Stepping Up Women’s STEM Careers in Infrastructure

Summary Note: Entry Points for World Bank Project Teams
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
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). 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).

---

**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). 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 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.