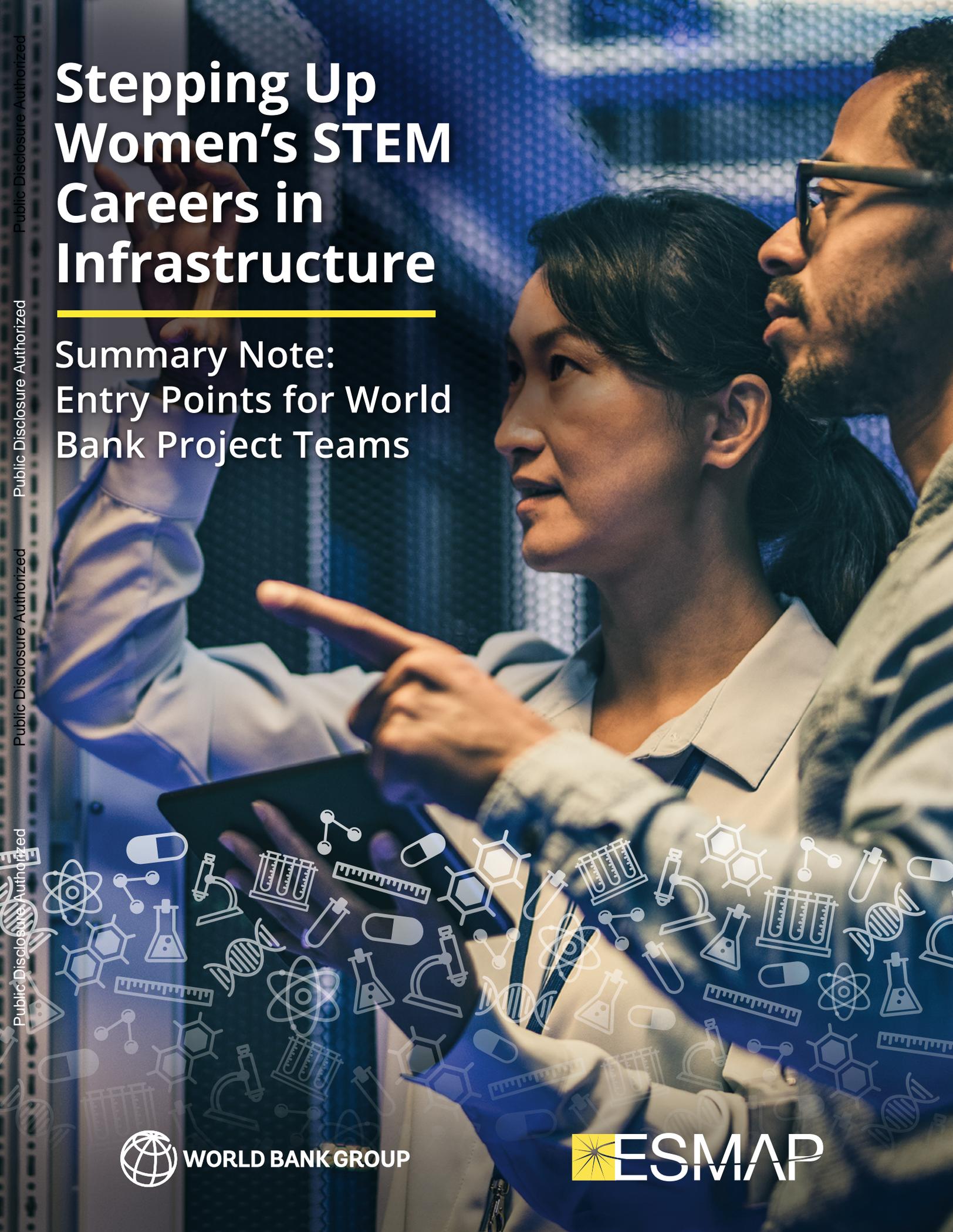


# Stepping Up Women's STEM Careers in Infrastructure

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Summary Note:  
Entry Points for World  
Bank Project Teams

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Attribution—Please cite the work as follows:

Schomer, Inka and Hammond, Alicia. 2020. “Stepping Up Women’s STEM Careers in Infrastructure—Summary Note: Entry Points for World Bank Project Teams” ESMAP Paper. Washington, D.C.: World Bank.

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# **STEPPING UP WOMEN'S STEM CAREERS IN INFRASTRUCTURE**

**SUMMARY NOTE: ENTRY POINTS  
FOR WORLD BANK PROJECT TEAMS**





## BACKGROUND AND PURPOSE OF THE SUMMARY NOTE

The report *Stepping Up Women's STEM Careers in Infrastructure: An Overview of Promising Approaches* describes a variety of ways to level the pathway for women entering into and progressing in science, technology, engineering, and mathematics (STEM) employment within the infrastructure sectors—energy and extractives; water; transport; and digital development.

This short note summarizes some of the findings from an extensive literature review, a global stocktaking exercise, key informant interviews, and five case studies in order to provide World Bank Group project teams with insights that they can use to support women's STEM careers in infrastructure at each stage of their careers. The report is intended to underpin and expand the existing knowledge on gender equality issues, under the World Bank's Energy Sector Management Assistance Program (ESMAP).

### WHAT ARE THE ADVANTAGES OF PROMOTING WOMEN'S STEM EMPLOYMENT IN INFRASTRUCTURE?

Increasing the employment and advancement of women in infrastructure organizations is a win-win proposition. For women, these sectors offer the potential to generate substantial income; the opportunity to design the infrastructure that

spurs countries' socioeconomic development; and to serve as role models for future generations of young women who are interested in STEM-related careers.

Equally important, infrastructure organizations that are committed to increasing the employment of women in STEM jobs help to expand the talent pool, and potentially strengthen their organizational performance metrics (see Box 1).

### WHAT ARE THE BARRIERS?

A metaphor frequently used to explain the fact that women are underrepresented in STEM careers is the "leaky pipeline." Although girls often perform as well as or better than boys in math and science at the primary and secondary levels, they are underrepresented in some STEM subjects, particularly engineering and computer science, at the tertiary level. Many girls who opt to study these subjects do not end up entering into related careers. Those who do

## BOX 1 Benefits of Gender Equality in the Workplace

A growing body of literature strongly supports the business case for gender equality in the workplace. For companies and institutions, there are many benefits, including the following:



**Better financial performance.** Firms with more women in leadership roles often demonstrate better performance, especially during periods of economic volatility; they also show a greater ability to minimize high-risk transactions and serve markets dominated by women. A 2011 study of Fortune 500 firms found that in terms of return on sales, companies with a sustained high level of representation of women board directors outperformed those that had sustained low representation by 84 percent; they also outperformed 60 percent for return on invested capital; and 46 percent for return on equity (Wagner 2011).<sup>a</sup> A McKinsey & Company study of 345 firms across six countries in Latin America and the Caribbean (LAC) found that firms with one or more women on the executive committee had 44 percent higher returns on equity than those without women (McKinsey & Company 2013). A study of 14 African countries found that companies with at least 25 percent women board directors had higher earnings before interest and taxes margin—a key indicator of profitability—that was 20 percent higher on average (Moodley et al 2016).



**Greater innovation.** A study of 4,277 companies in Spain found that companies with more women were more likely to introduce innovations in the market over a two-year period (Díaz-García, González-Moreno, and Sáez-Martínez 2013). The research also suggests that women score as well or better than men on key innovation capacities, including taking initiative; inspiring and motivating others; and championing change (Folkman 2015).



**Improved employee retention.** McKinsey & Company found that among companies that invested in attracting, retaining, and developing female talent, 64 percent reported increased employee productivity and retention, and 57 percent reported a greater ability to attract talent (McKinsey & Company 2010). And because recruiting and training new employees is costly for companies, a lower rate of employee turnover can lead to both savings and improved productivity.



**Improved service delivery.** A study by the Organisation for Economic Co-operation and Development (OECD) on the public sectors of 26 EU countries found that workforce diversity can improve public-service quality and efficiency gains; increase policy effectiveness; enhance social mobility; and contribute to advancing the reform agenda (OECD 2009).



**Safer operating environments.** Studies have demonstrated that female employees are often more likely to follow safety protocols, treat equipment responsibly, and safely operate equipment (IFC 2013).

a. Firms with with three or more women board directors in at least four out of five years.



**Better outcomes for sustainability and compliance.** Companies with more gender-balanced senior leadership—particularly women-owned businesses—often rank higher on key environmental, social, and governance risk management indicators (OECD 2016). Companies with more gender-diverse senior management also tend to have greater public accountability and compliance with international conventions or national legislation (IFC 2018).



**Improved community relations.** Gender equality in the workforce is correlated with improved community relations (Di Miceli and Donaggio 2018). A Catalyst and Harvard Business School study of Fortune 500 boardrooms found that companies with gender-inclusive teams contributed more charitable funds, on average, than companies without such teams (Soares, Marquis, and Lee 2011).

often leave these careers due to dissatisfaction with the workplace culture, the lack of advancement opportunities, or the challenges presented by work-life balance and other issues.

Multiple overlapping dimensions that interact in complex ways also have an influence on women's education, employment, and progression in STEM careers. Gender stereotypes and biases are present at all levels—across societies, in classrooms, and among families. Starting in primary school, and continuing through secondary and tertiary education, girls' interest and confidence in STEM subjects is often shaped by social and gender norms that come into play when learning these subjects, as well as when they are choosing their careers.

During the school-to-work transition, information asymmetries and legal barriers may limit the numbers of young women who enter infrastructure industries, or occupy certain types of

roles. Biases among employers also present barricades. Employers often hold biases about “masculine” and “feminine” work roles, as evidenced in prejudicial interview questions, or expectations about women's future childcare or care responsibilities; this too may keep qualified women from being hired for STEM jobs.

Even when they are hired, women are likely to face additional challenges that may cause them to leave the sector. These challenges include time-intensive work pressures with limited flexibility; unwelcoming work environments; the biases of coworkers; and the risks of gender wage gaps, unaccommodating workplace facilities, and sexual harassment. As they progress in their STEM careers, in addition to facing discrimination, additional institutional barriers—such as a lack of mentors, sponsors, professional networks, and quality training—can also limit the advancement of women.

Note: For further information see main report Schomer, Inka and Hammond, Alicia. 2020. “Stepping Up Women's STEM Careers in Infrastructure: An Overview of Promising Approaches” ESMAP Paper. Washington, D.C.: World Bank available at <http://documents.worldbank.org/curated/en/192291594659003586/An-Overview-of-Promising-Approaches>





# LEVELING THE PATHWAY FOR WOMEN IN INFRASTRUCTURE SECTORS

**Leveling the pathway for women in infrastructure sectors requires changes at all levels of engagement—in national policies, within the educational system, at the sector and industry levels, and within workplaces. Multisector efforts and cooperation are therefore needed in order to spotlight the structural and systemic constraints that are embedded both within the sector and in society overall, and that are steering women away from STEM and related technical fields.**

## START WITH EDUCATION

Removing gender biases in learning materials, and strengthening STEM curricula are critically important in attracting more women to STEM careers, particularly at the primary and secondary levels of education. Curriculum designers should create content and resources that are suited to the learning styles and preferences of girls as well as boys: for example, the research suggests that STEM curricula are more appealing to girls when they are clearly relevant to real-world situations.

Building interest and confidence in STEM subjects among young girls is also of key importance. Interactive, hands-on experiences, design-based learning, and extracurricular STEM activities specifically for girls offer promise. Schools and infrastructure organizations can work together to expose younger girls to science, and capture their attention in diverse and

creative ways. For example, the German utility E.ON engages children and youth from ages 5 to 18 in STEM-oriented thinking through its Energise Anything! Program, which offers inspiring interactive workshops. Such programs can also provide an opportunity for students to interact with female role models. Female role models are especially salient in STEM, helping to build the aspirations and self-efficacy of young girls. For example, in New Zealand, the Ultimit Women in Infrastructure Network runs an annual Girls With Hi-Vis program to expose girls to women who are excelling in nontraditional roles.

As young women start to think about their career choices, it is important to also address common misperceptions among girls about their abilities for STEM employment, and provide them with information about STEM career paths. For example, WomEng, a nonprofit organization in South Africa, has developed booklets with information about engineering programs and scholarship

opportunities, and answers to frequently asked questions about careers in engineering, aimed at secondary school girls. Informing young women about salaries for STEM jobs in infrastructure can also help influence their career choices.

In tertiary education and technical schools, institutions can change their traditional practices in order to create more equitable outcomes. For example, they might make introductory STEM classes more accessible and engaging for women by emphasizing the broad utility of engineering skills and knowledge; and by incorporating hands-on practical learning into the curriculum by having young women work at a building site.

Public and private sector entities can be more proactive in engaging potential STEM talent by providing scholarships, internships, and apprenticeships. In the Lao People's Democratic Republic (Lao PDR), an Asian Development Bank (ADB) project with the provincial water utilities is providing scholarships for young women to study water-related STEM careers, and providing them with job opportunities when they graduate. And in Tanzania, the Structured Engineers Apprenticeship Program (SEAP) has supported 300 women in engineering apprenticeships by covering their living expenses and providing them with training and mentorship opportunities.

These connections can also facilitate young women's access to information, and career opportunities through job matching and placement programs. In the Republic of North Macedonia, Energieversorgung Niederösterreich (EVN) provides a range of opportunities, including internships and engineering scholarships, to help young women gain professional experience, and eventually to join the company.

## REMOVE ROADBLOCKS TO RECRUITMENT

During the recruitment process, eliminating legal

barriers that may be preventing women from working in specific sectors and occupations can help advance women's employment. In recent years, Bulgaria, Bosnia and Herzegovina, Kiribati, and Tajikistan have all moved to reform their labor laws in order to eliminate some of the restrictions on women's employment: for example, in jobs deemed arduous or hazardous, such as underwater work.

Inclusive policies such as quotas and targets can also be effective, and can help to change the numbers quickly. When hiring, ensuring that merit as well as inclusion goals are considered in tandem can help to avoid backlash, stigmatization and tokenism. Steps taken to counter gender discrimination and bias during the hiring process are also helpful. For example, decision aids such as technical and cognitive tests, as well as structured interviews during which every candidate is asked the same questions in the same order, can help to stem implicit biases.

## DESIGN POLICIES AND WORKPLACES THAT ENCOURAGE RETENTION

Globally, women remain the primary caregivers in the home: therefore, flexible work and part-time employment options may help to reduce attrition, and increase the number of women who enter and remain in the workforce over the long term. However, although such arrangements may help to retain women in the workforce, those who take advantage of them may also be overlooked for promotion, a situation that calls for increased attention.

Because of the nature of the work, practices that seek to address issues of work-life balance may be limited for infrastructure professionals. For example, telecommuting options and mobile work may be difficult if not impossible for employees engaged in construction work or utilities. However, even when organizations

cannot offer such options, they can offer a variety of other flexible working arrangements, such as staggered working hours, compressed work schedules, or breaks to allow for extended learning and training.

Paid family leave and childcare solutions further support the retention of women, and have demonstrated positive benefits for businesses. In Brazil, childcare provided by the public sector increased maternal employment by 10 percentage points. And in rural Mozambique, the availability of preschool enabled caregivers (primarily women) to save 15 hours per week on their care responsibilities.

Addressing sexual harassment in the workplace by developing complaint and redress mechanisms, antiharassment and nondiscrimination policies, and sanctions for those who breach them, is of critical importance. The Solomon Islands Water Authority (SIWA) provides one good-practice example. With guidance from IFC, this utility has developed policies to prevent and counteract bullying and sexual harassment in the workplace, as well as to address cases of domestic violence among their employees. These policies also ensure that employees are provided with helpful information, and referrals to community support services.

Simple measures like providing appropriate facilities for women can foster a more inclusive work environment. Infrastructure organizations should consider women's preferences and needs when designing work and living spaces for women in the field: this includes ensuring that there is adequate lighting, separate toilets, uniforms that are appropriate for women, and on-site health facilities.

Infrastructure entities can work with trade unions to develop gender equality strategies, and to enhance the participation of women in STEM, including in leadership roles. Électricité de France (EDF) and ENGIE have established collective agreements on gender-equality targeting by balancing the number of women and men in

management and technical positions; enhancing women's empowerment and agency; combating stereotypes and sexism in the workplace; and highlighting gender-equality achievements.

## SUPPORT WOMEN AS THEY CLIMB THE LADDER

Mentoring and sponsorship programs are promising professional development strategies for women in STEM, and they can be supported at the workplace level as well as across industries. A variety of infrastructure mentoring programs are focused on empowering and promoting women. Male mentors could also play an important role in women's career advancement. Women in male-dominated industries such as engineering can benefit from having a senior male mentor: those who have had such mentors report a higher level of satisfaction with the progression of their careers, and were more likely to be partners or senior executives than male employees with senior male mentors.

Sponsorship—which involves the active support of someone who has considerable influence on decision-making processes or structures—is even more effective than mentoring. Research by the Center for Talent Innovation found that men and women with sponsors are more likely to ask for pay raises (and get them), as well as more likely to request to join high-visibility teams, and to experience greater career satisfaction.

Another key strategy is facilitating access to professional networks: here, sector-specific, international networks can help guide women in STEM, as well as infrastructure entities that are seeking to retain, support, and advance women's careers. Despite the increasing use of women's networks within organizations and companies, there has been relatively little research to examine their potential impact on women's career advancement, and the available research is mixed.



# HOW CAN PROJECTS CLOSE EMPLOYMENT GAPS IN THE INFRASTRUCTURE SECTORS?

The report *Stepping Up Women’s STEM Careers in Infrastructure: An Overview of Promising Approaches* describes several interventions and promising approaches, organized around the stages of the career pathway. Project teams have an opportunity to design actions, analysis, and indicators around women’s employment, for example through a focus on leadership and/or on child care. The Gender Tag Good Practice Note<sup>1</sup> provides detailed information for project teams on how to apply the Gender Tag, including the Mozambique Energy for All - P165453 project example in Box 3. More information is also available at the Gender Tag Resources and Tools page.<sup>2</sup>

## BOX 2 Elements of The Gender Tag

The Tag identifies operations that seek to close gender gaps in human endowments, more and better jobs, and ownership and control of assets; and promote women’s voice and agency, which constitute the four pillars of the World Bank Group Gender Strategy 2016-2023. Operations tagged for gender need to meet two criteria: they address one or more of the pillars of the Strategy, and the Project Appraisal Document (PAD) articulates a logical chain from analysis, to actions, to indicators in the Results Framework.

### Gender Gap Analysis

Identify and substantiate gaps between or among females and males in a given sector or project.

### Gender Action

Design interventions to address identified gender gaps.

### Indicator

Results framework indicators to measure progress of the proposed actions.

1. Good Practice Note for the Gender Tag May 2020 available at <https://worldbankgroup.sharepoint.com/sites/Gender/Knowledge%20Base/Gender%20Tag%20Good%20Practice%20Note%20Updated%20May%2013%202020.pdf>
2. Gender Tag Resources and Tools available at <https://worldbankgroup.sharepoint.com/sites/Gender/Pages/Gender-Tag-Good-Practices-Online-Tool-03262020-145306.aspx?deliveryName=DM60108>

### Gender Gap Analysis

- The analysis needs to provide substantiated evidence of the gender gaps, with specific baseline information and data relevant to the project and targeted area or country. Systematic Country Diagnostics, Country Partnership Frameworks, Regional Gender Action Plans and GP Follow-up Notes are a helpful start.
- Gender gaps can also be analyzed using quantitative and/or qualitative data from existing research, such as academic and gray literature, studies produced by line ministries, local think tanks/universities or the UN and other international agencies. Alternatively, primary research that may be conducted early in the project cycle, through social/gender assessments.

### Gender Action

- Actions need to close gaps relevant to the four pillars of the Gender Strategy and the project objectives. Gender does not mean only rectifying female disadvantage; there can be a gap to the disadvantage of males, such as higher-than-female school drop-out rates or male morbidity. Beyond disadvantage, projects should consider men's roles as agents of change to improve outcomes for gender equality.
- It is good practice if the actions are reflected in the description of the components, instead of being confined to a single paragraph on gender in the PAD.
- It is also good practice to spell out in sufficient detail key features of the gender gap-related actions, including which entities will be responsible for implementing the action; what resources will be required; how the narrowing or closing of the gap/s would be achieved and measured; and the process for evaluating and improving upon actions during the operation.

### Indicator

- Gender gaps addressed by the operation should have indicators that measure the narrowing of the gender gap in the project.
- The results framework can include quantitative indicators based on sex-disaggregated statistical data from surveys or administrative records. These can be process, output, or outcome indicators, as appropriate.
- Baseline data should be collected in order to set targets for the indicators. If these data are not available, then a baseline of zero can be used to measure changes over time.
- All person-level indicators should be sex-disaggregated. However, the standard share of female beneficiaries is insufficient. Indicators should explicitly aim to measure improvements in the identified gap.

### BOX 3 Example of Gender-Tagged Operation. Mozambique Energy for All - P165453

#### Gender Gap Analysis

- Electricity of Mozambique (Electricidade de Moçambique) (EDM) conducted a general review of women's participation in EDM's operations by the end of 2017.
- The results indicated that women represent 17 percent of the work force, and 40 percent of them perform activities related to their training areas: 25 percent of them work in technical areas, 57 percent have a university degree, 34 percent have an undergraduate degree, and 9 percent a basic education.
- Around 50 percent of the women have at least 12 years of service at EDM. One out of four executive board members is a woman.

#### Gender Action

- The project will support part of the implementation of the gender strategy (Engendering EDM), driven by the Human Resources Directorate (POG), in coordination with other development partners.
- Specifically, the project will support a gender audit to assess the challenges in terms of gender participation, diversity and equality; and based on the results, will formulate a corporate gender strategy.
- In addition, the project will ensure that at least 30 percent of the candidates hired in the Young Professionals Program are women, thereby closing a gender gap at the institutional level, given the current baseline of only 25 percent of all EDM women working in technical areas.

#### Indicator

- Develop and disclose a policy for gender equality and justice in EDM (Yes/No).
- Percentage of females hired under the Young Professionals Program at EDM (Percentage) Baseline: 0<sup>3</sup> Target: 30%

3. Baseline set at zero given uncertainty around exact number of women hired under Young Professionals Program and also given the limited time it has been running.





## TAKING ACTION WITH CLIENTS: RECOMMENDED STEPS

**Studies from a broad range of primarily private sector companies have consistently shown that organizations that launch initiatives to attract, recruit, retain, and advance women outperform those with a more homogenous workforce. So, while leveling the field for women's STEM employment in infrastructure can be challenging, the long-term benefits for companies and employees are well-documented.**

This note provides practical steps that infrastructure organizations can take in order to begin the change process. Needless to say, concerted and sustained efforts, especially from leadership, are required to ensure that women are given genuine opportunities to enter the sector, and that they continue to be supported as they progress in their STEM careers.

### STARTING A DIALOGUE ON STAFFING, AND BUILDING LEADERSHIP BUY-IN

Before starting a conversation about the status of female staffing in an organization, it is important to ascertain whether management is interested in and/or open to discussing human resource (HR) needs. While managers might be generally aware of the strengths and weaknesses of their workforce, the specific challenges that female staff typically face may not be their top priority.

A useful first step may be to start by asking questions about any institutional challenges the organization is facing, and allow that to lead into a discussion of how working on staffing issues might help to effectively address them. Determining whether the organization has sufficient technical staff with the skills needed to adequately operate and maintain facilities, for example, might help managers realize that providing opportunities for upskilling could be helpful in filling any gaps. Discussing ways to recruit talent, and minimize staff turnover or attrition can also be part of this conversation.

The next step is to determine whether the organization is collecting sex-disaggregated data. Sharing international experience from infrastructure entities that have faced similar challenges, and explaining how they overcame them by making their workforce more equitable while staying competitive in the market could be helpful. For example, Ethiopian Electric Utility's experience has catalyzed further action in the

sector, with Ethiopian Electric Power now moving forward on building a similar program.

Buy-in by senior leadership is critical to any organizational change process. Leaders who demonstrate a genuine understanding of the importance of women's participation in the workforce can encourage others to take the goal of gender equality seriously. Transformational leaders can articulate clear and meaningful goals; urge employees to rise above their self-interest to support collective goals; and communicate this vision to a broad set of stakeholders. Buy-in by senior management can also help maintain momentum and commitment to change, and can help ensure that the necessary resources will be allocated to the effort.

When engaging senior leadership, it is important for the HR and change management teams to ensure that decision makers and potential high-level champions are also engaged. Senior leaders may be able to make institutional commitments, but it is the departments and employees who will be crucial in actually driving the change process. Within the organization, the leaders of HR, institutional relations, governance, training and development, and corporate social responsibility (CSR) are all needed in order to enact relevant policies and implement institutional changes.

One way of motivating an organization's leadership and stakeholders to actively support inclusion of women in the STEM workforce is for the project team to point to national agendas and international agreements that aim to advance gender equality. Explaining the links between skills development, or childcare services, and laws and policies at the national level can help lend credibility to these efforts. This approach can also help build buy-in and advance the adoption of strategies designed to support women in the workplace.

## ASSESSING WOMEN'S EMPLOYMENT AND INCLUSION IN THE WORKPLACE

The next steps are to gather sex-disaggregated data, conduct analyses, and develop an evidence base. This data will provide helpful insight into the challenge areas, as well as the most promising areas for intervention.

### Consider Hiring Experts

World Bank project teams may want to hire an expert with gender analysis experience related to female labor force participation, women's employment, and/or women's employment in STEM jobs, as well as rights-based approaches to focusing on disparities between women and men. Expertise in human resources, gender audits, and program design, as well as monitoring and evaluation (M&E), may also be helpful. Gender experts can support a review of the evidence and the data-collection efforts, and can help link the data to specific recommended actions, targets, and relevant M&E indicators.

### Use Secondary Data Sources to Better Understand Gender Equality Issues

Existing data and resources can help project teams better understand a given country's laws, regulations, and policies. At the country level, exploring sector-specific policies and ministry-led, as well as civil society efforts to achieve gender equality, can be helpful (Box 4).

### Examine National Development Strategies

Evaluating national development strategies can also be helpful. For example, the Ethiopia Growth and Transformation Plan 2 contains baseline information, and has set targets for the number of women that are benefitting from

## BOX 4 Helpful Secondary Data Sources

**Women, Business and the Law** is a World Bank Group project that collects unique data on the laws and regulations that restrict women's economic opportunities in 190 economies. This resource covers such topics as accessing institutions, owning property, getting a job, providing incentives to work, going to court, building credit, and protecting women from violence.

The **Social Institutions & Gender Index (SIGI)** is an OECD-supported, cross-country measure of discrimination against women in social institutions through formal and informal laws, social norms, and practices, across 180 countries. SIGI covers four major dimensions of discriminatory social institutions that affect women's lives: (i) discrimination in the family; (ii) restricted physical integrity; (iii) restricted access to productive and financial resources; and (iv) restricted civil liberties.

The **Global Gender Gap Report**, supported by the World Economic Forum, benchmarks 153 countries on their progress toward gender parity across four dimensions: (i) economic participation and opportunity; (ii) educational attainment; (iii) health and survival; and (iv) political empowerment. The report also includes detailed country profiles and provides sex-disaggregated data across these domains.

The **World Bank Group's Gender Data Portal** is a comprehensive source of the latest sex-disaggregated data and gender statistics covering demography, education, health, economic opportunities, public life, decision making, and agency.

The **UNESCO Institute for Statistics (UIS)** is a comprehensive resource of statistics regarding education, science, technology and innovation, and culture.

The **OECD Gender Data Portal** includes specific indicators that shed light on gender inequalities in education, employment, entrepreneurship, health, and development, including data on female scientists and women's STEM education. The data sets cover OECD member countries, as well as partner economies in Brazil, China, India, Indonesia, and South Africa.

The **Global Women's Leadership Index** of the Wilson Center tracks women in governments around the world; describes how much power they hold; and explains how they progressed to their positions of leadership. The data is split into three pillars—pathways, positions, and power—to elucidate correlations between a variety of variables, decisions, and policies, and to show how they ultimately affect the degree of power held by women in public office.

vocational adult education programs, as well as the percentage of government institutions that provide childcare services.<sup>4</sup> These elements may help World Bank project teams work with relevant counterparts to push for reforms in national laws and policies, and to develop sector strategies for driving actions that will help close the gaps between women and men in STEM employment.

### Collect Institutional Data to Understand Women's Participation Within the Organization

In addition to secondary data, collecting both quantitative and qualitative primary data from within the institution can help clients better understand the level and nature of women's participation across the institution. Developing an evidence base can shed light on the key challenges the organization is facing, and establish a baseline against which future success can be measured. Such data can provide helpful perspective on the relative participation of men and women within the workforce; highlight ways to achieve greater parity; and gather important information about perceptions and attitudes within the organization.

Teams can start by establishing the scope of the assessment; identifying any existing sex-disaggregated data that is already available through HR databases; and leveraging opportunities to incorporate relevant questions into broader assessment efforts, such as employee engagement surveys. It is important to remember that while HR databases can provide a quantitative picture of women's participation according to

their roles or grades, they cannot assess the perceptions, needs, and challenges to career development that women are facing within the organization.

Assessments should include a general review of HR policies (Box 5), as well as a very careful review of recruitment and advancement practices. This can help to identify the specific ways that gender bias may be affecting women in the workplace. Reviewing collective bargaining agreements, determining the prevalence of sexual harassment,<sup>5</sup> and examining sexual harassment policies, as well as prevention and response mechanisms, should also be carried out.

## DEVELOPING A STRATEGY, AND A CORRESPONDING ACTION PLAN

In order to ensure broad implementation of institutional initiatives for supporting women in the STEM workforce—and continuity of those initiatives in the event of staff or leadership changes—the commitment of senior leadership to these goals should be translated into very concrete and specific actions that are clearly spelled out in an institutional plan or strategy.

Developing a strategy that is supported by evidence helps make the case for necessary changes. A 2018 McKinsey study that researched diversity within the executive teams of 346 companies worldwide found that all of the companies that demonstrated improvements in the inclusion of women over a three-year period

4. "Ethiopia Growth and Transformation Plan II" (GTP II). <https://www.greengrowthknowledge.org/national-documents/ethiopia-growth-and-transformation-plan-ii-gtp-ii>
5. Those who wish to conduct a survey of sexual harassment in the workplace should follow the ethical and safety guidelines established by the World Health Organization (WHO 2005). Poorly conducted surveys are unethical, because responding to a poorly designed survey could needlessly retraumatize respondents. The WHO guideline outlines some of the methodological, ethical, and safety challenges of conducting research on violence against women and girls (VAWG), and describes a range of innovative techniques that have been used to sensitively, respectfully, and carefully address these challenges.

## BOX 5 Sample Questions for Human-Resource Policies Review

Does your organization have a gender nondiscrimination policy?

Does your organization have a committee focused on gender equality?

- Is there an assigned gender focal point? Does the focal point have decision-making authority?
- What resources are allocated to this work?

Do you have any recruitment policies specifically focused on women?

- Do you have any quotas or targets regarding female employees in your organization? If so, what is the targeted percentage or number?
- Do you have job ads targeted at women?
- Do you have any outreach channels via women's professional networks?

Does your organization have recruitment relationships with any universities or trade schools?

Do you have any advancement policies focused on women?

- Do you have any quotas or targets for the number of women who reach management and/or leadership roles? If so, what is the targeted percentage or number?
- Do you have structured planning for career growth and advancement?

Do you offer any flexible working arrangements? For example:

- a. Part-time employment?
- b. Options for teleworking/telecommuting?
- c. A gradual phased-in schedule for mothers returning from maternity leave?
- d. Flexible core hours, or compressed work schedules?
- e. Other (please specify)?

Source: Adapted from the ESMAP-funded Women in Power Sector Network in South Asia (WePOWER), and the Africa Gender and Energy program available at <https://www.esmap.org/multimedia/power-sector-questionnaire-human-resources-training-and-gender-practices>

Note: For an expanded list of detailed questions, see Tool 1.1: Gender Audit (IFC 2018).

had done so with the support of specific diversity and inclusion strategies.

The companies that succeeded shared these traits: (i) senior leadership commitment that cascades down; (ii) use of data as a means of linking the diversity and inclusion strategy to the

business growth strategy; (iii) development of a portfolio of initiatives that promotes a culture of inclusiveness, and demonstrates commitment to increased diversity; and (iv) commitment to local buy-in through strategies tailored to the business area or geographic region (McKinsey & Company 2018).

Closing large gender gaps takes time and requires substantial resources. For many organizations, focusing initial efforts on moderate, achievable gains that have a greater probability of enduring over time through changes in leadership may be the best strategy. For example, it may be better to initially focus the review of HR policies on salary equity rather than trying to move forward with a costly plan for on-site childcare facilities. Specific local contexts must also be understood, and carefully taken into consideration by the World Bank project teams. For example, changes that impact union contracts or collective agreements may take several years to implement: this underlines the need for any actions to be driven by current, on-the-ground realities.

### Setting Specific Goals and Targets

Diversity initiatives within organizations often focus somewhat narrowly on promoting more women to leadership and professional roles, and tend to spend less time and thought on creating the types of programs that are needed in order to attract a larger number of qualified women candidates to the sector; for example, forming relationships with educational institutions that actively promote both male and female job candidates, and making STEM scholarships available for tertiary education.

Creating specific goals in each job category can enhance opportunities for women in roles that are traditionally male-dominated. These goals can then be embedded in an organization's overall strategy to address gaps in women's STEM employment (See Table 1).

The strategy should be very specific about the steps that will be taken to achieve targets set for the recruitment, retention, and advancement of women within the organization. Project teams should support the design; track progress toward project targets and initiatives in the identified focus areas; and help organizations revise and adopt changes in policies as needed.

### Designating Champions at All Levels of the Organization, and Engaging Men

Designating champions at all levels within an organization can help sustain institutional commitment to change. Employees who are passionate about diversity, inclusion, and women's full participation in the workforce can be formally assigned to take charge of key initiatives, such as mentorship programs.

They can also be tasked with presenting fresh perspectives, inspiring attitudinal shifts, and supporting the change in norms needed in order for diversity and inclusion strategies to succeed. Project teams can also encourage relevant counterparts to create committees or councils to drive progress through monthly meetings, planning sessions, and roundtables.

Since men occupy the majority of STEM jobs and comprise most of the infrastructure workforce, engaging them as partners and supporters of gender equality initiatives is needed for success. Engaging men as mentors and implementers of inclusion strategies is one way to do this. However, any mentorship program should take care to mitigate the risks of sexual harassment by carefully vetting potential mentors, and letting mentees know about any antiharassment measures that are in place, as well as the mechanisms for reporting harassment.

### Creating Strategic Messaging that Explains How an Inclusive Workforce is Good for Business

Highlighting the business benefits of promoting gender equality to both employers and employees can help gain broader support than tackling the issue from the perspective of antidiscrimination alone. In fact, messaging that portrays women as victims is regressive and can backfire, further disempowering female staff. On the other hand, positive messaging that communi-

**Table 1 Sample Framework for Setting Targets to Improve Women’s Representation in STEM Jobs**

Target Area Focus	Possible Strategies for Tracking Progress
Identifying evidence-based strategies to enhance women in STEM within the sector or country context	<ul style="list-style-type: none"> <li>• Undertake a review of best practices that are relevant to the general sector context and related policies, and share findings with the organization’s leadership representatives.</li> </ul>
Establishing a corporate-level commitment to gender equality in STEM employment	<ul style="list-style-type: none"> <li>• Adopt an institutional strategy and action plan focused on closing the gender gaps in STEM professions.</li> <li>• Sign up for a global reporting initiative to track performance on women’s employment (if resources are available).</li> </ul>
Recruiting and retaining an equitable workforce	<ul style="list-style-type: none"> <li>• Undertake an in-depth review of institutional recruitment, retention, and advancement processes, and related policies.</li> <li>• Review all job description materials for potential biases, especially those for technical STEM roles.</li> <li>• Develop a retention strategy in response to issues identified during employee surveys and exit interviews, if available.</li> <li>• Embed key questions on workplace culture, parental leave, and sexual harassment in employee engagement surveys. Make sure the results of the survey are sex-disaggregated.</li> <li>• Ensure that basic facilities such as toilets and dorms are built and/or renovated in such a way that they can accommodate the safety and hygienic needs of both women and men.</li> </ul>
Advancing women’s representation in senior STEM positions	<ul style="list-style-type: none"> <li>• Establish and monitor targets for women’s representation in management and other leadership roles.</li> <li>• Provide progress reports to relevant stakeholders.</li> <li>• Increase the ratio of women to men in senior management within a specific timeline.</li> <li>• Increase the retention rates for midcareer women.</li> </ul>
Developing overall approaches for enhancing equity in infrastructure entities	<ul style="list-style-type: none"> <li>• Embed key questions on such issues as workplace culture, parental leave, and sexual harassment in employee engagement surveys. Make sure the results are sex-disaggregated.</li> <li>• Ensure basic facilities such as toilets and dorms can safely and comfortably accommodate both women and men.</li> </ul>

Note: World Bank project teams or infrastructure institutions can incorporate intended targets in their respective strategies and action plans based on the ideas put forward in the above framework.

cates some of the ways that inclusion can help modernize the organization and increase its competitive edge can help to create a more constructive and welcoming workplace culture.

Failure to articulate these benefits to both workers and unions may derail efforts to achieve gender equality. In order to avoid alienating any particular group, or unintentionally leading to misunderstandings, or backlash, it may be necessary to carefully frame internal communications, always keeping the focus on the benefits that can be realized through a more diverse and inclusive workforce. It may also be helpful to design and implement “soft-incentive” schemes that formally recognize teams who successfully adopt gender equality, and inclusive strategies.

### Capturing Results through Reporting Mechanisms

Reporting on changes to the representation of women at all levels of the organization helps to promote institutional transparency and accountability. Project teams can share information about progress achieved through project reports, action plans, and other mechanisms. They should also advise infrastructure entities to announce progress toward their targets in quarterly reports and staff meetings, clearly stating the case for gender equality in STEM employment, and outlining the steps being undertaken by the organization to set and meet planned targets.

New M&E mechanisms may be needed in order to capture both qualitative and quantitative data on the effectiveness of the various approaches, strategies, and activities that have been implemented. Including relevant output and outcome indicators in the project design can help ensure that these indicators are reported on during implementation.

Interventions designed to enhance the comprehensiveness of annual reporting ideally would include the proportion of women employees overall, as well as the number of female senior executives and board members. Encouraging infrastructure entities to disaggregate their employee satisfaction survey by sex can help paint a clearer picture of the current situation, as well as of any progress being made.

## MOBILIZING FINANCIAL AND HUMAN RESOURCES

### Linking Strategies with the Resources Needed to Support the Implementation of Goals and Targets

The activities outlined in this note require substantial allocation of the financial and human resources needed in order for effective and sustained implementation to occur. The costs incurred may include hiring consultants to deliver a baseline assessment; designing mentorship programs; earmarking funds for STEM scholarships; building or installing new facilities; and purchasing additional gear for women.

Costs vary from country to country, as well as by the type of initiative. Although there are variations depending on the specific context, initiatives for promoting women in STEM and professional roles generally cost more per person than training programs for women in low- and medium-skills jobs (for example, training women as bus drivers, or in the use of heavy machinery). Therefore, closing the gap between women and men in professional roles requires larger, but very worthwhile, investments.







## REFERENCES

- Díaz-García, Cristina, Angela González-Moreno, and Francisco Sáez-Martínez. 2013. "Gender Diversity Within R&D Teams: Its Impact on Radicalness of Innovation." *Innovation: Management, Policy & Practice* 15 (2): 149-160.
- Di Miceli, Alexandre, and Angela Donaggio. 2018. *Women in Business Leadership Boost ESG Performance: Existing Body of Evidence Makes Compelling Case*. Washington, DC: IFC.
- Folkman, Zenger. 2015. "A Study in Leadership: Women Do It Better Than Men." *In Real Women, Real Leaders: Surviving and Succeeding in the Business World* by Kathleen Hurley and Priscilla Shumway, pgs. 165-69. Hoboken, NJ: John Wiley & Sons.
- International Finance Corporation (IFC). 2013. *Investing in Women's Employment: Good for Business, Good for Development*. Washington, D.C.: IFC.
- \_\_\_\_\_. 2018. *Unlocking Opportunities for Women and Business: A Toolkit of Actions and Strategies for Oil, Gas and Mining Companies*. Washington, D.C.: IFC.
- McKinsey & Company. 2010. *The Business of Empowering Women*. New York: McKinsey & Company. Accessed September 2019. <https://financialallianceforwomen.org/download/the-business-of-empowering-women/>
- \_\_\_\_\_. 2013. *Women Matter: A Latin American Perspective*. New York: McKinsey & Company Accessed September 2019. <https://www.femtech.at/sites/default/files/Women%20Matter%20Latin%20America.pdf>.
- \_\_\_\_\_. 2018. *Delivering Through Diversity*. McKinsey & Company.
- Moodley, Lohini, Tania Holt, Acha Leke, and Georges Desvaux. 2016. *Women Matter Africa*. McKinsey & Company.
- OECD. 2009. *Fostering Diversity in the Public Service*. Paris: OECD.
- \_\_\_\_\_. 2016. *Background Report: Conference on Improving Women's Access to Leadership*. Paris: OECD.
- Soares, Rachel, Christopher Marquis, and Matthew Lee. 2011. *Gender and Corporate Social Responsibility: It's a Matter of Sustainability*. New York: Catalyst.
- Wagner, Harvey. 2011. *The Bottom Line: Corporate Performance and Women's Representation on Boards (2004–2008)*. New York: Catalyst.
- World Bank. 2015. *World Bank Group Gender Strategy (FY16-23): Gender Equality, Poverty Reduction and Inclusive Growth*. Washington, D.C.: World Bank.



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