoteness of hydropower operations presents a singular challenge, but this is not insurmountable (see Box 4.10, Case study on Sarawak Energy). Survey respondents also suggested that companies offer breaks for breastfeeding or religious observance and time off or reimbursement of costs for sports and wellness activities. While these measures benefit men and women, many interviewees said that they have more impact on women's work–life balance due to the predominant role they play in childcare. Integrating flexibility for all employees can also open the door for men to take on a greater share of domestic duties.

Figure 4.3 shows how survey respondents ranked a series of measures their company could offer to improve work–life balance. It should be noted that if an option was picked by few respondents, as with paid maternity leave, this is most likely because companies already provide it. However, for both men and women the most important arrangement is flexible working hours, followed by childcare support and the option to work from home.

FIGURE 4.3

Survey Responses to the Question “Which of the Following Would You Like Your Organization to Offer to Improve Employees’ Work–Life Balance?”



Source: World Bank data.

BOX 4.3

WEPOWER: A NETWORK TO ACHIEVE GENDER EQUALITY IN THE ENERGY AND POWER SECTOR

Started in 2019, WePOWER (led by the World Bank) was created as a vibrant voluntary women's professional network in the Energy and Power Sector in South Asia that supports women's participation in energy projects and institutions and promotes normative change regarding women in Science, Technology, Engineering, and Mathematics (STEM) education. WePOWER's 28 partners implement gender activities under five strategic pillars to address gaps in women's employment in the energy sector and enrollment in STEM education. The total share of women in power utilities in South Asia ranges from 3 percent to 25 percent, and the share of women engineer/technical employees is even lower—less than 1 percent to 21 percent.

“Over the years, WePOWER has continued to make a substantive and meaningful impact, despite the constant disruptions caused by COVID-19. In 2021, the 28 WePOWER partners across South Asia implemented 628 activities for 13,431 female students and professionals.

WePOWER Partners initially intended to implement 870 activities to reach 11,236 female beneficiaries, but were able to comfortably exceed that target by 20 percent because, having learned from their experience the previous year (in 2020), they were able to adapt to the contingencies created by the pandemic.

They redirected their efforts toward utilizing more virtual platforms for training and workshops. Additionally, the new hiring and promotions, supportive policies, and facilities also played an important role in helping women to stay engaged and progress in their careers.

The STEM outreach and internship opportunities are imperative for encouraging more girls to pursue jobs in the energy sector. WePOWER Partners persisted with these crucial activities, which was especially important at a time when shutdowns affected many schools and universities in South Asia.

(continues)

BOX 4.3 (Continued)

Country Support

STEM Education Outreach by Druk Green Power Corporation (DGPC) January to May 2021: DGPC's Basochhu Hydropower Plant (BHP) provided an outreach program to 25 female students of Gaselo Central School under Wangdue Phodrang District. The in-person visit was approved by the District COVID-19 Task Force. The DGPC female professionals provided an overview of the company's business operations and spoke about their academic background and 15 years of experience in the powerhouse as operations and shift in-charge. This program also offered field visits to the BHP Powerhouse (WePOWER 2021).

BOX 4.4

CASE STUDY: ENGIE BRASIL

Engie Brasil is the largest private-sector power producer in Brazil, operating in the generation, commercialization, and transmission of electric power, gas transport, and energy solutions. Its installed capacity of 10,000 MW consists of 97 percent clean and renewable energy installations, including 12 hydropower plants with a total installed capacity of 7,900 MW. It is present in 20 states and has been operating in Brazil for 25 years.

The company manages several diversity and inclusion initiatives (ENGIE 2022). First, in 2019 it set the ambitious goal of having 50 percent women in its workforce by the end of 2030. It recognizes the potential challenges of acquiring qualified female employees in operations and maintenance, particularly in the remote regions where most of the



Image source: Engie Brasil LinkedIn post
(continues)

BOX 4.4 (Continued)

company's operations are located. To meet this challenge, it promotes opportunities and works to develop the skills of women through free professional training courses. For example, in 2022 Engie Brasil developed a regional program named *Impulsando Mujeres en Liderazgo* (Empowering Women in Leadership). This six-month program provided participants with a rich experience that will accelerate female leadership development through assessment, workshops, and coaching. Thirty-one women were selected from across South America with the goal of becoming future leaders in the company.

Engie Brasil adheres to the UN Women Women's Empowerment Principles (WEPs), which are a set of considerations for businesses on how to promote gender equality and women's empowerment in the workplace, marketplace, and community. By joining the WEPs community, the CEO has signaled a commitment to this agenda at the highest levels of the company.

Additionally, Engie Brasil has been certified by Economic Dividends for Gender Equality (EDGE), which is a leading global assessment methodology and business certification standard for gender and intersectional equity. EDGE measures organizations' performance in terms of representation, pay equity, and effectiveness of policies and practices to ensure equitable career progress and inclusiveness of their culture. Having the EDGE seal is highly important for Engie Brasil because it supports the identification of best practices so that it can advance in building an increasingly inclusive organizational culture.

Other diversity and inclusion initiatives at Engie Brasil include:

- **Regional Diversity and Inclusion Committees** to plan and develop gender actions such as recruitment strategies, training programs (internal and external), social media communication plans, and diversity and inclusion webinars, workshops, and policies.
- **Business coalition *Mulheres 360***, a collaborative mobilization initiative that aims to engage private sector leaders to ensure voluntary commitments from companies to end violence against women and girls. This is accomplished through awareness raising on how to recognize violence against women and what to do when it occurs, training for the development of effective policies and procedures and coordinated advocacy with high impact on public policies, and engagement of companies, civil society organizations, international agencies, and government.
- **Key performance indicators** (non-financial) include the percentage of female managers, which stands at 22.5 percent across South America (mid-2022).
- **Modification of equipment** by the maintenance team at the São Salvador hydropower plant (grids, doors, and levers) so that it can be handled more easily by the female plant operator. This was done at the team's own initiative, reflecting that gender inclusion is not only a company policy, but is supported among employees.

Specific actions that can be taken by various actors are listed below:

Hydropower Operators, Consultants, and Equipment Manufacturers

- Adopt a clear, public commitment to gender equality at the highest level of the organization.
- Reflect the commitment in a realistic gender strategy that will involve internal identification of barriers, design the plan to remove these barriers (or at least minimize their impact) through engaging with women in the workforce, roll out the strategy, and monitor the impact in a way that allows reflection and adaptation toward the objective of equality.
- Ensure gender strategies capture, examine, and provide modalities of support to family life and family unity for both men and women employed in remote areas or any specific context.
- Adopt gender policies and make these known both within and outside of the organization.
- Produce a Gender Action Plan, which involves conducting a gap analysis of gender equality, setting goals, defining key performance indicators, and ensuring regular follow-up and accountability.
- Provide gender awareness training to key staff, such as operations managers and those responsible for recruitment.
- Provide tools to promote a spirit of diversity within the organization, such as in-person or online sensitivity training, visual material and videos showing women performing nontraditional roles in the workplace.
- Adopt and implement strict policies against discrimination and harassment, including specific mention of passive sexual intimidation. Ensure all staff are aware of the definitions of discrimination or harassment, are able to recognize it, and know how to act when they see it.
- Implement a grievance mechanism for victims of sexual harassment. Provide several avenues for the reporting of harassment and ensure that victims or reporters are protected from retaliation. Reduce the burden of proof to the extent possible for the survivors, and continuously address victim-blaming attitudes.
- Dedicate budgets and implement actions to enhance work–life balance.
- Provide personal protective equipment suitable for women at hydropower operations. This means that protective clothing should be available to fit a women’s shape and size, and other equipment such as work boots and safety harnesses should be available in smaller sizes.
- Provide separate sanitary facilities for men and women at power plants and construction sites.
- Implement human resources recruitment policies to attract female talent, for example by advertising positions using gender neutral language (see Box 4.5) and having both male and female recruiters.

- Work with universities to target women students for internships and apprenticeships (IRENA 2019), as these provide valuable first-hand experience, which can help women eventually secure permanent positions in the sector.
- Widely disseminate information on job opportunities, using all traditional and modern tools available (social media, job websites, LinkedIn, recruiters, job fairs, women in STEM networks and mentoring programs, and so forth), and not just through informal networks.

NGOs

- Create awareness of the need for and advocate for gender equality in the renewable energy sector, for example by promoting best practices and sharing stories of successful women in the sector.
- Provide guidance and assistance to hydropower operators on mainstreaming gender, for example by working with them to develop gender action plans.
- Work with local communities to help women find jobs both within the hydropower sector and in other economic spin-off opportunities that the presence of a hydropower plant provides.
- Promote good practices for advancing gender equality by showcasing best practices.
- Provide expertise and support in gender mainstreaming and monitoring, including supporting the confidentiality and safety of any staff who report unwanted behaviors (for example, map and help access basic services and support).

Hydropower Industry Associations

- Promote good practices for advancing gender equality among members by showcasing best practices, promoting activities such as mentoring on social media channels, holding sessions on women in hydropower at conferences and ensuring that women figure prominently as speakers at industry events.
- Conduct sector-wide regular consultations with different genders and set up standards that can guide inclusion and safety for all within the sector.

Governments and International Financing Institutions

- Design, adopt, and implement transparent gender policies.
- Commit budgets to include closing gender gaps as an integral part of development projects.
- Use purchasing power to encourage gender diversity in their supply chain, for example by employing a points system in tender processes whereby a bidder is awarded more points if there are women on the team. Follow up to ensure that the women are full, contributing, team members once the project is underway, and not just included in bids just to “tick a box.”
- Provide support for gender mainstreaming efforts in developing countries, such as the UNDP-supported Equipares Seal in Colombia (see Box 4.6).

Academia

- Adopt a clear, public commitment to gender equality from the highest level of the institution.
- Adopt gender-sensitive policies and make these known both within and outside of the institution.
- Produce a Gender Action Plan, which involves conducting a gap analysis on gender equality, setting goals, defining key performance indicators, and ensuring regular follow-up and accountability.
- Provide gender awareness training to key staff.
- Provide tools to promote a spirit of diversity within the institution.
- Implement a grievance mechanism designed for victims of sexual harassment.
- Dedicate budgets and implement actions to promote work-life balance.
- Dedicate budgets to research obstacles and good practices in achieving gender equality in any specific given social, cultural and economic context.
- Implement human resources recruitment policies that aim to attract female talent by advertising positions using gender-neutral language (see Box 4.5), using women and men recruiters, and showing photos of men and women in nontraditional roles (IRENA 2019; GWNET 2019b). Hiring committees and interview panels should also include both women and men.

BOX 4.5

GENDER-NEUTRAL LANGUAGE AND IMAGING

In certain languages, the words for professions can be written as either male or female. By default, the male version is traditionally used. To be more inclusive, this can be changed to include both women and men.

For example, job advertisements for engineers in Spanish should indicate *ingeniero/a* or even *ingeniera/o* instead of just the masculine form *ingeniero*, and be accompanied by images of both women and men, even though engineering is a male-dominated profession. When *Empresas Públicas de Medellín* (see Box 4.6) made these changes, it saw an uptick in the number of female applicants to its vacancies.

Another example of gender-neutral language is changing the name of the room in which workers gather during breaks from the “men’s room” to the gender-neutral “social room.”

As one interviewee said, “these are small changes but companies who have incorporated gender have made these changes.”

Finally, the question of whether to adopt hard quotas (mandatory fulfilling of a certain percentage of positions by women) is a sensitive topic on which there was no consensus during the interviews. Some interviewees felt that quotas could be a concrete means of getting more women into nontraditional positions. In fact, some countries have enacted laws to this effect, such as Malaysia, which requires publicly traded firms to have at least one female director on their boards as of September 1, 2022 (Bloomberg Markets 2021). However, many interviewees noted that there are too few women in the pipeline to fill these positions and that women who are promoted too soon or without the necessary skills are being set up to fail. If quotas force companies to promote underqualified women to high positions, and if those women then perform unsatisfactorily, that can not only lead to frustration or even burnout among the women involved, but also harm the perception of women's ability to be leaders in the sector in general. Women may also face additional bias by male peers if they are perceived as having been promoted only because of a quota.

An alternative to hard quotas is soft quotas, such as ensuring that a minimum number of women are interviewed for each position. This is important because research into academic hiring in the United States showed that if there is only one woman in a pool of candidates being interviewed, she is viewed as an outlier and has almost no chance of being hired. If two or more women are interviewed, that changes interviewers' perception of the norm: the women are no longer seen as outliers, leading to much higher chances of a woman being hired (Johnson, Hekman and Chan 2016). An alternative is for quotas to be adopted only for certain positions, such as board members. The Colombian company *Empresas Públicas de Medellín* gives recruiters for high-level positions the assignment to propose an equal number of male and female candidates (See Box 4.6).

BOX 4.6

CASE STUDY: EMPRESAS PÚBLICAS DE MEDELLÍN

Empresas Públicas de Medellín (EPM) was founded as the public utilities company of Medellín, Colombia's second-largest city. Still owned by the municipality of Medellín, it is now the third-largest company in the country, and it provides electricity, gas, water, and sanitation services in most of Colombia. Its 24 hydropower stations, thermoelectric power station, and wind farm represent 19 percent of Colombia's installed generation capacity and supply nearly 24 percent of Colombia's electricity. Of EPM's 8,371 direct employees, 30 percent are women. Twenty-seven percent of the company's managers are female, as are 33 percent of its technicians and auxiliaries.

(continues)

BOX 4.6 (Continued)

In 2021, EPM was awarded a Silver Seal for commitment to gender equality by Equipares, which is a collaboration between the Colombian Ministry of Labor and the High Presidential Council for Women's Equality, supported by the United Nations Development Program. This official recognition was the culmination of a two-year process during which EPM, guided by Equipares, identified and analyzed gender gaps in the organization and developed and implemented an action plan and gender policies to close the gaps identified. An independent audit verified the progress made and granted EPM a score of over 98 percent. The EPM leadership are now considering implementation of the requirements for the Equipares Gold Seal, if these are deemed compatible with the constraints EPM faces as a public enterprise (e.g., certain board positions are political appointments that EPM's management cannot influence).

EPM acknowledges that it still must do more to close gender equality gaps and is committed to achieving continuous improvement. As in the other case study companies, a key enabler of its success thus far has been the enthusiastic support and encouragement of the highest echelons of the company's management.

The actions EPM has taken to attract more women include:

- Renaming of 235 positions that previously had masculine job titles, to make them more inclusive. This has led to more women applying for these positions.
- Creation of a community of women engineers and technicians, who are encouraged to apply for every new vacancy published.
- Removal of the requirement to include a photo in resumes, or to include one's age or gender.
- For high-level positions that are filled through recruiters, recruiters are instructed to find an equal number of male and female candidates, whenever possible.

Actions taken to improve the working environment for women include:

- A campaign among employees to promote gender equality and raise awareness of the damage that can be done by harassment and sexist jokes in the workplace.
- Efforts to promote a "new masculinity" in the workplace, including by encouraging men to also take care leave for sick children or make use of flexible working hours to take children to school.
- EPM's Committee for Labor Coexistence (*Comité de Convivencia Laboral*) is an interdisciplinary body that protects employees against psychosocial hazards that can affect their health, including work-related stress and workplace harassment. EPM has made an effort to raise awareness of the existence of this committee and to ensure employees feel it is an ally. This committee also visits remote hydropower sites to get to know the employees there.

Raise Awareness to Promote Hydropower as an Appealing Career for Women

“Make the hydropower sector an environment welcoming to women and tell the story.”

– Interviewee

Hydropower has been called “the forgotten giant of the renewable sector (IEA 2021).” It is a mature, well-established technology that has played a key role in electricity generation for well over one hundred years. In the dozens of interviews conducted for this study, many participants expressed the view that it is a shame more women do not choose to pursue careers in the sector. Women talked of the adventures they had, of the awe and excitement they had felt working on hydropower installations, and of their pride in helping provide clean electricity for their countries.

People working in the sector generally extol the virtues of hydropower. The majority of respondents to the survey (81 percent of men and 77 percent of women) said they would “probably” or “definitely” still be working in hydropower in two years’ time. However, there was consensus from interviewees that the sector has not been successful at promoting itself outside of its somewhat insular milieu.

The 2020s present a massive opportunity for the hydropower sector not only to assert its position as a driver of the energy transition but also to shake off its image of an old, traditional, male-dominated sector and spark the imaginations of environmentally conscious current and future generations. It has the opportunity to become a frontrunner in gender equality by telling the stories of the women working within it, encouraging them to share with the wider world their adventures, their enthusiasm, and their pride as hydropower ambassadors.

Many actors can participate in the promotion of hydropower as an attractive career for women (see below). First and foremost is the hydropower industry itself:

Hydropower Operators, Consultants, and Equipment Manufacturers

- Ensure that employees know about the Gender Action Plan and any related strategy; plus its significance for the organization.
- Actively educate employees about their roles in defining the safety of the work environment for women.
- Ensure that the complaints and reporting mechanism is safe for women and eliminates the possibility of retaliation.
- Continuously educate and address attitudes that discourage diversity.
- Actively promote the many positive attributes of hydropower in order to make it a more attractive sector to work in. An example of one hydropower operator that does this already is provided in Box 4.7: Case study on Hydro-Québec.

BOX 4.7

CASE STUDY: HYDRO-QUÉBEC

Hydro-Québec is among the world's largest hydropower producers, operating more than 60 hydropower plants with a total installed capacity of over 37,000 MW. It is also responsible for the transmission and distribution of electricity in the province of Quebec, Canada. It employs approximately 20,000 people.

Hydro-Québec has implemented programs to ensure that its workforce reflects the diversity of the Quebec population and that its hiring processes attract the best candidates. To this end, a dedicated Equity, Diversity, and Inclusion team was created at the beginning of 2021.

The company has put in place several initiatives to attract and retain women and minorities:

- Hydro-Québec is an official partner of **The A Effect**, a program to help foster ambition and leadership skills in women. Cohorts of interested women complete 50 hours of Master Class training. The program helps them to create networks and gives them the skills to make an impact within the organization, particularly in management roles.
- The company undertakes **training and awareness raising** among managers and employees, stressing that everyone has a role to play in creating a more inclusive environment. Managers are trained on unconscious biases and two "inclusion weeks" have been held, with daily activities such as online conferences on a particular theme related to each underrepresented group.
- The company plays a corporate citizen role and tries to **stimulate young women** to think about pursuing nontraditional careers and entering the hydropower sector in general. Educational materials are provided free of charge to schools, and in-house experts are made available to give talks to classes at all levels, from elementary to university (Hydro-Québec 2022).
- Data on **external hiring of underrepresented groups** are reviewed monthly, and data on **representation of women and minority groups** among employees and management are made publicly available. Although women only make up 18 percent of frontline managers, they constitute approximately 40 percent of intermediate-level managers (data from June 2021).

(continues)

BOX 4.7 (Continued)

In 2022, the CEO is a woman and over half of the members of the Board of Directors are women (Hydro-Québec 2022). Women represent 21 percent of the engineering workforce at Hydro-Québec, which is significantly higher than the Québec industry average of 15 percent (Ordre des ingénieurs du Québec 2021).

- Hydro-Québec is a member of **Catalyst**, a global nonprofit supported by many of the world's most powerful CEOs and leading companies that aims to help build workplaces that work for women by equipping companies with the strategy and tools they need to make change and measure impact at their organization (Catalyst 2022).

- Launch campaigns to explain the benefits of hydropower, with tailored messages for various target audiences, ranging from policy makers to the general public, to encourage all facets of society to see hydropower as a solution to climate change.
- Reconfirm the company's commitment to the SDGs and to sustainability and social responsibility and publicize evidence of the company putting this commitment into action.
- Raise awareness among the public of the benefits of hydropower and demystify the technology by holding open-door days that allow visits to facilities.
- Offer internships and employee-for-a-day programs for university students to learn more about the typical workday of people in the sector and the variety of roles that they play.
- Undertake targeted outreach to, and encourage visits to facilities by, primary and secondary schools, as well as universities.
- Draw more attention to the fact that hydropower offers many different opportunities, not only in engineering but also in environmental science, ecology and conservation, communications, marketing, sales, and a range of other STEM and non-STEM disciplines.
- Promote the attractiveness of the hydropower sector as an exciting career option.
- Promote apprenticeships as an adventure and, where possible, allow apprentices to experience a range of hydropower facilities.

Hydropower Industry Associations

- Launch campaigns to explain the benefits of hydropower, with specially crafted messages for various target audiences, ranging from policy makers to the general public, to encourage all facets of society to see hydropower as a solution to climate change. See Box 4.8 for a global example.

BOX 4.8

PROMOTION AND AWARENESS RAISING ABOUT HYDROPOWER, BY INDUSTRY ASSOCIATIONS

International, national, and regional hydropower associations generally have as part of their mandate the promotion of hydropower, explaining its role as a reliable energy source that can help society meet renewable energy and emissions reduction targets. They provide information aimed at demystifying the technology and explaining its benefits.

For example, in March 2022, International Hydropower Association (IHA) launched We Can with Hydropower, a global campaign to highlight hydropower's role in achieving net zero and energy security. Actions include a micro-site and frequent postings of short, eye-catching messages on social media (IHA 2022).



Image source: International Hydropower Association

Several major hydropower conferences, such as the World Hydropower Congress, HydroVision, and the conferences organized by Waterpower Canada and the National Hydropower Association in the United States, regularly host dedicated sessions or events specifically on women in hydropower. These sessions are important for raising awareness about the issues facing women in the sector and to showcase best practices implemented by hydropower operators or other stakeholders to encourage more women to join and stay in the sector. While the majority of participants at these events tend to be women, many men also participate.

In addition, industry associations have created a number of initiatives aimed at attracting younger professionals and creating more diversity. One recent example was the Youth in Hydropower session at the World Hydropower Congress in 2021, which led to the creation of Young Professionals in Hydropower (YPH), an initiative organized by IHA to provide a platform for youth to influence and drive positive
(continues)

BOX 4.8 (Continued)

change in the hydropower sector. YPH aims to cultivate future leaders in the field of renewable energy and climate change. A similar initiative is the Future Leaders of Waterpower, or FLOW, which was created by the National Hydropower Association in the United States with the goal of attracting diverse and young professionals to the hydropower industry (Dumlao 2022).

However, feedback received during the study made clear that the hydropower industry's messages are insufficiently successful at reaching audiences outside the industry itself. The challenge ahead is for the sector to successfully target outside stakeholders, including the general public.

- Support hydropower companies in their efforts to enhance their sustainability and social responsibility performance.
- Through research and the proposal of best practice activities and monitoring strategies, support hydropower companies' efforts to contribute to the advancement of the SDGs.
- Ensure coherence of messaging from the industry.
- Promote the role of hydropower in the energy transition.
- Promote the attractiveness of the hydropower sector as an exciting career option.

Universities and Educational Institutions

- Promote the role of hydropower in the energy transition by including hydropower in courses on renewable energy.
- Engage with the hydropower industry not only for research, but also to seek expertise from industry to help promote the sector to current students.

Governments and International Financing Institutions

- Consider hydropower in policy making and when considering or promoting the transition to renewable energies.
- Consider incentives for equality at the community level, as well as for the companies that promote equality.

- Ensure that sexual and gender-based violence is criminalized, and ensure that law enforcement and social services offer support and safe reporting of—and safe processing of—disclosures in line with a survivor-centered approach.

Provide Mentoring, Role Models, and Networking Opportunities for Women

“I benefited a lot through having a mentor. So, now I can easily turn to other women and mentor them, formally and informally.”

– Focus group participant

Mentoring is an effective and increasingly popular mechanism to promote women’s professional development, by helping women build important soft and hard skills, expand their networks, interact with role models, find acceptance and affirmation, and ultimately, achieve career success (UN Women 2020). Mentoring also helps drive positive organizational culture change (De Vries and Webb 2006). During the interviews, providing mentoring, role models, and networking was the recommendation mentioned by the greatest number of participants.

Mentors act as role models and help mentees feel less isolated, build their confidence, and navigate the internal politics of their organizations (GWNET 2019a; GWNET 2019b). Effective mentoring results in higher chances of promotion; thus, men and women should have equal access to such opportunities.

Several mentoring programs already exist for women either in a particular profession (such as engineering or management) or who work within a particular sector (such as hydropower or geothermal energy). Mentoring others is an opportunity for women to share their knowledge and help future generations. Several interviewees who act as mentors said that they wished that they had had access to mentoring programs when they were starting their careers. Others said that they were not aware of the mentoring programs that already exist, indicating that the issue may not only be a lack of programs that target women who work in the hydropower sector, but also a lack of awareness of existing programs. Although the impacts of mentoring may be difficult to measure in quantitative terms, at least in the short term, exit surveys can be used to evaluate satisfaction with the mentoring program for both mentees and mentors. In the long term, the career progress and satisfaction of women who have received mentoring can be compared with those of women who have not.

Two mentoring programs that attract many women to the hydropower sector are described in Box 4.9. Many actors can contribute to providing mentoring, role models, and networking opportunities for women, with specific actions indicated below.

BOX 4.9

EXAMPLES OF SUCCESSFUL MENTORSHIP PROGRAMS

The **Women in Hydropower** mentorship program matches mentors and mentees from the hydropower sector, thereby providing an opportunity for women to connect, build new friendships and networks, and share experiences in a supportive environment that highlights the important contributions of women from the global hydropower industry. The mentors and mentees are encouraged to meet once a month for eight months (October to May), and pairings can be renewed for the subsequent annual cycle.

This program started in 2017 as an ad hoc initiative by two experienced women in the hydropower industry within the United States and has grown to international participation. In September 2021, 126 women were placed in pairs or groups of three based on language and interests. Participants hailed mainly from North America, but also came from South America, Europe, Africa, and East Asia and the Pacific, representing a total of nine countries. Composed entirely of volunteers, the Steering Committee works with international, national, and regional hydropower associations to promote and share information about the program.

“The feedback about women’s experiences in this mentorship program has been overwhelmingly positive and illustrates how critical women-to-women mentorship is” (Women in Hydropower 2023).

The **Global Women’s Network for the Energy Transition (GWNET)** organizes mentoring programs for women in low- and middle-income countries working in the renewable energy sector, including in hydropower. Some of its programs are global, whereas others have a regional or sectoral focus. GWNET aims to help women from low- and middle-income countries attain leading positions in their countries’ energy transitions. To date, its pool of over 400 female and male renewable energy leaders has provided one-on-one mentoring to over 300 women in over 70 different countries. Mentoring programs last 12 months and are complemented by knowledge transfer webinars or online course materials, networking sessions, and study tours. Women are supported to clarify and advance their career goals, enhance their strengths, address their weaknesses, and build a global network.

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BOX 4.9 (Continued)

Besides organizing mentoring programs, GWNET engages in research and advocacy activities, including the co-authoring of this report. Together with the United Nations Industrial Development Organization and ENERGIA, it has launched the Gender and Energy Compact, which calls upon public and private sector organizations in the energy industry to commit to achieving gender parity.

“The GWNET Mentoring Program helped me to understand my strengths and draft the path towards my career goals. Discussions with my mentor have been eye-opening and thought-provoking, and for sure helped me to develop as an energy leader” (GWNET website).

Mentorship, Training, and Support Groups

Hydropower Operators, Consultants, and Equipment Manufacturers

- Develop and support mentoring and networking programs for women within the company. This can be accomplished in a variety of ways.
- Allow and encourage employees to take advantage of mentoring and networking opportunities provided outside of the company, both as mentors and mentees.

Hydropower Industry Associations

- Showcase women role models, for example by offering to host a blog to share stories of successful women, regularly highlighting women in hydropower on social media posts, and ensuring women speakers feature prominently at conferences. This can be accomplished by adopting a rule that each panel must include at least one female speaker.
- Support and promote mentoring and networking opportunities in the sector by providing seed funding or in-kind support, leveraging membership networks to find participants, and advertising them through their regular communications channels.
- Disseminate best practices on mentoring programs through communication tools such as member newsletters, social media posts (or re-posts), or by offering to host blogs highlighting participants in programs.

BOX 4.10

CASE STUDY: SARAWAK ENERGY

Sarawak Energy is an energy development group and a vertically integrated power utility. Founded 100 years ago, its vision is to achieve sustainable growth and prosperity in Sarawak (Malaysian Borneo) by meeting Southeast Asia's need for reliable renewable energy. The company's generation mix is dominated by clean and renewable hydropower complemented by thermal power from the indigenous natural resources of coal and gas.

With a multidisciplinary workforce of 5,400, Sarawak Energy serves a population of nearly 3 million people through 740,000 customer accounts across Sarawak.

Talent Management Strategy

Sarawak Energy recognizes that equity, diversity, and inclusion (EDI) within its workforce is crucial to building a progressive working culture and driving sustainable growth for the company. The group has taken deliberate actions to achieve an equitable representation of women.

Enabled by a robust talent management strategy, coupled with policies that promote EDI, the company has formulated a People Strategy with the motto "Let's ADD (Acquire, Develop, and Deploy) our talent." This strategy addresses the full talent management value chain, from the acquisition of the right people, to their effective development, and finally their deployment in roles that maximize their potential. This is supported by a talent management ecosystem comprising components such as merit-based progression and a self-driven development plan.

The company's recruitment strategy adopts the principles of EDI and covers the development of young talent through scholarships and bursaries. This resulted in an increase in the share of women employed by Sarawak Energy between 2018 and 2021: in this period, at least 40 percent of the executives recruited were women. Currently, women hold 38 percent of all executive-level positions in Sarawak Energy. The company also adopted a merit system for career progression, which resulted in an increase in the share of women receiving promotions; a total of 629 women employees received promotions within the same period.

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BOX 4.10 (Continued)

To support Malaysia's national target to have thirty percent women in leadership positions and of SDG 5, the company appointed 12 women to the boards of its subsidiaries, including its hydropower generation subsidiaries, in 2022.

In 2017, the company launched the Sarawak Energy Leading Women Network (SELWN) (Sarawak Energy website 2022), a professional networking and engagement platform with the primary objective of developing and empowering women employees within Sarawak Energy through talent management programs, networking, and continuous learning. It also encompasses a successful in-house Women Mentoring Women program to allow women leaders to draw on their own experiences to empower other women employees.

Anecdotal feedback from this program is very positive: the leaders of the company commented that they have seen growth in confidence in the women who took part in this program and that they are more willing to speak up now within the safe environment that the company provides.

Sarawak Energy also offers structured learning and development programs to help employees build technical and leadership skills. To further enhance women's development programs, SELWN (through its capacity building and learning focus areas) collaborates with the human resources department to identify-focused learning designed for women and to organize opportunities for women to attend relevant leadership programs.

The Accelerated Development Program was also implemented to accelerate the development of executives in the company. The program had set the goal of reaching 40 percent of the executives in Sarawak Energy. It has already exceeded this goal, with about 50 percent of women executives participating in the program to date.

Strong Governance

Sarawak Energy has adopted a zero-tolerance policy toward unethical behavior and misconduct in the workplace to further support gender equality and the creation of a safe workplace for all. The company has recently revised its Code of Ethics, broadening its scope to include subjects such as workplace harassment.

(continues)

BOX 4.10 (Continued)

Healthy Living Benefits

In addition to a robust people strategy that seeks to retain the best talent in the company, Sarawak Energy has also taken steps to support the needs of its diverse body of employees. To help employees balance work and personal life, the company allows for conditional flexible working hours, whereby arrangements can be made with respective team managers.

To support working parents in balancing career and familial responsibilities, on-site childcare facilities are provided at Sarawak Energy's headquarters and Bakun hydropower plant, despite such facilities not being mandated by Malaysia's regulatory requirements. The centers not only accommodate working parents' needs and provide peace of mind that their children are easily accessible, but also serve as an attraction for younger talent to join the company, especially in positions stationed at rural sites (Sarawak Energy website 2022). The co-benefits of the Bakun center include the creation of employment opportunities in the local communities as childcare workers.

NGOs

- Support and promote mentoring and networking opportunities in the sector.
- Disseminate best practices on mentoring programs through communication tools such as member newsletters, social media posts (or re-posts), or by offering to host blogs highlighting participants in programs.

International Financing Institutions

- Work with NGOs and other relevant institutions to develop, provide seed funding or in-kind support for women in specific regions or parts of the sector where additional assistance may be needed, and promote mentoring and networking opportunities for them. For example, the World Bank's ESMAP, which hosts the Secretariat of the Energy Storage Partnership, organized a mentoring program for women in energy storage together with GWNET.

Include More Men in the Gender Inequality Discussion and Encourage Them to be Proactive to Reduce the Gaps

The survey results indicate that men are not as aware as women of the processes entailed in narrowing the gender gaps. However, evidence shows that it is highly effective to involve men in these processes, helping them to understand how they relate to the underlying gender equality issues. The World Bank (2013) summarized the situation by stating that both men and women are impacted by gender norms, and that this context exerts a negative influence on women's agency and sustains men's unwanted behaviors such as the exercise of violence and the imposition of constraints on women's empowerment and agency. Moreover, men are key stakeholders for gender equality and should act as allies to improve women's empowerment and agency. They are capable of changing deeply rooted behaviors that prevent women fully enjoying their rights and spaces, including those that provide economic opportunities. This could be by implementing better training, and enforcing respect and promotion policies within companies. In general, men's greater decision-making power gives men more agency and spaces than women, as their decisions are backed by gender norms that tend to glorify traits of hegemonic masculinity.

Moreover, studies over the past decades signaled that even male and female engineers with virtually identical qualifications and occupational attitudes tend to have different positions at a workplace because the culture of engineering is generally identified with a male gender role, which works against women (Gregg and McIlwee 1991). Men have the power to change those perceptions and behaviors by working collaboratively to ensure men and women enjoy all spaces at different levels. Men can: (i) act as listeners and help amplify women's voices by ensuring trust and respect; (ii) create awareness about their power and privilege as men; (iii) give credit to women when female colleagues provide ideas and leadership; (iv) promote and advocate for gender equality policies across the organization; (v) be active in identifying and addressing sexism including sexist language and behaviors; (vi) share responsibilities at home including taking care of domestic tasks and caregiving; and (vii) support women taking leadership and decision-making positions (UNFPA 2020).

Some behaviors observed in sectors where STEM careers are needed replicate actions and attitudes performed during school years. Harvard Business Review explained a longitudinal study of engineering students to see how "socialization," or learning about the culture of engineering, affects their future job decisions. It found that engineering is a career that needs close collaboration and teamwork, but women are treated in gender-stereotypical ways that impede technical interaction with their peers (mostly men) especially when they are relegated to note taking or secretarial tasks (Harvard Business Review 2016). Men as leaders of the field have the potential to change these initial behaviors and avoid perpetuating them across the industry.

Hydropower Operators, Consultants, and Equipment Manufacturers

- Design and implement programs to create awareness of the importance of gender equality in particular for men.
- Disseminate the importance of gender equality within companies such as better work environment, higher revenues, better transparency, and so forth.

Hydropower Industry Associations

- Dedicate spaces for discussion about the importance of involving men in gender equality actions.

Universities and Educational Institutions

- Identify and address unwanted behaviors that show traits of hegemonic masculinity that constrain women's trust and confidence.

Governments and International Financing Institutions

- Support the design and implementation of programs that aim to change men's behaviors and promote women's participation.



FIVE CONCLUSIONS



“Let us look at potential beyond gender, beyond diversity, let us look at human beings. We all have so much to offer to companies.”

– Interviewee

The hydropower sector has specific barriers for women equality. First, the sector has long been dominated by engineering expertise of various types, unlike the (younger) renewable energy subsectors (Scheiber & Tomiotto 2018). Second, hydropower is a well-established technology, with companies that have been operating for many years; as a result, it carries a legacy of processes and patterns of behavior that have directly or indirectly disadvantaged women. Third, hydropower facilities are often in remote areas, which hampers opportunities for women because of the lack of facilities specifically for women, the impracticality of bringing young children to such facilities, and concerns over women’s safety.

These hydropower-specific barriers are compounded by additional barriers that are common to all parts of the renewable energy sector and, in fact, all sectors that require STEM skills, including the scarcity of women studying STEM subjects, male-dominated workplaces in which women may feel unwelcome, and a lack of role models and mentorship opportunities for women. As a result, women make up just 30 percent of hydropower employees, according to the survey conducted for this study. This is broadly consistent with other renewable sectors despite hydropower’s legacy as a well-established technology. Therefore, in recognizing the challenges faced by women in the hydropower sector, it is important to acknowledge that many other sectors within the energy industry are struggling to achieve gender parity.

Presented throughout the report are several case studies of companies that have made a particular effort to address these barriers and enhance gender equality. These attest to the fact that the hydropower sector all over the world has already made great strides in improving working conditions for women and men.

To close remaining gender gaps and attract more women to the sector, companies, and other hydropower stakeholders should consider implementing the five key recommendations from this study:

- **Start with education and implement actions to remove constraints on the numbers of women who pursue STEM degrees:** The scarcity of women studying STEM creates a pipeline problem: few qualified women are available for hydropower companies to hire at the entry level, and thus there are also few women to promote to higher positions. As numbers of women remain low at all levels in hydropower companies, male-centric workplace undesirable behaviors persist, which leads to fewer young women viewing hydropower as a viable career and fewer women choosing to study STEM subjects. To break this cycle, universities, hydropower companies, and other stakeholders must do more to attract women to STEM degree programs by highlighting the career opportunities available to women in STEM and by making those degree programs welcoming and safe for all.
- **Identify gender gaps in the workplace and enact policies to close them:** This study found that although hydropower companies have worked hard to enhance diversity and

inclusion in the workplace, many women in hydropower still face biases, discrimination, and harassment at work. This leads to many women either choosing not to enter the sector at all, or to leaving the sector. Hydropower companies must work to improve workplace environments for women, including by providing the benefits they require to balance work and family life, by providing diversity and inclusion programs that benefit women, and by educating men and women on gender biases and how to address them.

- **Raise awareness to promote hydropower as an appealing career for women:** Almost all the women interviewed for this study had ended up in the hydropower sector “by accident.” For various reasons, including hydropower jobs being viewed as more suitable for men in some cultures, and career opportunities in the sector being disseminated primarily through informal male networks, women tend to be less aware of the wide range of career possibilities that hydropower offers. Hydropower companies, industry associations, and other stakeholders should seek to change this by promoting the benefits of a career in hydropower to women and men.
- **Provide mentoring, role models, and networking opportunities for women:** both women and men viewed a lack of female role models in hydropower as a key barrier to women’s entry into and advancement in the sector. First, a lack of visible examples of successful women in hydropower leads to fewer young women choosing to work in the sector. Second, once women have entered the sector, a lack of peer groups and mentors supporting them as they navigate their heavily male-dominated work environment can leave them feeling like outsiders. Hydropower companies can address this by providing networking opportunities with other women in the sector, offering mentorship programs internally or encouraging employees to join external networking programs, and by revealing the successful women within their ranks to inspire others to join the sector.
- **Include more men in the gender inequality discussion and encourage them to be proactive to reduce the gaps:** it is imperative for men to act as allies and to form part of the solution to achieve gender equality in hydropower. Since men continue to disproportionately influence workplace environments, their recognition of gender biases and their leadership in promoting gender equality can have a powerful impact. Practicing allyship can be as simple as recognizing that a lone woman standing in a room full of men may feel intimidated; men can take steps to make sure that her voice is heard. Many women participating in this study praised male managers and colleagues who had supported their careers and had from the outset insisted that they be included in any discussions or actions.

Closing gender gaps in the hydropower sector requires the efforts of many stakeholders within and beyond hydropower companies, including industry associations, NGOs, academia, and governments. Gender equality cannot be left just to human resources departments—to bring about lasting change in a company’s workplace culture, wholehearted support from the highest levels of management is crucial. It is also important that the industry and other stakeholders acknowledge that gender gaps exist, gather the necessary data, implement concrete measures, evaluate their effectiveness, and share evidence regarding what works. Stakeholders should assess the effectiveness of specific initiatives in terms of advancing gender equality and the benefits that increased participation by women generate for the sector.

Engaging with young people will also be critical. By implementing the recommendations to raise awareness of hydropower as an interesting career for women and encouraging girls and young women to pursue STEM subjects, the hydropower sector and educational institutions can ensure that the next generation are fully engaged with the sector and reinforce the role that hydropower can and must play in meeting climate change goals.

This report is a baseline study, an important step on the long road to gender parity. Although this report was global in nature and involved participants from every continent and a wide range of stakeholders, it does not aim to be fully comprehensive, and the information collected is from self-selected individuals: it mainly reflects perceptions and observations, albeit valuable ones. Further work is needed, in particular to identify key regional trends and any differences. More factual data on various aspects of women's employment in the sector (including the school-to-work transition, retention, promotion, and wage gaps) could be gathered on a regional and country-by-country basis. This will be particularly important for the World Bank and its clients, as further research in specific developing country contexts may show a different balance of barriers and, importantly, identify successful mechanisms for furthering women's participation in the hydropower workforce at all levels. The survey and interviews were conducted in English, French, and Spanish; further investigation in additional languages may bring an even wider perspective. Further work is also needed to explore the wider issue of diversity, equity, and inclusion in the hydropower sector, focusing on different cultural communities such as the LGBTQ+ community.

Follow-up studies are recommended to track progress and to dig deeper into some of the key themes identified here, such as how to make remote hydropower sites more inviting workplaces for all, and what the precise impacts are of different hiring practices and diversity and inclusion programs.

ANNEX

Measures to Ensure Equality Can Be Achieved in Each of the Hydropower Project Stages

HYDROPOWER PROJECT STAGE	MEASURES NEEDED TO ENSURE EQUALITY CAN BE ACHIEVED
1. Planning	<ul style="list-style-type: none"> • Promote gender equal teams in the feasibility studies, engage with universities and academia to encourage female students to join the teams. • Engage gender diverse teams in the design and implement environmental and social impact assessments, especially ensuring that women are on the teams to consult the female population that will be impacted by the project. • Engage and consult with all staff on how support can be given to family unity—for example, putting together a plan for childcare and support, using technology and the opportunity to work remotely for parents with small children (reducing unnecessary separation and any requirement to be present in the field in person). • Make a safety and security plan mandatory, with specific consideration of female employees (engineers, construction workers). Such a plan must be designed by women, in order to avoid making erroneous assumptions. • Here, as in all stages, ensure that the pay for work is equal for the same grade and job, regardless of gender. • Map local women-held businesses and engage their services to the extent possible.
2. Construction	<ul style="list-style-type: none"> • After creating a safe environment for women (physical and social), call for workers, highlighting that women are encouraged to apply (for any position at the construction site) because the company actively works to ensure diversity and equality. • After hiring staff, make an introduction mandatory, to explain the importance of the company's commitment to gender equality, and ensure that the safety of all genders is a non-negotiable issue, stressing the role of all in ensuring respect for diversity and an inclusive work environment. • Ensure the introduction of effective, safe reporting mechanisms (grievance mechanisms) that are easily accessible to all. • Promote access to sexual and reproductive health services, and the presence of female nurses and doctors specialized in women's health.
3. Operation	<ul style="list-style-type: none"> • Monitor the environment effectively—that is, ensure the gaps or barriers deterring functionality of women in the working environment are identified in a timely manner and addressed adequately (including barriers at the community level, such as the availability of childcare services, or health (including sexual and reproductive health) services. For example, create a feedback mechanism engaging women to reflect on the working environment, issues, and recommendations; create a female lead team to design a response to such barriers. • Ensure women are given space to identify good practices and encourage their engagement in awareness and opportunities with academia.
4. Decommission or Repurposing of the Plant's Facilities	<ul style="list-style-type: none"> • Engage female staff in design of the decommissioning plan. • Ensure female community members are consulted in the process, defining the new purpose of the plant's assets and facilities.

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