Report

The Green Edge: Women's Employment and Leadership for Sustainable Business in Viet Nam

A Viet Nam Diagnostic

JUNE 2025

Australian Aid

IFC International Finance Corporation WORLD BANK GROUP

About IFC

IFC—a member of the World Bank Group—is the largest global development institution focused on the private sector in emerging markets. We work in more than 100 countries, using our capital, expertise, and influence to create markets and opportunities in developing countries. In fiscal year 2024, IFC committed a record $56 billion to private companies and financial institutions in developing countries, leveraging private sector solutions and mobilizing private capital to create a world free of poverty on a livable planet. For more information, visit www.ifc.org.

Acknowledgments

This publication was produced by IFC Gender and Economic Inclusion Department (GEID). It was led by Operations Officers Franziska Deininger and Oliver Rowntree, and Consultant Chi Quynh Nguyen, under the guidance of Manager Karine Bachongy, Principal Operations Officer Heather Kipnis, and Senior Operations Officer Sarah Twigg, along with Senior Advisor Isabel Chatterton and Global Director Nathalie Kouassi Akon. The report also received valuable support from Country Manager, Viet Nam, Lao PDR and Cambodia Thomas James Jacobs.

The report was made possible with the generous contribution of the Australian government through the Department of Foreign Affairs and Trade, as part of the ongoing Vietnam Private Sector Development Partnership between IFC and Australia.

The analysis was conducted by Alice Berkeley, Jakob Kessel, Sarah McLeish, Sam Kelly, and Kirsten Newitt from Ergon Associates, in collaboration with Hien Thu Nguyen and Diep Tran from Mekong Economics, and Mimi Vu, Van Ly, and Giang Minh Nguyen from Raise Partners.

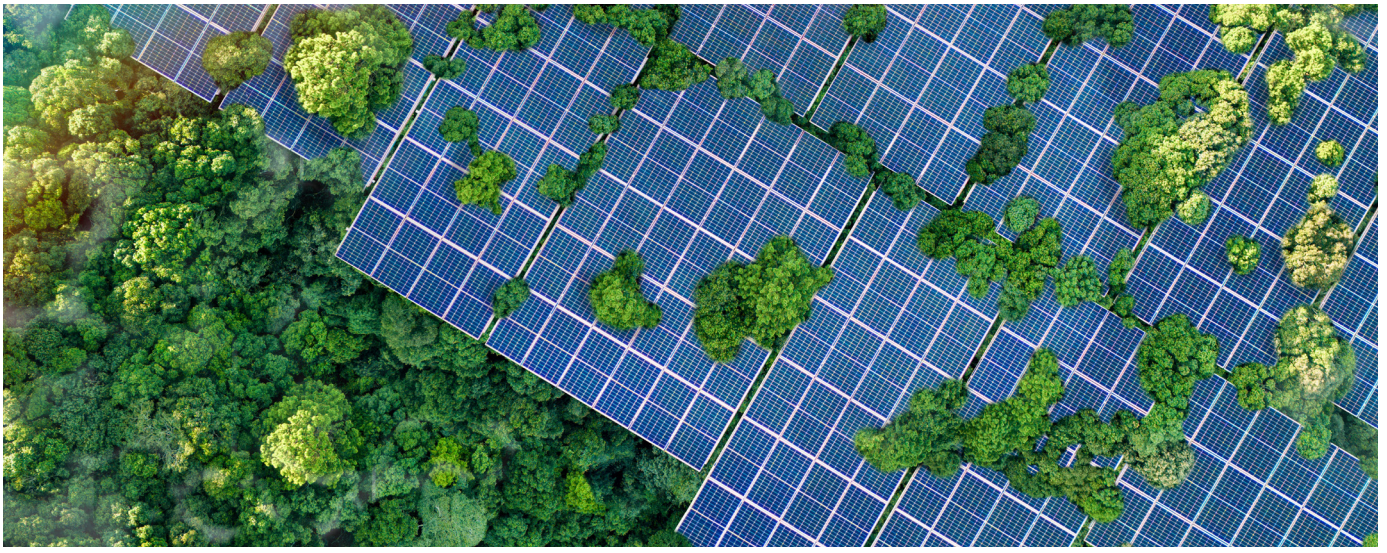
The authors are grateful for valuable insights from key informants in Viet Nam, including those from Unilever Viet Nam, Veca, Clime Capital, DUYTAN Recycling, Tona Syntegra Solar, GreenYellow, PAN Group, and Olam Agri Viet Nam, as well as the Ministry of Natural Resources and Environment, and other companies who wished to remain anonymous.

The authors are also grateful to the following World Bank Group colleagues for their support, review, and inputs: Principal Operations Officer, Climate Business Department, Tuyen D. Nguyen, Principal Investment Officer, Infrastructure and Natural Resource , Helen Han, Operations Officers, Manufacturing, Agribusiness, and Services, Van Hoang Pham and Uy Duc Pham, GEID Operations Officer Hang Vu, GEID Consultant Prudence Vincent, World Bank Senior Social Development Specialist Kaori Oshima, World Bank Senior Social Development Specialist Abidah Billah Setyowati, World Bank Senior Energy Specialist Chiara Odetta Rogate, World Bank Senior Agricultural Specialist Binh Thang Cao, and Consultant Yasmin Mohamed. The authors also thank peer reviewers Sunita Dubey from Global Alliance for People and Planet, Jessica Nga Tran from Clime Capital Management, and Tran Thi Huong Giang from Deutsche Gesellschaftfür Internationale Zusammenarbeit.

The team would also like to thank Gina Wilkinson for editing this report and Beatriz Calvo Garro for graphic design.

Contents

List of Boxes, Figures, and Tables



Executive Summary

Viet Nam is among the countries most vulnerable to climate change. The country is taking action to reduce its greenhouse gas emissions and to adapt to the impacts of a warming world—and its private sector is playing a central role in this green transition. Navigating climate change effectively requires creating climate-resilient livelihoods that prioritize job creation in green sectors while addressing the disproportionate impacts on vulnerable communities, particularly women who face greater barriers to accessing information, resources, and markets. However as this first-of-its-kind diagnostic shows, to successfully reduce climate-related risks and capitalize on competitive advantages, companies must identify and address gaps in women's and men's economic participation.

In Viet Nam, like many emerging markets, women are disproportionately impacted by climate change. Sectors in which women play a major role, such as smallholder agriculture, are particularly vulnerable to climate change, and this affects women's livelihoods and contributes to business disruptions and productivity losses. Currently, gender gaps in the fields of science, technology, engineering, and mathematics (STEM) mean fewer women have the right skills to benefit from significant job growth expected under the green transition, particularly in traditionally male-dominated sectors like energy, manufacturing, construction, and transport.

Addressing these gaps and meaningfully engaging women in the green transition helps businesses manage risks and identify new growth opportunities. For example, gender-inclusive recruitment strategies can expand talent pools and help meet growing demand for skilled labor in green industries, particularly for STEM positions. In addition, increasing gender diversity among management and executive leadership teams can enhance decision-making when addressing climate risks and shaping corporate climate strategies. Women leaders bring valuable perspectives that can drive the adoption of innovative approaches, including strategies with climate co-benefits. Companies that engage women in their supply chains can strengthen the resilience of their value chains, better manage climate-related disruptions, and reduce emissions.

This report examines women's roles in three sectors that are particularly relevant to Viet Nam's green transition: solar energy, plastics recycling, and rice production. These sectors were selected for their significant influence on Viet Nam's efforts to create sustainable, low-carbon economic growth, along with their potential to drive investment in the country.

Solar Energy

Viet Nam's revised Power Development Plan 8, which was approved in 2025, sets out bolder emphasis on renewable energy. Solar energy is already experiencing immense growth and under the updated plan it will account for the largest share of the country's energy mix by 2050, at 34 percent. However, substantial investment is needed to meet Viet Nam's renewable energy goals, along with more highly-skilled workers, especially for STEM and technical roles. This diagnostic explores women's current representation in the sector and identifies interventions that can help companies unlock the wide-ranging benefits that flow from a gender-balanced workforce and leadership teams.

Plastics Recycling

Viet Nam's National Action Plan for Circular Economy (NAPCE) through 2035 prioritizes plastic waste management and recycling. The sector needs investment to meet national recycling commitments, comply with extended producer responsibility legislation, formalize waste collection, and improve sorting infrastructure and recycling capabilities. Women already make up a major share of the informal workforce in this sector, and this diagnostic examines how they can help meet growing demand for more skilled, formal positions, while enhancing supply chain efficiency.

Rice Production

As part of its efforts to drive green economic growth, Viet Nam is committed to the sustainable development of one million hectares of high-quality, low-carbon rice in the Mekong Delta by 2030. Rice production is a significant economic driver for Viet Nam, but it also contributes to greenhouse gas emissions. Furthermore, the rice sector urgently needs to adapt to climate risks, which are already reducing farmer productivity, threatening smallholder livelihoods, and disrupting supply chains. This diagnostic explores women's participation in the formal segments of the rice production value chain while touching on entrepreneurship potential in informal segments, and opportunities to upskill women for higher-value jobs.

Key Findings

- **There are gaps in women's participation in employment in Viet Nam's solar energy, plastics recycling, and rice production sectors, most notably in technical and STEM roles.** On average, women account for 23 percent of the total workforce across the three sectors. Women play an integral role in the supply chains of plastics recycling and rice production, but they are concentrated in lower-value segments with few resources to scale operations or access better jobs. Their jobs are also more vulnerable to the impacts of climate change.

- **Women are also underrepresented in leadership positions across the three sectors.** Women hold 21 percent of senior management roles and 23 percent of board member positions among companies surveyed for this diagnostic. Of the three sectors, solar energy has the lowest share of women in leadership positions, followed by plastics recycling and rice production. This may be attributed to perceptions that women are better suited for positions in recycling and agriculture, which in turn lead to a better pipeline of women leaders.

Box A: Methodology

This diagnostic draws on a combination of primary quantitative and qualitative data collection. Data was collected through online channels and via telephone interviews from October to November 2024. The findings were triangulated with secondary literature on the three sectors of interest.

An enterprise survey examined women's representation in employment and leadership, as well as company policies on women's recruitment, retention, and promotion. Sixty-three complete responses were collected across the three sectors: 23 for both solar energy and rice production and 17 for plastics recycling.

Twelve key informant interviews were conducted with company officials, investors, and policymakers to provide more in-depth understanding of women's representation in these sectors.

- **The diagnostic identifies several major barriers to women's participation and leadership across all sectors.** The recruitment and retention of women is impacted by occupational stereotypes- for example, that men are more suitable for certain technical roles, and concerns related to parental leave and women's care and household responsibilities. Most firms have not developed mentoring or sponsorship programs to support women's career development, particularly in the plastics recycling and rice production sectors. Formal non-discrimination policies are also lacking in these two sectors.
- **Women are integral to supply chains in plastics recycling and rice production, but they remain concentrated in lower value segments with limited resources to expand operations or secure quality jobs.** Most informal waste collectors in the plastics recycling sector are women, and they lack access to training, finance, and technologies that could enhance their productivity. Similarly, women smallholders in rice production face constraints adopting climate-smart methods. In both sectors, skills development, financial inclusion, and access to technology would simultaneously improve women's economic opportunities while strengthening supply chain resilience and productivity.

Table A: Summary of Findings by Sector

	Solar energy	Plastics recycling	Rice production
Leadership			
Share of women in corporate boards	**13%**	**22%**	**34%**
Share of women in senior management	**10%**	**17%**	**37%**
Employment			
Share of women in formal workforce*	**25%**	**21%**	**22%**
Share of women in high-skilled STEM occupations	**5%**	**21%**	**52%**
Share of women in medium-skilled technical/operational roles	**6%**	**20%**	**14%**
Workplace Policies			
Firms that offer flexible working hours	**87%**	**76%**	**100%**
Firms with formal policies referencing non-discrimination or equal opportunities	**91%**	**59%**	**48%**
Firms with mentoring or sponsorship programs to support women's career development	**65%**	**47%**	**17%**

*Excluding informal workers.

Source: Viet Nam Gender-Smart Climate Diagnostic enterprise survey conducted in 2024.

Call to Action

To realize new opportunities in the green transition and manage climate risks to business productivity and performance, companies can take a range of actions to enhance women's participation including the examples below.

1

Target recruitment and retention of women in STEM and technical roles.

- Implement targeted outreach programs through universities and technical schools to develop a strong pipeline of STEM workers, with specific targets on reaching women.
- Partner with educational institutes to create internship and apprenticeship opportunities specifically for women to encourage their early entry in STEM and technical roles.
- Showcase women in technical roles through company websites, recruitment materials, and industry events to challenge stereotypes and encourage job applications from young women.
- Establish re-entry programs that encourage women to return to work after starting families.
- Make hiring practices inclusive by using gender-neutral job descriptions and gender-diverse interview panels, for example.

2

Promote women's leadership and diverse management teams.

- What gets measured, gets managed—collect and analyze gender-disaggregated data on women's representation and promotion to identify and close gaps in leadership.
- Establish specific, measurable, actionable, realistic, time-bound (SMART) goals for women's representation in senior management and board positions.
- Incorporate leadership diversity metrics into company performance indicators.
- Clearly communicate non-discriminatory promotion pathways and criteria to all employees and provide regular feedback.
- Create career advancement pathways for high-potential women by developing and targeting accelerated leadership programs.
- Provide women with executive coaching and sponsorship by senior leaders, including male champions.
- Develop targeted networking opportunities for women within the business and help women access networking opportunities across the industry.

3

Develop an inclusive and resilient supply chain.

- Strengthen women's participation in supply chains by integrating gender-related criteria into procurement processes and supplier evaluations.
- Collect sex-disaggregated data across supply chains to identify women's roles and enhance their participation, productivity, and resilience to climate shocks.
- Develop supplier programs to build women entrepreneurs' climate adaptation and resilience capacity, for example, through training in adaptive techniques, digital tools, and business continuity in extreme weather events.
- In rice production, support cooperative business models and technology platforms that aggregate the outputs of women smallholders and improve their market access.
- Establish digital platforms and recycling collection hubs that integrate informal women workers into formal supply networks.
- Integrate gender metrics in annual sustainability reporting or environmental, social, and governance (ESG) commitments.

4

Build respectful and inclusive workplaces.

- Develop and implement comprehensive anti-harassment policies with clear reporting mechanisms and conduct regular training for all employees on how to recognize and prevent harassment.
- Develop and customize protocols for workers in vulnerable contexts, such as those traveling to remote installation sites or agricultural areas.
- Embed gender considerations when developing business strategies, such as consulting women and ensuring climate adaptation activities consider women's needs and aspirations.
- Introduce comprehensive parental leave policies that go beyond legal minimums, such as encouraging paternal leave and flexible parental leave.
- Provide on-site childcare facilities or childcare subsidies to help parents balance work and family obligations.
- Implement flexible working arrangements including part-time options, remote work, and flexible hours.

1. Introduction

Viet Nam is highly vulnerable to climate change, and without adequate adaptation and mitigation measures it risks losing between 12 to 14.5 percent of gross domestic product annually by 2050 (World Bank 2022a). Recognizing this, Viet Nam has set ambitious climate targets—including achieving net-zero emissions by 2050. Significant public and private sector investment has been mobilized to build climate resilience and pursue pathways to low-carbon development. Importantly, gender considerations have also been integrated into Viet Nam's Nationally Determined Contribution (NDC) to ensure that women can fully contribute to this green transition.

Research shows that the green transition will impact men and women differently (UN Women 2024; Nguyen 2021). However, until now, there has been little in-depth research into the role of Vietnamese women in climate adaptation and mitigation. This diagnostic aims to narrow that gap by examining the participation and leadership of women in three sectors of the economy that are particularly relevant to the green transition: solar energy, plastics recycling, and rice production. It also lays out practical steps that companies can take to enable women to fully contribute to Viet Nam's climate targets, while also improving business productivity, driving innovation, attracting investment, and meeting rising demand for high-skilled and technical workers.

The three sectors selected for this diagnostic are each impacted differently by climate change and are responding in unique ways to the green transition. As shown in Table 1, growth and investment are the focus of the solar energy sector, supply chain formalization and extended producer responsibilities are two important issues for plastics recycling, while adaptation is a key concern for climate-vulnerable rice production. There are also significant variations in women's participation, employment, and leadership across these sectors. However, they also share some common challenges. These include the underrepresentation of women in STEM education and training as well as employer biases against hiring women for technical roles, which limits their current employment and prospects for the jobs of the future.[1,2]

The diverse nature of these sectors enabled this diagnostic to explore both the big picture and the finer nuances of how advancing women's participation can reduce climate-related risks for the private sector while also maximizing the business benefits of the green transition. A summary of each sector is included in Table 2, while Annex 1 details the methodology used to select the three sectors of focus. See Box 1 for a definition of the 'green transition'.

Box 1: Understanding the 'Green Transition'

The 'green transition' is a shift towards a low-carbon, resource-efficient, and socially inclusive economy, focusing on sustainable practices that promote growth, protect the environment, and address risks from climate change. This transition must be just, support workers and communities affected by this process, and ensure that benefits are shared equitably.

The green transition includes actions to mitigate and to adapt to climate change. Mitigation aims to reduce greenhouse gas emissions, by investing in an energy mix to lower carbon footprint. Adaptation seeks to reduce the risks or vulnerabilities posed by climate change, or to increase resilience to its impacts.

1 For example, only 25.5 percent of technical and vocational education trainees are women, and just 5 percent enroll in technical occupations (GIZ, 2022). The gap is even wider in rural areas, where only 29.1 percent of women have access to vocational training, compared to 40.1 percent of men (ILO, 2023).
2 Businesses frequently discriminate against women in technical hiring, with a common bias against their technical abilities (GIZ, 2023).

Table 1: Climate Relevance and Potential for Gender Impact and Investment by Sector

	Relevance to the Green Transition	Investment Potential	Gender Impact Potential
Solar Energy	Solar energy production is already reducing Viet Nam's reliance on fossil fuels and enabling a more sustainable energy mix. The sector is projected to account for 33 to 34.4 percent of installed capacity by 2050, according to Viet Nam's adjusted Power Development Plan 8. Expanding the sector is crucial to achieve Viet Nam's net-zero emissions target by 2050, to meet growing demand for power, and for climate adaptation, for example by powering cooling and irrigation systems in heat-stressed agricultural regions.	The revised Power Development Plan 8 aims for solar capacity target of 46, 459 to 73,416 megawatts by 2050 and seeks to power half of all buildings through rooftop solar by 2030. These ambitions require substantial investment to scale up solar capacity, particularly in utility-scale projects and rooftop solar deployment across commercial and residential sectors.	The solar sector is expected to generate approximately 3.5 jobs for every megawatt of solar energy installed between 2015 and 2030 (Friedrich-Ebert-Stiftung 2021). Many of these jobs will be in specialized STEM fields that are traditionally male-dominated. However, without targeted efforts, the employment gender gap could widen and companies may miss out on talent pools of women despite growing competition for skilled workers.
Plastics Recycling	Plastic waste and pollution are major issues in Viet Nam and a significant source of greenhouse gas emissions. Strengthening the plastics recycling and waste management sector is now central to climate and environmental policy and a key focus of Viet Nam's National Action Plan for Circular Economy (NAPCE) until 2035.	Investment is needed to formalize waste collection, improve sorting infrastructure, and expand recycling capabilities, all of which would support national commitments for recycled plastics, including meeting demand from extended producer responsibility (EPR) legislation.	Women dominate informal waste collection work but lack access to stable, better-paid jobs in formal recycling. They must be included in the formalization of the sector and supported by investments in skills training and access to finance to transition into higher-value roles.
Rice Production	The rice sector is highly vulnerable to climate change and needs urgent adaptation measures to sustain productivity. Rice production also contributes to greenhouse gas emissions, making mitigation efforts critical to achieving Viet Nam's net-zero targets.	Rice production is a major economic driver for Viet Nam, and the government has approved a program to sustainably develop one million hectares of high-quality, low-carbon rice while fostering green growth in the Mekong Delta up to 2030. Transforming the rice value chain towards a 'low-volume, high-value' model requires significant investment in sustainable production practices, climate-smart infrastructure, and processing technologies.	Climate impacts and the transformation of the rice value chain may lead to the loss of jobs and livelihoods in primary production, where many women work, but it will also generate new opportunities for better quality jobs in more technologically-advanced agricultural production and processing. To ensure women benefit from these opportunities, barriers such as access to land, finance, and technical training must be overcome, particularly in rural areas.

This report is structured into six chapters. Chapter 2 presents the business case for integrating women into business strategies in the context of climate change and the green transition. Chapters 3, 4, and 5 are deep-dive analyses of solar energy, plastics recycling, and rice production respectively, examining women's current participation and opportunities to include women in the green transition. Finally, Chapter 6 provides practical recommendations for companies to develop gender-inclusive strategies and strengthen their business performance in the green transition.

2. The Business Case:
Why inclusion is important to advance the green transition

Companies that incorporate women-inclusive strategies into their climate adaptation and mitigation efforts unlock new market opportunities and strengthen business performance. This chapter highlights evidence of the tangible gains that come from engaging women as key stakeholders in the green transition.

Women-inclusive leadership drives better and more strategic decision-making. The complex challenges posed by climate change and the green transition require businesses to adopt innovative approaches and comprehensive risk management. Company leaders must anticipate emerging risks, identify new market opportunities, navigate evolving regulatory landscapes, and drive organizational change. Global evidence shows that firms with more diversity in their leadership teams, including the presence of women in the senior leadership, outperform their peers in a wide range of business performance metrics (McKinsey 2023; IFC 2024). In the context of developing and implementing climate strategies, the presence of women in leadership teams also help companies perform better in climate action indicators, such as reducing energy consumption, greenhouse gas emissions, and water use (BoardReady & A Bird's Eye View 2021; FP Analytics 2020).

Targeting women's employment expands talent pools for critical skills. The green transition will increase employment in most sectors and will require new skill sets, both for employees moving across sectors and for those entering newly-created jobs (World Bank 2022). For example, the energy transition in Viet Nam is expected to require up to 1.93 million workers, creating an estimated 315,000 jobs annually in solar, wind, and biomass power by 2030 (Austrade 2024). A large share of these new job opportunities will require skills that are not yet readily available in Viet Nam (World Bank 2022). As the green transition accelerates, companies can widen their employee

base, strengthen their talent pipeline, reduce staff turnover, and enhance overall competitiveness by proactively promoting gender inclusion in recruitment, retention, and career development (IFC 2024).

Inclusive workplace policies and practices enhance productivity and retention. Companies need engaged and committed workers to implement new technologies, adapt production methods, and respond to emerging climate challenges. Workplace policies that create safe, inclusive, and supportive environments for all workers improve business performance through increased productivity, reduced turnover, and stronger organizational adaptability—all critical for the green transition. In addition, inclusive workplaces support diverse perspectives that can drive innovation and help address climate risks, especially in sectors such as plastics recycling and rice production, where women possess deep first-hand knowledge of emerging challenges and opportunities. Women-inclusive workplace policies can be particularly impactful in male-dominated sectors, like energy, that will be central to the green transition.

Women-responsive strategies strengthen supply chain resilience. Climate change poses significant risks to supply chains, with extreme weather events, volatile production conditions, and resource constraints threatening to disrupt material flows, reduce quality, and increase costs. To maintain business continuity and competitiveness, companies need resilient, transparent, and adaptable suppliers in all tiers, including informal and small-scale suppliers where women often play crucial but undervalued roles. In plastics recycling and rice value chains, women often perform upstream activities, primarily in informal or micro and small businesses. Targeted investments in women suppliers—through capacity development, technology transfer, formalization support, and access to finance—can improve input quality and reliability, build stronger supplier relationships, and strengthen the resilience and productivity of these segments, while also expanding economic opportunities for women.

Women-inclusive practices attract investment and better financing terms. Many development finance institutions and impact investors now require gender action plans as a requirement for financing, and a growing number of investors are integrating gender metrics into their ESG frameworks. Firms that can demonstrate a commitment to inclusion are better positioned to attract these investors and secure favorable loan terms. This is important because companies will need substantial investment to adapt to climate change and to expand low-carbon sectors. In solar energy, large amounts of upfront capital are needed to manufacture and install solar panels, inverters, and energy storage systems, along with investments in climate-resilient infrastructure and smart grids to ensure reliable energy supply amid changing weather patterns. Plastic recycling requires investments in specialized equipment, such as sorting machines and recycling technologies, as well as infrastructure to create more efficient waste management systems and to build resilience to extreme weather events. In rice production, transitioning to a low-volume, high-quality, climate-resilient model demands investments in modern farming equipment, climate-resistant seeds, irrigation systems, and post-harvest infrastructure. Additionally, both the rice and plastic sectors need investments in training, capacity building, and local innovation to reduce emissions, improve productivity, and ensure long-term climate resilience.

The solar energy, plastics recycling, and rice production sectors and the business benefits of strengthening women's participation across leadership and employment are explored in more detail in the following chapters.

3. Solar Energy

The remarkable growth of the solar sector is a significant contributor to Viet Nam's transition toward a low-carbon and climate-resilient future. In 2023, renewable energy comprised 13.6 percent of the country's total electricity production, with solar energy alone accounting for 9.2 percent (IRENA 2023). The government's revised Eighth National Power Development Plan aims to further increase installed solar capacity up to over 73,000 megawatts. This would make solar power the country's dominant energy source and provide 34 percent of total installed capacity by 2050. This will reduce reliance on fossil fuels and help to power climate adaptation such as cooling, irrigation, and energy-intensive advanced manufacturing.

Viet Nam's renewable energy sector continues to attract substantial foreign direct investment, with inflows totaling $15.8 billion in the first half of 2023 (Ministry of Planning and Investment 2023). To achieve the revised targets set out in the adjusted Power Development Plan 8, Viet Nam will need around $136.3 billion in investment between 2026 and 2030 or about $27.6 billion annually. The development of solar sector is expected to rely primarily on private sector investment (Nguyen 2025).

At a Glance

A skilled workforce is vital to meet growing demand for solar energy in Viet Nam. However, according to companies surveyed for this report, women hold just 5 percent of high-skilled STEM roles in the sector. Gender-inclusive approaches to skills development and recruitment will give solar companies access to a broader talent pool and strengthen women's abilities to take up emerging opportunities in this fast-growing industry.

The Solar Sector Value Chain

Viet Nam is the largest producer of solar equipment in Southeast Asia, accounting for five percent of global supply (Asian Development Bank 2023a). Vietnamese

firms are involved in the production of solar wafers, cell manufacturing, and module assembly for domestic supply and for export, with larger firms carrying out vertically integrated production across the full value chain, as shown in Figure 1 (Asian Development Bank 2023a).

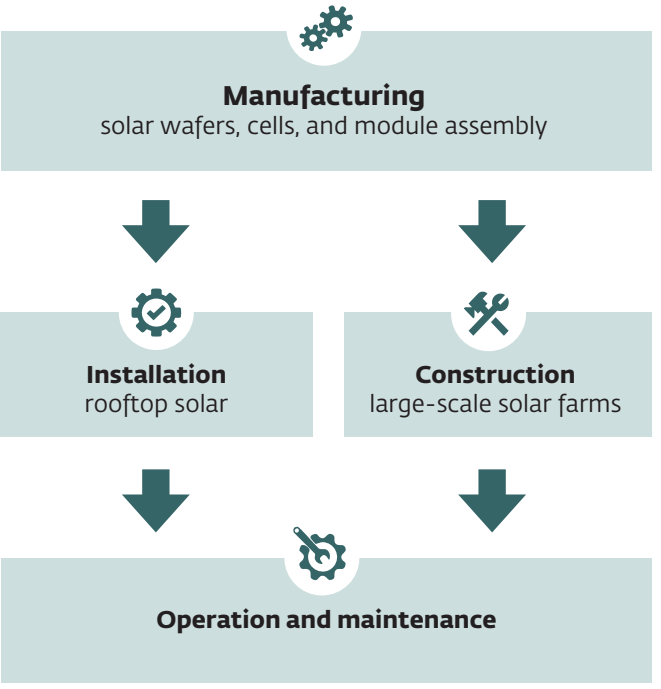
Growth in the solar sector is expected to create more than 25,000 jobs by 2050 (Minh 2024). Much of Viet Nam's current and planned expansion of solar energy has been driven by the private sector through the development and installation of off-grid rooftop solar on commercial and residential buildings (World Economic Forum 2021). Viet Nam also has utility-scale solar farms which feed electricity into the national grid. Jobs associated with solar farms are largely related to construction, including in engineering and procurement.

Many solar companies in Viet Nam specialize in the maintenance of solar panels. This can include cleaning, testing of electrical equipment, and replacing panels. However, the number of jobs in operations and maintenance tends to be very small compared to initial installation phases.

Women's Roles in the Solar Sector

Although country-specific data on women's participation in the solar sector in Viet Nam is limited, some studies have explored energy employment patterns across the region more broadly. In the Asia Pacific, women hold a significant portion of solar energy jobs, at 40 percent (IRENA 2022).[3] However, in Viet Nam and across the broader energy sector, women primarily perform lower-skilled jobs that do not require technical

Figure 1: Solar Sector Value Chain



expertise and are less connected to innovation and management. Compared to men working in the energy sector, women typically receive lower renumeration. Furthermore, women's share as managers or leaders in the energy sector is almost negligible (GIZ 2024).

The share of women pursuing STEM education in Viet Nam is 37 percent, which is higher than the global average of 30 percent. Despite this, the share of women advancing into higher STEM positions within companies drops significantly, particularly at senior levels (Binh 2025). As the solar sector expands, addressing barriers to women's recruitment and career advancement will allow companies to attract and retain talent to meet increasing demand for jobs.

3 In the Asia Pacific region, women's participation in solar is higher than in other energy subfields, with women making up 40 percent of the solar workforce compared to 15 percent in wind and 22 percent in oil and gas (IRENA, 2020; 2022). Estimates for solar (2022) and wind (2021) are for the Asia Pacific, while the estimate for oil and gas is global (2019).

Findings from the Sector Diagnostic

Surveys and key informant interviews gathered information from 23 solar sector companies with a total of 425 employees, of which about one quarter are women. These companies are engaged in large-scale on-grid solar facilities, including through construction and installation; small-scale solar applications such as installation and maintenance; and manufacturing of solar equipment.

- **Women's leadership in the solar sector remains low.** Women hold 13 percent of board positions and 10 percent of senior management roles across the surveyed companies.

- **Women are underrepresented in employment, particularly in technical roles.** Women make up 25 percent of the total workforce of surveyed companies, but hold only 5 percent of high-skilled STEM roles and 6 percent of medium-skilled technical roles.

- **Gender gaps and social norms make recruitment of women challenging.** Companies report difficulties in attracting women due to gender-based occupational stereotypes, perceptions that some technical roles are too physically demanding, and the underrepresentation of women in STEM education, which reduces the pipeline of qualified individuals.

- **There is scope to strengthen company policies and initiatives to promote equal opportunities for women and men.** While most firms have formal non-discrimination and equal opportunity policies, few offer mentorship programs, targeted recruitment, or family-friendly measures that could support the retention and career advancement of women.

More details on women's leadership and employment, recruitment challenges, and inclusive workplace policies are contained below.

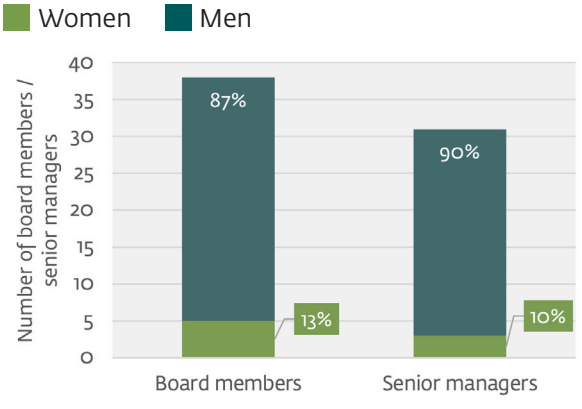
Leadership

Women hold just 13 percent of board positions and 10 percent of senior manager roles in the surveyed firms in Viet Nam's solar sector, as shown in Figure 2. This is significantly lower than the Asia-Pacific average of 40 percent of senior management in the solar sector (IRENA 2022).

> *"In terms of balanced management, women and men have different views on the way to conduct business, so it's good to have representation of different groups and perspectives in leadership teams."*
>
> *GreenYellow representative*

This is due to cultural and workplace barriers, and the common practice of drawing senior leaders from specialist technical occupations with a limited pipeline of qualified women. However, in key informant interviews, industry leaders reported increasing demand for workers with non-technical skills in areas such as project management, law, and finance, potentially opening new opportunities for women to advance into leadership roles.

Figure 2: Women in Leadership - Solar Energy Sector



A scarcity of leadership training, professional development, and mentorship opportunities creates barriers for women to advance in the sector. According to key informant interviews, these factors contribute to a lack of confidence among women that adversely affects perceptions about their readiness for leadership roles. As in other industries, women in the solar sector often face the double burden of balancing professional activities with a disproportionate share of unpaid household and care responsibilities. This is particularly problematic in the solar sector, where employees are often expected to work long, irregular hours and undertake frequent travel, including to remote sites. See Box 2 for a case study on women's leadership in the sector.

Box 2: Women in Leadership Dr. Phuong Anh Thi Nguyen, Chief Executive Officer of Tona Syntegra Solar

Dr. Phuong Anh Thi Nguyen is Chief Executive Officer of Tona Syntegra Solar, a joint venture established in 2017 between German-Swiss solar photovoltaic company Syntegra and Viet Nam's Tona Construction. Tona Syntegra Solar focuses on the engineering, design, and installation of rooftop solar solutions for commercial industrial communities. Its operations also involve engineering, procurement, and construction, as well as project operations and management and investment solutions.

"There needs to be a whole value change in the industry," says Dr. Nguyen. "We need resources, education, and awareness-raising to create attention and let women know the opportunities and benefits."

Dr. Nguyen also works as a senior lecturer at several universities, where she encountered a shortage of women studying electrical engineering. After joining Tona Syntegra Solar, she initiated targeted efforts to inspire women and girls to take up STEM education. Since 2023, company representatives have visited the top ten universities in Viet Nam to talk to female students about career opportunities in the renewable energy sector.

In 2019, Dr. Nguyen co-founded TRE Foundation, which aims to educate and inspire young people, particularly girls, to take up careers in green energy and sustainability. The foundation has also installed solar energy systems at 500 schools in Viet Nam.

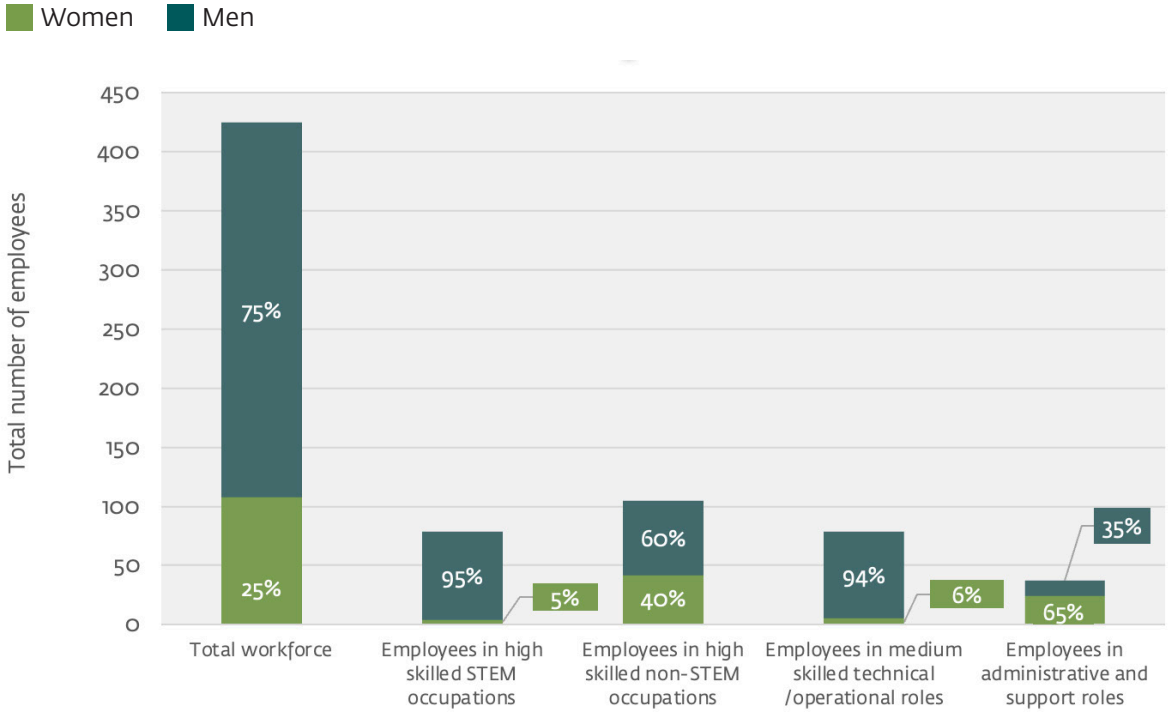
Source: Interview with Dr. Phuong Anh Thi Nguyen, CEO, Tona Syntegra Solar

Employment

Women account for one quarter of the total workforce across the 23 solar companies surveyed for this diagnostic, and their low participation in technical and STEM roles limits their overall employment in the solar sector. Across the surveyed sample, high-skilled and medium skilled STEM jobs account for 37 percent of the total solar workforce, but women hold just 5 percent of high-skilled STEM roles and 6 percent of medium skilled technical positions. In contrast, women perform 65 percent of administrative and support roles and 40 percent of high-skilled non-STEM positions, which account for 34 percent of the total workforce, as shown in Figure 3. They account for 29 percent of employees in other occupational categories, most of which are lower-skill operational roles.

In key informant interviews, industry stakeholders highlighted the importance of high-skilled, non-STEM roles in the future expansion of the sector. For example, carbon credit market mechanisms are projected to grow rapidly in Viet Nam, creating more jobs in carbon accounting and regulation. These positions could provide entry points for women because they are perceived as 'office jobs' that are more appropriate for women and align with areas of study favored by female university graduates. Jobs in corporate compliance and ESG functions are also expanding as companies seek investment to drive the expansion of the capital-intensive solar sector.

Figure 3: Formal Workforce by Occupational Category – Solar Energy Sector



Recruitment Challenges

Surveyed companies cited a lack of relevant technical skills as the most significant barrier to recruiting more women in the solar energy sector, while several key informant interviewees pointed to women's low levels of participation in STEM studies as a major constraint. Previous studies have noted the low number of women enrolled in technical and vocational education and training relevant to solar energy (GIZ 2022).

Key informant interviews also yielded insights into gendered stereotypes that impact women's career choices and companies' hiring decisions. For example, some jobs in the solar sector were not regarded as suitable for women because they involved physically demanding work in challenging conditions and exposure to extreme temperatures.

> *"For all our shareholders and lenders, we have KPIs to meet on both climate and gender equality, including having women in management and mid-management levels. By addressing climate and gender equality together, you not only benefit from having women's insights and perspectives in the workplace but also have access to more favourable financing options."*
>
> *GreenYellow representative*

Inclusive Workplace Policies

Ninety percent of surveyed solar energy companies had a formal policy on equal opportunity that explicitly referred to women, and 74 percent had formal policies or codes of conduct relating to sexual harassment. Moreover, around two-thirds of companies said that they offered some form of focused career advancement support to women, including formal leadership training and mentoring programs.

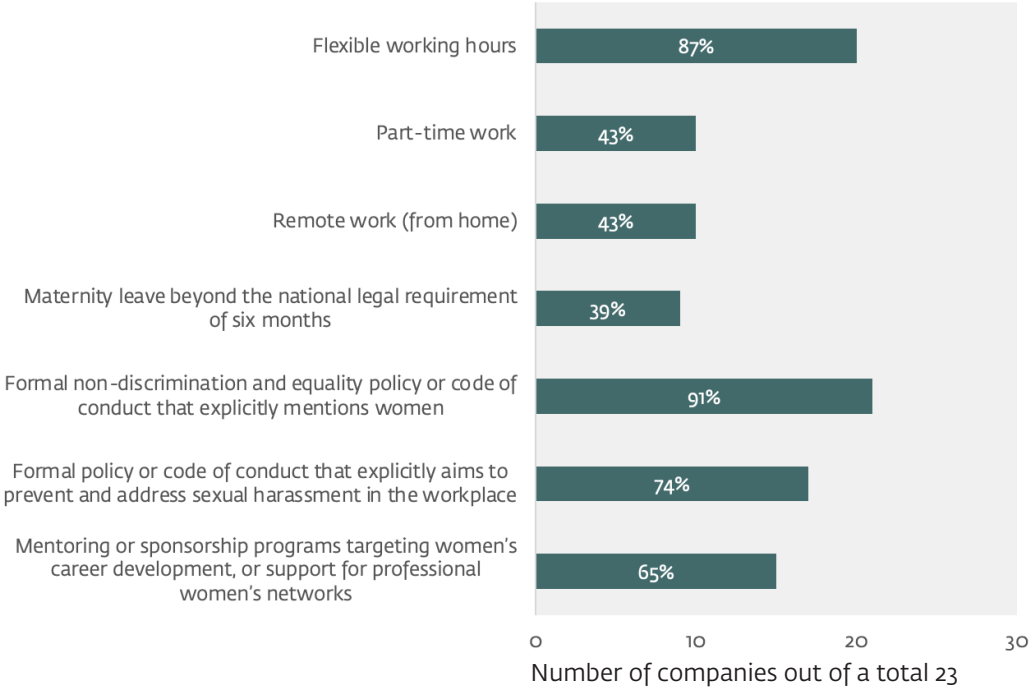
While many companies have adopted family-friendly policies to support employees with caregiving responsibilities, significant gaps remain. Only 35 percent of surveyed firms offered paternity leave beyond the legal minimum of five days, highlighting limited support for shared caregiving. However, as shown in Figure 4, most companies provided some form of flexible work arrangements, such as flexible hours, part-time options, or hybrid work. Key informant interviews revealed that childcare support is commonly offered, primarily through subsidies rather than direct services.

Key informant interviews also showed that investor focus on environmental, social, and governance performance has driven solar companies to strengthen policies on women and inclusion in the workplace and supply chains. For example, some firms said they were required to meet key performance indicators on inclusion—such as implementing equal opportunity policies and practices—as a condition for financing. These trends are expected to increase equal opportunity initiatives in Viet Nam's solar sector in coming years.

For specific actions that companies can take to advance women inclusion in the sector, see Chapter 6, and for a case study on inclusive workplace policies, see Box 3.

4 Only 4 out of 23 companies said they faced specific challenges in recruiting more women when asked directly. However, a number of additional companies made reference to skills barriers as a key reason for women's underrepresentation in the sector in their responses to other open-ended questions.

Figure 4: Workplace Policies on Women Inclusion – Solar Energy Sector



Box 3: How Clime Capital and SEACEF II Support Women-focused Investments in the Renewables Sector

Clime Capital is a Singapore-based fund manager of the Southeast Asia Clean Energy Facility (SEACEF). SEACEF is the first blended equity fund focused on accelerating the low carbon energy transition in critical markets in Southeast Asia. Clime Capital uses a 'gender-smart' investment approach to increase diversity through the growth and development of their portfolio companies. They also require their portfolio companies to submit periodic reports detailing sex-disaggregated data on recruitment, retention, promotions, and leadership development.

By implementing gender-smart policies, providing capacity building, and sharing best practices and resources, Clime Capital has observed a notable increase in women's participation in portfolio companies before and after investment rounds.

Additionally, it reports a growing number of women founders attending its investor networking events and conferences.

Among pipeline companies, less than 10 percent have women in top roles, such as founder or director. Clime Capital supports these startups to diversify their leadership through a tailor-made help desk, peer-to-peer mentorship, and customized capacity building. Additionally, it promotes and connects women leaders with the Climate Leaders Network, whose members are women active in accelerating an inclusive green transition in Viet Nam. Through networking and mentorship opportunities, Clime Capital fosters a community that supports current and future women leaders in renewable energy, climate action, and clean tech.

Source: Interview with Jessica Tran, Clime Capital Country Manager, Viet Nam

5 The Climate Leader Network is delivered in partnership with the IFC, the Australian Department of Foreign Affairs and Trade, the Global Energy Alliance for People and Planet, and the United States Agency for International Development.

4. Plastics Recycling

Viet Nam generates approximately 1.8 million tons of plastic waste annually, yet only around 10 percent is currently recycled (Ministry of Industry and Trade 2023). The plastics recycling sector features prominently in Viet Nam's National Action Plan for Circular Economy towards 2035, and greater recycling capacity is key to meeting national commitments and legislation on plastic waste management.[6] To develop sustainably, the sector needs to improve waste collection, sorting, and processing capacity, and invest in modern recycling infrastructure.

Scaling up formal recycling operations and integrating higher-quality processing methods will be key to meeting the needs of industries seeking reliable sources of recycled plastics. As regulatory and market pressures drive increased demand for secondary plastics, businesses will need to address bottlenecks in feedstock availability, quality standards, and supply chain integration to expand operations and enhance competitiveness (World Bank Group 2021).

At a Glance

The growth of the plastics recycling sector offers significant opportunities to increase women's inclusion, and advance climate adaptation and mitigation. It is also key to meeting national commitments on plastic waste management, including private sector obligations arising from extended producer responsibility regulations. Formalizing the sector's upstream value chain, where women dominate, would enhance supply chain efficiency and stability.

Plastics Recycling Value Chain

The plastic recycling sector in Viet Nam is largely informal and fragmented, with municipal waste collectors and individual pickers gathering recyclables

6 The Vietnamese government has adopted several policies to encourage domestic plastics recycling and manage imported waste, as well as regulations for the private sector. The Law on Environmental Protection introduces extended producer responsibility for packaging materials. This includes financial penalties for businesses that import or manufacture plastic products or packaging that are hard to recycle or contain toxic ingredients (World Bank Group 2021).

from various locations to sell for extra income. These materials are then aggregated and initially sorted by small family-run businesses, which act as intermediaries. A significant portion of recycling occurs in 'craft villages,' where residents collaborate on informal waste collection and processing, often without permits. Both formal and informal enterprises convert recovered plastics into usable applications. See further details in Figure 5.

Figure 5: Plastics Recycling Value Chain

Picking and collection: Most recyclable materials are collected informally, either by municipal waste collectors or individual pickers. Municipal workers extract recyclable materials during their collection routes to sell for additional income (The Circulate Initiative 2023). Individual pickers collect waste from landfills, streets, and waterways (Nguyen 2021; Global Plastic Action Partnership 2023).

Aggregation: Aggregation and initial sorting of recyclables typically happen at small local businesses, often run by families or informal operations. These aggregators serve as intermediaries in the waste recycling supply chain by gathering materials from waste pickers or small collectors, sorting them by type or quality, and then selling them to larger recycling facilities or processing plants.

Craft villages: A notable portion of plastics recycling occurs in 'craft villages', which are residential areas where residents collaborate in a common profession. The capabilities of these craft villages vary, but they typically involve many households working together on informal waste collection, aggregation, pre-processing, and sometimes recycling (The Circulate Initiative 2023). Some craft villages primarily focus on recycling imported plastics, with many operating without permits for recycling or importing plastic waste (Thapa et al. 2024).

Processing and recycling: Both formal and informal enterprises are involved in plastics processing and recycling. The two main processes are converting recovered plastics into flakes and converting the flakes into usable applications. An estimated 50-75 formal plastics recycling enterprises and around 200 informal enterprises operate in Viet Nam, mostly in and around Hanoi and Ho Chi Minh City (The Circulate Initiative 2023).

Manufacturing: Some manufacturing companies have made public commitments to include a proportion of recycled plastic in their inputs to promote circularity. For example, a growing number of multinationals and global brands operating in Viet Nam are making voluntary commitments to fully transition to reusable or recyclable plastics as part of wider climate commitments (Diana et al. 2022).

Women's roles in Plastics Recycling

Women account for a major share of the sector's lower-tier value chain, and are concentrated in informal, low-paid waste collection, sorting, and small-scale processing activities that provide little or no income security. Women make up an estimated 85 percent of informal waste collectors and 66 percent of refuse sorters but are notably underrepresented in the medium-skilled technical and operational roles that comprise most jobs in formal recycling firms (Global Plastic Action Partnership 2023). Within the broader Viet Nam waste management sector, women make up 40 percent of workers overall but hold just 10 percent of leadership and management positions (Global Plastic Action Partnership 2023).

Women disproportionately perform low-skill and low-paid tasks, such as separating and cleaning waste. Men tend to carry out more physically demanding, higher-value tasks, including transport and collection of electronic waste. Furthermore, men are more likely to work at night when new waste is delivered to sorting facilities, often giving them better access to higher-value waste.

In craft villages, men typically make decisions and supervise, while women handle waste collection, separation, and washing. This division of labor leads to a significant pay gap between male and female workers in the plastics recycling supply chain. For instance, at Hanoi landfill sites there is a 78 percent pay gap between male and female workers (Global Plastic Action Partnership 2023).

Limited resources and earning capacity hinder women's ability to scale or upgrade their operations, and they often face transport limitations, reducing the volume of materials they can deliver to recycling centers. Additionally, older workers lack the digital skills and access to technology to join more structured supply chain networks.

Findings from the Sector Diagnostic

Surveys and key informant interviews collected information from 17 companies operating primarily in formal, downstream segments of the plastics recycling and circular economy chain, including recycling and manufacturing of recycled plastic products and materials. These companies employ a combined 2,495 employees, 21 percent of whom are women. Informal waste pickers were not surveyed for this report.

- **Women's leadership in the plastics recycling sector is low.** Women hold 22 percent of board seats and 17 percent of senior management positions in surveyed plastics recycling and manufacturing companies.

- **Women are underrepresented in employment, particularly in technical roles.** Women comprise 21 percent of the workforce in formal segments of the value chain, primarily within large-scale recyclers and manufacturing firms. They occupy few positions in medium-skilled technical and operational roles that dominate these segments, and more frequently perform low-skill, low-paid tasks within the lower tiers of the sector.

- **Stronger inclusive workplace policies would help build a valuable talent pool.** Policies and initiatives to promote equal opportunities and support women's career progression are limited, contributing to recruitment and retention challenges.

- **Formalizing recycling networks would support women workers.** Women make up most of the workers in the informal segments of the plastics value chain. They face significant barriers in scaling operations and accessing formal recycling networks, which could enhance their productivity and make their incomes more secure.

More details on women's leadership and employment, recruitment challenges, and inclusive workplace policies are contained below.

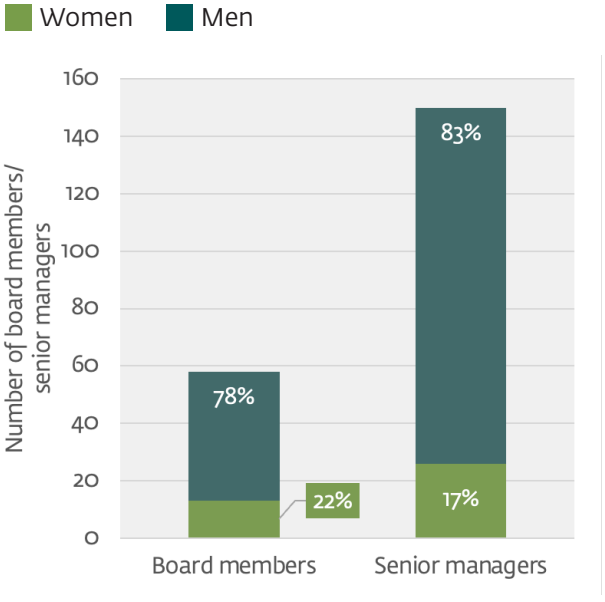
Leadership

Women are underrepresented in leadership across plastics recycling and post-recycling manufacturing companies. Across the companies surveyed for this diagnostic, women hold 22 percent of board positions and 17 percent of senior management roles, as shown in Figure 6.

Interviews with senior leaders and industry experts identified barriers to women's participation in leadership roles. These include biases about women's suitability for senior positions, which reduce opportunities for promotion and, according to key informant interviews, also negatively influence women's own perceptions and confidence to pursue leadership roles in the sector. Other factors affecting women's career advancement include limited provision of family-friendly policies and few initiatives to support their progression.

Including more women in decision-making across formal plastics recycling and manufacturing companies could drive better decision-making and more efficient operations, especially among the largely female waste collection workforce.

Figure 6: Women in Leadership – Plastics Recycling Sector



Employment

Across the surveyed sample of companies, women represent 21 percent of the workforce in formal recycling, processing, and manufacturing. Their low participation stems from underrepresentation in the technical and operational roles that dominate these segments. Women hold only 20 percent of medium-skilled technical jobs and 21 percent of high-skilled STEM roles, but make up the majority of administrative and support workers—although these roles are a small share of total employment. See Figure 7 for more details.

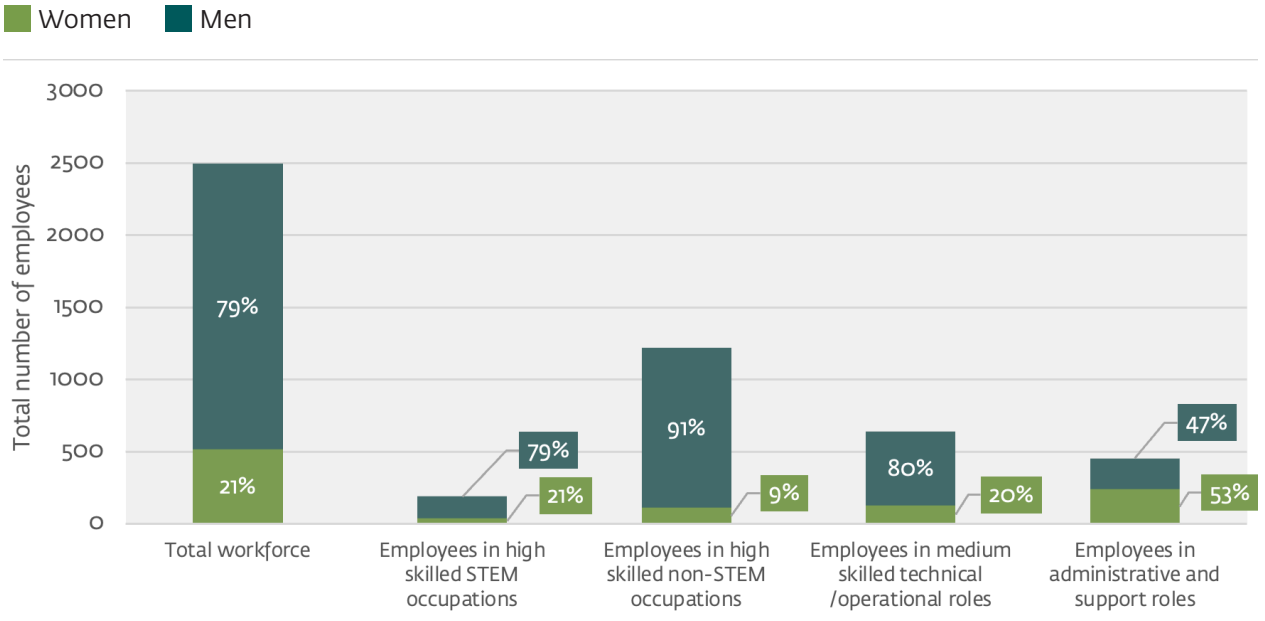
Formal recycling companies can achieve multiple benefits by supporting the predominately female informal workforce across their value chains. In the lower-tier segments, women waste collectors often have unique insights into collection challenges, material flows, and community waste dynamics that are critical for increasing efficiency and productivity in the sector.

> *"Climate priorities and women inclusion can be tackled simultaneously, and this is becoming a more common approach among large corporations and brands"*
>
> *DUYTAN Recycling representative.*

Formalization—for example through cooperatives or engaging women collectors through digital platforms or collection hubs—can also help recycling firms to achieve greater input transparency. This transparency will help to meet increasing demand from large corporations for sustainable plastic. Key informant interviews reveal that the use of recycled plastic helps manufacturing companies meet extended producer responsibility regulations, and may ultimately help them to avoid financial penalties related to the use of imported plastics or from manufacturing products that are difficult to recycle. In addition, supporting workers' efforts to formalize their operations can unlock access to investment. In a key informant interview, Veca, a

digital-based company connecting the recycling value chain, noted that this can help companies demonstrate that they meet ESG requirements and provide investors with a better understanding of where growth opportunities might lie. See Box 4 for a case study on Veca's innovative efforts to promote inclusion in the sector.

Figure 7: Workforce by Occupational Category – Plastics Recycling Sector



Recruitment Challenges

Fewer than one third of companies stated that they face challenges in recruiting women workers, suggesting low levels of awareness across the sector. Of those that reported challenges, the most common issue was a lack of required skills and experience among women candidates—for example in technical roles crucial to the recycling process such as electrical engineering. This reflects broader trends of women's underrepresentation in technical roles across the formal plastics recycling sector.

The second most frequently recognized barrier was that women declined job offers due to unappealing working conditions and benefits. Other challenges cited by companies related to work-life balance, including women's disproportionate time spent on caregiving and household responsibilities. This reflects a broader absence of workplace policies promoting equal opportunities.

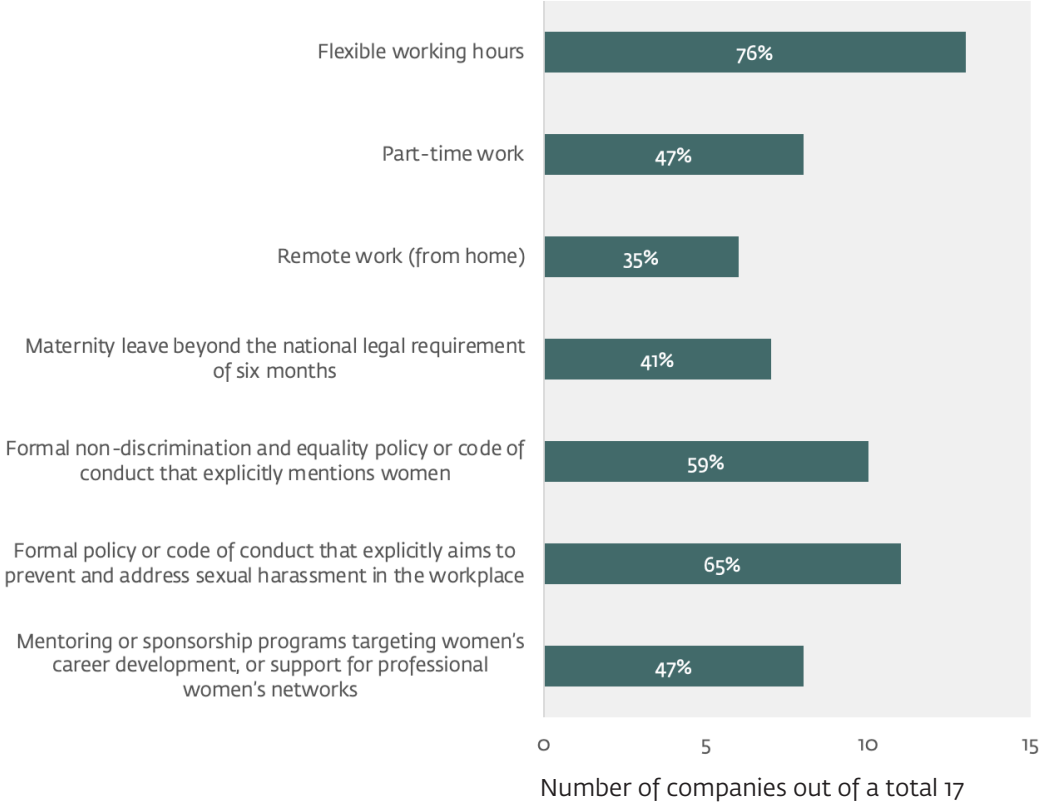
> *"We have seen a number of women-led enterprises that are focused on design and use of new materials for plastics, and we are working with some of them right now in our plastics innovation challenge."*
>
> *Unilever Viet Nam representative*

Inclusive Workplace Policies

While the majority of surveyed companies in the plastics recycling sector have formal policies on non-discrimination, equal opportunities, and sexual harassment, more than a third do not. As shown in Figure 8, half of all surveyed companies said they do not offer any specific initiatives to support women's career advancement. This is reflected in women's underrepresentation in leadership and their limited economic participation more generally, particularly in technical positions that comprise the majority of job in the plastics recycling and wider waste management sector. In addition, a great deal of work is done in waste recycling facilities, which makes it difficult to offer inclusive work arrangements such as working remotely or part-time options. The sector would benefit not only from establishing comprehensive policies, but also from implementing them more effectively.

For specific actions that companies can take to advance women's participation in the sector, see Chapter 6.

Figure 8: Workplace Policies on Women Inclusion – Plastics Recycling Sector



Box 4. Veca Leverages Digital Innovations to Empower Women Waste Collectors

Veca is a Vietnamese startup in which 60 percent of employees are women. Veca is working to build a more sustainable and efficient plastic waste supply chain through a digital platform that connects key stakeholders in the scrap market. Its mobile app links households, schools, offices, and complexes where plastic waste is generated; waste collectors and junk shop owners; aggregators such as large-scale junk shops; and formal facilities where plastic waste is processed and recycled.

Initially, Veca found that women waste pickers used the app less than men. It attributed this to women's lack of access to smart phones and digital skills, particularly among those aged between 50 to 60 years. So, Veca trained women waste pickers on how to use the app and in waste collection skills, such as how to assess waste value. To support older women waste pickers, a dedicated administrative team reached out using mobile apps like Zalo and Facebook Messenger to directly connect them with customers.

Veca cites insufficient infrastructure as another key challenge in scaling up waste picking and recycling. For example, many female pickers lack access to motorbikes or other transport, which limits the area from which they can collect scrap. Veca also found that older women preferred to work in local areas with fixed collection points. To address this, Veca plans to allow apartment and building operators to open accounts on its app and install fixed collection booths, making collection easier for waste pickers.

As noted, 60 percent of Veca's direct employees are women. The company introduced several internal measures to support them as part of a long-term strategy to retain talented staff and strengthen their skills and livelihoods, thereby contributing to the company's success. For example, Veca offers family-friendly policies, including flexible working hours and parental leave. It also provides training tailored to female employees in skills such as language proficiency and marketing.

Source: Interview with Veca representative

5. Rice Production

Rice production is central to Viet Nam's agricultural economy, food security, and export earnings, but it is also among the sectors most vulnerable to climate change. Rising temperatures, shifting rainfall patterns, and extreme weather events are projected to reduce rice yields by 8.8 percent by 2030 and 15.1 percent by 2050 (Government of Viet Nam 2022). Without adaptation measures, rising sea levels could result in a 46 percent fall in national rice production by 2100, with its rice heartland in the Mekong Delta most affected (Nguyen 2021). At the same time, rice production is also a climate mitigation priority, currently contributing 18 percent of Viet Nam's greenhouse gas emissions and 75 percent of its methane emissions (Vu et al. 2022; World Bank 2022). Both factors have made the sector's shift towards low-carbon, high-value production a national priority.

Comprehensive upgrades are needed to modernize the rice value chain, from farming to processing to export. The government and agricultural companies are prioritizing high-quality, climate-friendly rice production, along with technology-driven efficiencies to boost competitiveness and cut emissions (World Bank 2022c). As the industry becomes more capital-intensive, labor dynamics will also shift. Total employment in rice farming will likely decline with automation, while demand will grow for specialized roles in agronomy, quality control, logistics, and supply chain management (World Bank 2022c). According to key informant interviews, moving toward higher-value, export-oriented production could ease current fiscal constraints and enable businesses to boost investment in their workforce, including through skills development and inclusive employment practices.

At a Glance

The shift towards higher-value, sustainable rice production presents both challenges and opportunities for women's economic participation. Some traditional primary production jobs, where women are overrepresented, could be lost, but the move towards more sustainable production methods will create new—and potentially higher quality—agricultural positions. Women's participation in STEM studies and occupations will influence their ability to access these new employment opportunities.

Rice Production Value Chain

The majority of rice produced in Viet Nam is sold to processors through traders, who play a crucial role in the supply chain. Rice processing involves several steps, with small mills focusing on local consumption and larger mills targeting export markets. A substantial portion of Viet Nam's rice is exported, while wholesalers, traditional retailers, and modern retailers distribute rice to domestic consumers. See further details in Figure 9.

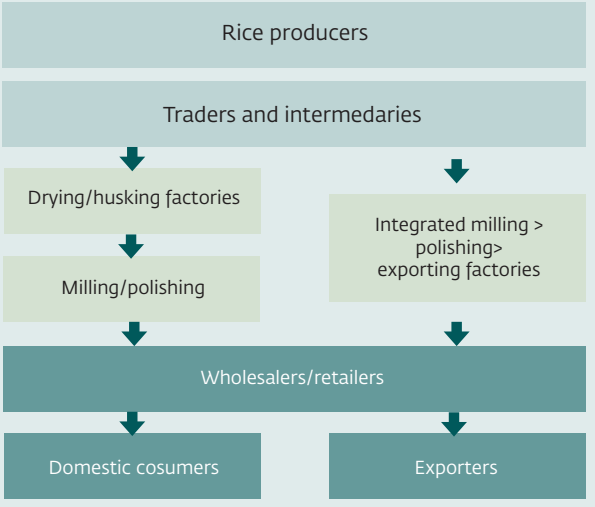
Figure 9: Rice Production Value Chain

Production: Eighty-two percent of Viet Nam's arable land is dedicated to rice cultivation and more than 15 million smallholder farmers—primarily in the Red River and Mekong deltas—depend on rice for their livelihoods (Rikolto 2024).

Traders: Ninety-three percent of rice produced in Viet Nam is sold to processors through traders.

Processors and millers: Rice processing involves several steps, including de-husking, removing the rice bran, and polishing. Factories may handle one or all of these processes. Small mills produce white rice for local consumption, while medium and large mills produce rice for export (The Anh, Van Tinh, and Ngoc Vang 2020).

Wholesalers, retailers, and exporters: Seventy percent of Viet Nam's rice is exported, and it accounts for over 90 percent of national exports. Wholesalers, traditional retailers, and modern retailers sell rice to domestic consumers.



Women's roles in Rice Production

Women are essential to Viet Nam's rice sector and make up 60 percent of the agricultural workforce (Tuan et al. 2024). However, their roles are often informal, low-paid, and concentrated in small-scale farming and post-harvest processing. As the sector reorients towards more sustainable, low-volume, high-value production models, overall employment in primary rice farming is expected to decline, disproportionately impacting women who make up a sizeable share of the workforce.

However, the transition will also create higher-quality jobs and new entrepreneurship opportunities across both primary production and downstream segments of the agricultural value chain. If barriers related to upskilling and gender-based bias are overcome, women already working in primary production are well-placed to leverage their deep knowledge to access new opportunities. Women already play a significant role in downstream agri-food industries, where demand for skilled workers will likely increase as the sector transitions to higher-value, export-oriented production.

The company survey did not reach smallholder farmers or smaller businesses, despite recognizing their importance in the rice production value chain in Viet Nam. Other studies have found that less than 10 percent of farm owners are women and that few women operate and own small and medium enterprises in the agricultural sector (Nguyen 2021; Asian Development Bank 2023). Barriers include limited access to financial and technical resources, a discriminatory land tenure system, and sociocultural norms that often assign decision-making roles to men. These gender-specific challenges amplify the broader barriers facing smallholder rice farmers, such as small land holdings, low incomes, and limited access to credit. Consequently, smaller agricultural businesses also face difficulties securing the finance and technical support needed for climate adaptation and productivity improvements (Nguyen 2021; Tuan, et al. 2024).

Findings from the Sector Diagnostic

Surveys and key informant interviews gathered information from 23 companies in rice production, milling, processing, and wholesale. These companies had a combined workforce of 934 formal year-round employees and 518 seasonal workers. Women accounted for 22 percent of year-round employees and four percent of the seasonal workforce. The survey focused on formal agribusinesses, including information about their seasonal workers, but did not cover smallholder farmers and other informal workers.

- **Women's leadership in rice production is higher relative to other sectors.** Women represent 37 percent of senior managers across the surveyed companies. Anecdotal information indicates that women have fewer leadership roles in primary production, including executive positions as farm owners or in milling and processing.

- **Women hold a minority of formal jobs in the rice value chain, particularly in technical occupations.** Across surveyed companies, women represent 22 percent of year-round positions and just four percent of seasonal jobs, the latter of which provide important livelihoods in many rural areas. Women hold only 14 percent of the medium-skilled technical occupations that are frequently found in formal segments of the sector.

- **Real and perceived STEM gaps and employer bias impede the recruitment of women.** Occupational stereotypes, biases among employers, low participation in technical fields, and unequal access to land, assets, finance, and other resources all poses challenges to women's economic participation in rice production.

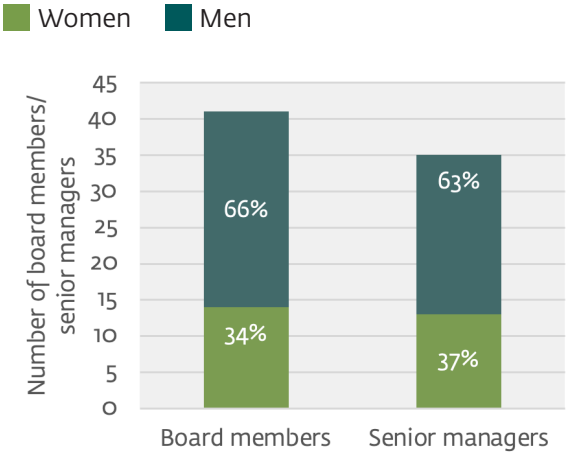
- **There are large gaps in inclusive workplace policies.** Few companies have formal workplace policies that support women's employment and leadership or extend parental leave policies beyond the legal requirement, likely impacting the retention of female employees.

More details on women's leadership and employment, recruitment challenges, and inclusive workplace policies are contained below.

Leadership

Compared to the broader primary production sector, women occupy more leadership roles across rice production, milling, processing, and wholesale in the surveyed companies. Women also hold a significantly larger portion of these positions compared to the solar energy and plastics recycling sectors, although men still occupy 66 and 63 percent of board and senior management positions, respectively, as shown in Figure 10. However, key informant interviews were not as positive, with respondents estimating that women hold just five percent of leadership roles in supplier cooperatives and 20 percent in milling and processing.

Figure 10: Women in Leadership – Rice Production

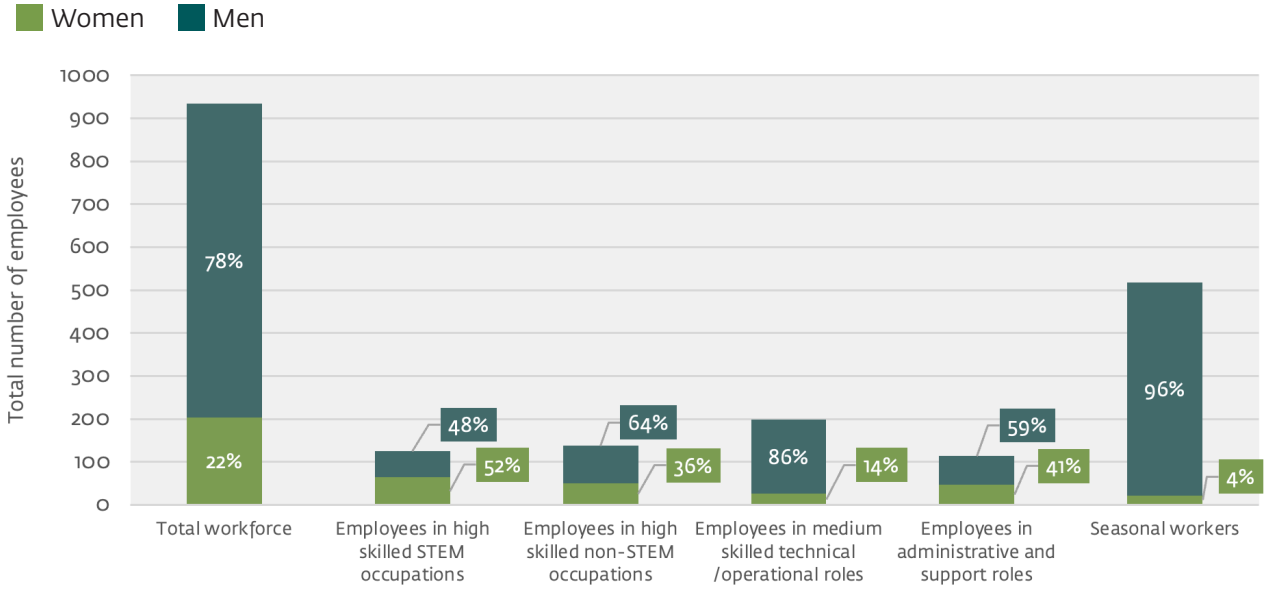


Employment

Women account for approximately one fifth of total employees across the surveyed companies in the rice production sector. In contrast to many other sectors, women are relatively well-represented in high-skill STEM and non-STEM positions, representing half and one-third of these roles respectively. However, these occupations are the minority of year-round jobs in rice production, with most jobs in medium-skilled technical and operations occupations, where women hold just 14 percent of positions across the sample of companies, as shown in Figure 11.

Seasonal workers are employed on a temporary basis—typically during planting or harvest season when labor demand is high. They tend to be found in medium-skilled technical and operational roles. In the seasonal segment, women are significantly underrepresented, making up only four percent of employees. In contrast, women's share of administrative and support positions is relatively high at 41 percent.

Figure 11: Workforce by Occupational Category – Rice Production Sector



Recruitment Challenges

A lack of suitable skills was a frequently cited barrier to hiring more women in rice production, reported by 10 out of 23 companies. Key informants also noted that agriculture companies face challenges in recruiting skilled workers because young people prefer to migrate to cities and take up manufacturing jobs. This makes it more difficult for universities and colleges to attract students to agricultural studies, particularly women who may already be less inclined to study STEM fields, and reduces the talent pipeline for companies.

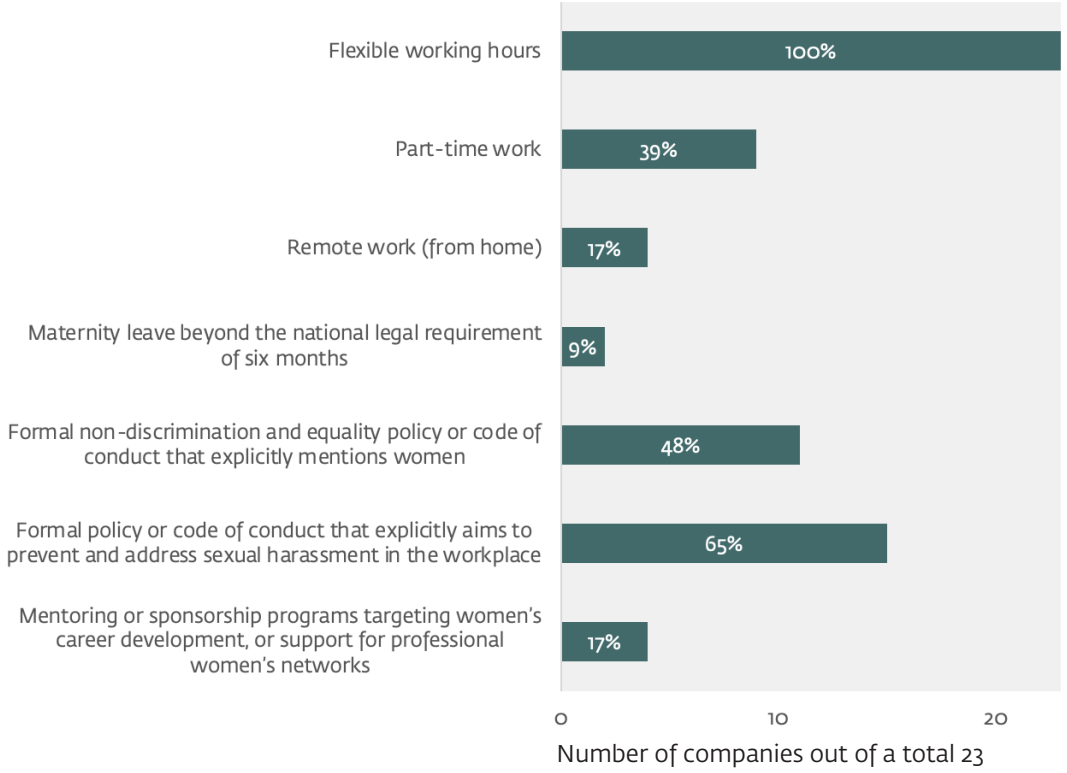
Furthermore, occupational stereotypes and gender biases pose barriers to women's employment in technical and operational roles in the rice production sector. Employers tend to view these roles as 'more suitable' for men due to perceived physical demands, field work, and travel requirements. As a result, employers often prefer to hire women for office-based administrative roles rather than technical positions (Key informant interviews; GIZ 2023). These same biases were also reflected in the company survey, and in addition, several managers cited concerns about maternity leave and women's household responsibilities. Perceptions about gender roles likely dissuade women from applying for technical positions, with 11 out of 23 surveyed companies reporting a lack of female applicants as a barrier to hiring more women.

Inclusive Workplace Policies

All of the surveyed companies in the rice production sector said they offered flexible working hours, as shown in Figure 12. A majority have anti-sexual harassment policies, and half have non-discrimination and equal opportunity policies that explicitly mention women. However, very few companies offer maternity leave benefits beyond the legal requirement or offer targeted career development programs, such as mentoring or sponsorship programs, to support women's advancement. For a case study on efforts by Olam Agri Viet Nam to support diversity and inclusion in the rice value chain, see Box 5.

For specific actions that companies can take to advance gender equality in the rice production sector, see Chapter 6.

Figure 12: Workplace Policies on Women Inclusion – Rice Production Sector



Box 5: Supporting Women's Participation in the Rice Value Chain at Olam Agri Viet Nam

Olam Agri Viet Nam, a subsidiary of the multi-national Olam Group, has won international recognition for its inclusion policies in Viet Nam. Olam Agri opened its first factories in the country in 2020 and engages rice cooperatives, millers, farmers, and other partners across the supply chain.

The company has set a target for women to occupy at least 30 percent of its leadership positions. It conducts inclusive training programs and actively builds a pipeline of female talent by ensuring women employees understand and have access to career development pathways. It also strives for a healthy work-life balance and fosters a diverse workforce.

Olam promotes inclusion and sustainability across its rice supply chain too, including among smallholder farmers and cooperatives. In 2018, Olam launched the '10,000 Farmers Program' in the Mekong Delta with the German development agency GIZ, offering training on sustainable farming practices and ways to improve rice quality. The program targeted 25 percent female participation.

In 2024, Olam Agri Viet Nam won the HR Asia Award for Workplace Excellence and Diversity, Equity, and Inclusion for its progressive policies on gender.

Sources: HR Asia, 2024; Olam Agri, 2024.

6. Recommendations: How companies can engage women in the green transition

The urgent need to adapt to climate risks and accelerate the transition towards a sustainable, low-carbon economy is reshaping industries, workforce dynamics, and supply chains worldwide. In Viet Nam, the solar energy, plastics recycling, and rice production sectors are at the forefront of these changes. The findings from this diagnostic provide practical actions that businesses can take to build the inclusive workplaces and diverse leadership teams that can best respond to both the challenges and opportunities of the green transition.

EXPAND ACTIVE RECRUITMENT AND RETENTION OF WOMEN IN STEM AND TECHNICAL ROLES

To meet growing demand for green skills and to capitalize on technological advances, Viet Nam needs more women in STEM and technical roles. To achieve this, companies can build pipelines of qualified female candidates and develop long-term career pathways for women, while helping all workers balance work and care responsibilities.

- **Implement outreach programs through universities and technical schools.** Traditional recruitment schemes often fail to attract women to STEM roles, but businesses can partner with technical universities and training institutes to run workshops for prospective female students and create female-focused scholarship and grant programs. Train company recruitment teams to understand and address unconscious bias in candidate selection for STEM and technical positions.

- **Partner with educational institutes to create internship and apprenticeship opportunities specifically for women.** These programs can provide practical entry points for women students who may lack industry connections or face unconscious bias in traditional hiring for STEM and technical roles. When designing these programs, use part-time and flexible apprenticeship models that accommodate student schedules. Establish clear performance metrics focused on skills development and provide structured feedback and professional development planning. Deploy female mentors and role models and create direct pathways from internships to full-time employment.

- **Showcase women in technical roles through company communications.** Visibility matters. Challenge stereotypes by showcasing women in technical roles through company websites and social media, recruitment materials, and industry events. Provide relatable role models and demonstrate an inclusive workplace culture. Ensure gender balance in all visual representations of the company's workforce.

PROMOTE WOMEN'S LEADERSHIP AND INCLUSIVE MANAGEMENT TEAMS

Evidence shows that the presence of women in leadership helps companies strengthen performance and drive innovation. Companies can take practical actions today by establishing clear targets, creating pathways to leadership for high-potential women, reviewing promotion practices, and identifying ways to reduce bias of women on board.

- **What gets measured, gets managed: collect and analyze gender-disaggregated data on women's representation and promotion to identify and close gaps in leadership.** Consistent data collection is essential to establish baselines, set targets, develop appropriate interventions, and monitor progress in leadership diversity. Companies can conduct an annual leadership demographic audit or create a dashboard that tracks representation and promotion by leadership level, department, and tenure. Companies can also review industry benchmarks and historical company trends, establish mechanisms for anonymous feedback, and gather qualitative data on perceived barriers to advancement.

- **Establish specific, measurable, actionable, realistic, time-bound (SMART) goals for women's representation in senior management and board positions.** Working towards leadership diversity targets takes time. SMART goals help companies set progressive milestones, such as one, three, or five-year targets, with specific percentages for each leadership level. These goals can create sector-specific targets that acknowledge different starting points, develop transparent strategies to communicate targets with all stakeholders, and include interim review points to assess progress and adjust actions as needed. They can also establish both minimum thresholds and aspirational targets to drive continuous improvement.

- **Incorporate leadership diversity metrics into company performance indicators.** This action will increase visibility and focus on leadership diversity. For example, companies can include key performance indicators on women's representation into quarterly business reviews, alongside financial and operational metrics. Companies can create a balanced scorecard that ties diversity metrics to business outcomes like innovation and retention. They can also publicly report on progress toward inclusion goals in annual reports, including both numbers and qualitative case studies.

- **Clearly communicate unbiased promotion pathways and criteria to all employees and provide regular feedback.** Companies can reduce the influence of subjective judgements that disadvantage women in male-dominated fields by developing unbiased and transparent promotion criteria. Clear promotion criteria also help women to prepare for leadership roles and ensure all employees have equal access to information on promotion opportunities. For example, career progression grades and criteria could be uploaded to the company intranet and/or shared at all staff meetings. Quarterly or bi-annual development conversations can focus on progress toward career objectives. Companies could also consider creating self-assessment tools aligned with promotion criteria to help employees identify development needs.

- **Create pathways for high-potential women by developing leadership programs.** Companies that invest in leadership programs gain the benefits of strong talent retention and institutional knowledge. To enhance the pipeline of women leaders, companies could offer programs that include a dedicated share of women participants or programs specially targeting high-potential women. For example, companies could provide access to external

executive education programs at leading institutions, create rotational assignments across departments to build broad organizational knowledge. They could also establish 'leadership laboratories' where participants apply new skills to real business challenges and participate in peer coaching and cohort-based learning to build supportive professional communities.

- **Provide executive coaching and sponsorship from senior leaders, including male leaders.** Direct support from executives helps women navigate organizational politics, builds confidence, and increases visibility with key decision-makers. Companies with a large share of men in leadership can engage them as allies and advocates by pairing them as mentors or executive sponsors for women with leadership potential. Sponsors could be trained on effective advocacy techniques and be made aware of implicit bias. Companies can also establish formal mentoring relationships between senior women leaders and emerging talent.

- **Help women access networking opportunities across the company and industry.** Professional networks provide access to information, opportunities, and support, and can help workers advance their careers and overcome barriers. Companies can encourage their female workers to join established industry networks for women leaders, such as the Viet Nam Energy Women Network or the Climate Leaders Network, and recognize networking time and participation as part of their official work.

DEVELOP A RESILIENT, INCLUSIVE SUPPLY CHAIN

In Viet Nam's plastics recycling and rice production sector, women dominate important but vulnerable segments like informal waste collection and smallholder farming. These women possess valuable firsthand knowledge of climate risks and adaptation strategies that companies can leverage to build resilient supply chains. By formalizing relationships with women suppliers, investing in their capacity, and integrating them more effectively into core business operations, businesses can enhance traceability, improve quality control, and build greater adaptation to climate-related disruptions.

- **Map supply chains to identify women's roles throughout the value chain.** Understanding where and how women participate in supply chains is essential for designing effective inclusion strategies. Mapping can also identify areas vulnerable to climate risks and help to develop effective interventions that avoid disruptions and enhance resilience in supply chains.

- **Collect gender-disaggregated data on supply chain participation and performance.** As noted, consistent data collection is essential to establish baselines, set targets, and monitor progress. This data collection should extend to supply chains. Companies can track performance indicators such as retention rates, productivity, quality, and growth by gender, and analyse trends to identify systemic barriers facing women suppliers. Where possible, digital data collection tools, dashboards, and visualizations should be accessible to suppliers at all levels to improve decision-making.

- **Share supply chain gender metrics with investors to demonstrate ESG commitment.** Investors increasingly value supply chain diversity as an indicator of good governance and risk management. Actions on this front can strengthen investor relations, potentially lower capital costs, and enhance reputations in financial markets. Companies could, for example, develop comprehensive ESG reporting that highlights gender inclusion across the supply chain, create case studies demonstrating how women suppliers contribute to business resilience and sustainability, or quantify the business impact of supply chain inclusion initiatives.

- **Strengthen women's participation in supply chains by integrating gender-related criteria into procurement processes and supplier evaluation.** Procurement policies shape supply chain composition and can be powerful tools for advancing women's participation. Companies can set specific targets for sourcing from women-owned businesses and create sourcing approaches where gender-inclusive suppliers receive preferential consideration. They could also conduct regular supplier diversity audits to track progress and identify opportunities for improvement, and provide technical assistance to help suppliers meet inclusion criteria.

- **Create supplier development programs that build the capacity of women entrepreneurs.** Women-owned businesses often lack access to resources, technology, and networks needed to scale operations and meet corporate requirements. However, women suppliers are reliable partners who are willing to grow with businesses' needs. Companies can enhance supplier capacities by providing mentoring from established suppliers and procurement experts. They can establish peer networking opportunities for women entrepreneurs to collaborate and share knowledge. Companies could also partner with banks or financial institutions to hold information sessions on financial access for women-led small businesses.

- **Establish digital platforms and collection hubs that integrate informal women workers into formal supply networks.** Digital platforms are great tools to bridge the gap between informal workers and formal supply chains. These tools also increase efficiency and transparency by reducing intermediary costs and improve traceability from point of collection. Some examples include user-friendly digital marketplace platforms that connect informal waste collectors with formal recyclers or processors, and incorporate simple, transparent payment systems that reduce transaction costs and improve financial inclusion. Digital literacy training would boost adoption. In the case of plastics recycling, companies could also establish physical collection hubs in strategic locations accessible to women suppliers.

- **Create cooperative business models that aggregate women smallholders to improve market access.** Aggregation models help women farmers overcome scale limitations and strengthen their market position. Companies that support cooperative models can streamline their interactions and support for women farmers through climate-smart farming training or guaranteed purchase agreements that boost market stability, for example. To make these models sustainable, companies can help women-led cooperatives to build capacity in registration, governance, compliance, and financial systems. Shared services models for equipment, transportation, and storage can help to achieve economies of scale.

BUILD RESPECTFUL AND INCLUSIVE WORKPLACES

To be successful, the strategies and actions detailed above must be underpinned by comprehensive workplace policies that promote inclusion and address barriers to women's participation. Companies that create respectful, supportive work environments can more effectively attract and retain diverse talent, build strong leadership pipelines, and cultivate trust with supply chain partners. Policies addressing gender-based discrimination, harassment, flexibility, and care responsibilities demonstrate quality governance to investors. Importantly, they also create the conditions for women to contribute fully to the green transition.

- **Introduce comprehensive parental leave policies that go beyond legal requirements and specifically encourage paternity leave.** Support women's career continuity by helping to balance care responsibilities that have traditionally fallen on women. For example, create incentives for men to take full paternity leave though 'use it or lose it' provisions. Ensure employees who take leave remain eligible for performance reviews and promotions and create ways for workers on leave to maintain workplace connections.

- **Provide childcare to help parents balance work and family obligations.** Companies with large operations could invest in onsite childcare facilities, while smaller companies could explore subsidies and partnerships with local childcare providers. Shift workers should be able to access extended hours of childcare coverage. Companies may also consider offering backup care options for emergencies or when workers' regular arrangements fail.

- **Establish programs that help professionals to return after career breaks.** 'Returnship' programs recognize the value of experienced talent, address skills gaps, and build confidence to return to work. For example, companies could provide skills refresher training on new and current technologies, assign dedicated mentors who understand the challenges of returning to work, and offer projects focused on returnee's strengths and capabilities. Companies could also offer three to six month paid professional development programs and clear pathways to return to permanent employment.

- **Implement flexible work arrangements.** Standard work schedules often conflict with care responsibilities, discouraging women caring for children or elderly. Options like flexible hours, remote work, compressed weeks, or job sharing allow employees to integrate work and care more effectively, while also maintaining productivity. Companies can offer varied start and end times and enable remote or hybrid work where operationally feasible. Other examples include creating part-time roles with proportional benefits and advancement opportunities, and job-sharing options for senior positions.

- **Develop and implement comprehensive anti-harassment policies with clear reporting mechanisms.** Explicit policies and reporting mechanisms allow women to feel safe within their organization, especially in traditionally male-dominated areas. Companies should create policies that clearly define prohibited behaviors, establish multiple reporting channels, and outline investigation procedures and consequences. These policies should address both overt harassment and subtle forms of gender bias, and include protections against retaliation for those who report incidents. Conduct regular policy reviews to incorporate emerging best practices.

- **Conduct regular training for all employees on how to recognize and prevent harassment.** This helps create a culture of mutual respect and accountability, and ensures all staff understand appropriate workplace behavior and individual responsibilities. Companies can develop training materials addressing common scenarios in technical workplaces, provide role-specific modules with additional content for managers and supervisors, and use interactive formats including scenario-based learning and facilitated discussions. Include content on bystander intervention techniques and deliver annual refresher training to reinforce key concepts and introduce emerging issues.

- **Develop and customize protocols for workers in vulnerable contexts, such as those traveling to remote installation sites or agricultural areas.** Women's recruitment, participation, and promotion can be impacted by concerns about the safety of work in remote locations. This can be addressed through specific safety protocols for travel and remote work, and by providing communication tools, emergency supplies and other specialized safety equipment. Check-in procedures should be established, along with protocols for late or missed check-ins. Companies should train supervisors to recognize and address field-specific risks.

- **Engage diverse stakeholders, particularly women, in assessing climate-related business risks and developing strategies for the green transition.** This involves identifying and consulting women customers, end-users, employers, leaders, and suppliers in risk assessments and the design of climate-friendly products and services. Structured dialogue platforms should be created to empower women to share their insights, lived experiences, and indigenous knowledge, with dedicated times and spaces for their voices to be heard. Establish diverse, cross-functional teams that can better assess and respond to the risks and opportunities of the green transition, particularly in workforce planning and supply chain management.

It is hoped that Viet Nam's private sector and all stakeholders in the solar energy, plastic recycling, and rice production sectors can leverage the findings and recommendations in this first-of-its-kind diagnostic to grow the skilled talent pool, improve workforce stability, and strengthen supply chain resilience. By taking deliberate steps to include women in all parts of the business—from leadership to supply chains—companies, workers, and communities will be better equipped to adapt to climate change, innovate, grow the low-carbon economy, and successfully navigate the green transition.

Research Sources & Bibliography

Key informant interviews:

From August to October 2024, interviews were conducted with representatives from 12 companies and organizations linked to the solar energy, plastics recycling and rice production sectors. These include Unilever Viet Nam, Veca, Clime Capital, DUYTAN Recycling, Tona Syntegra Solar, GreenYellow Viet Nam, Pan Group, Olam Agri Viet Nam, the Ministry of Natural Resources and Environment, and other respondents who preferred to remain anonymous.[7]

Secondary sources:

BoardReady & A Bird's Eye View. 2021. *Does Board Diversity Drive Corporate Action on Climate Change?* BoardReady: Seattle. https://abirdseyeview.global/diversity-and-climate-action/#_downloads

Asian Development Bank. 2023a. *Renewable Energy Manufacturing: Opportunities for Southeast Asia.* Asian Development Bank: Manila. https://www.adb.org/publications/renewable-energy-manufacturing-opportunities-southeast-asia

Asian Development Bank. 2023. *Facilitating Entrepreneurship Growth by Lifting Barriers: A White Book on Women-Owned Small and Medium-Sized Enterprises in Viet Nam.* Asian Development Bank: Manila. https://doi.org/10.22617/SPR230590-2

Austrade. 2024. *Driving Viet Nam's green energy transition: Leveraging opportunities.* https://www.linkedin.com/pulse/driving-vietnams-green-energy-transition-leveraging-kjlmc/?trackingId=PbIZVme8Q%2FOQoO7OcgJcvQ%3D%3D

Bell, Matthew. 2021. *Why ESG performance is growing in importance for investors.* Ernst & Young. March 9. 2021 https://www.ey.com/en_us/insights/assurance/why-esg-performance-is-growing-in-importance-for-investors?utm_source=chatgpt.com

Bao Binh. 2025. *"Định kiến giới là thách thức lớn nhất khi phụ nữ Việt Nam tham gia STEM."* VNEconomy, March 6, 2025. https://vneconomy.vn/techconnect/dinh-kien-gioi-la-thach-thuc-lon-nhat-khi-phu-nu-viet-nam-tham-gia-stem

Breu, Marco et al.2021. *Viet Nam Offshore Wind Opportunities Increasing.* McKinsey. November 1, 2021. https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/capturing-the-wind-renewable-energy-opportunities-in-Viet Nam

CASE. 2024. *Co-benefits of Energy Transition in Viet Nam's Industrial Development.* CASE for Southeast Asia: Hanoi. https://www.esp.org.vn/wp-content/uploads/GIZ_CASE-report_ENG_261223.pdf?utm_source=chatgpt.com

Center for Environment and Community Research. 2019. *Women empowerment in the plastic waste value chain.* CECR: Hanoi. https://cecr.vn/download/report-women-empowerment-in-the-plastic-waste-value-chain/

Deininger et al. 2023. *Placing Gender Equality at the Center of Climate Action.* World Bank Group: Washington D.C. https://documents1.worldbank.org/curated/en/099718102062367591/pdf/IDU08c737dd00f8580412b0aed90fce874ab09b0.pdf

Diana et al. 2022. *"Voluntary commitments made by the world's largest companies focus on recycling and packaging over other actions to address the plastics crisis."* One Earth 5, 1286–1306 November 18, 2022. Cell Press: Cambridge. https://www.sciencedirect.com/science/article/pii/S2590332222005346

FP Analytics. 2023. *Women as Levers of Change.* FP Group: Sydney. https://womenasleversofchange.com/#environment
Friedrich-Ebert-Stiftung. 2021. Gender equality and climate change in Viet Nam. FES Viet Nam: Hanoi. https://library.fes.de/pdf-files/bueros/Viet Nam/18478-20211109.pdf

GIZ. 2022. *Inclusion in Technical and Vocational Education and Training (TVET).* Reform of TVET in Viet Nam. GIZ: Hanoi. https://www.tvet-Viet Nam.org/wp-content/uploads/2022/08/220623-NMC-Inclusion-in-TVET-facsheet-FINAL-EN.pdf

GIZ. 2023. *Gender Analysis for the Programme 'Reform of Technical Vocational Education and Training in Viet Nam.* GIZ: Hanoi. https://www.tvet-Viet Nam.org/wp-content/uploads/2023/12/20191018-LMP-CK-NHN-Gender-Analysis-for-TVET-Programme-EN.pdf

7 In 2025, the Ministry was merged with another and became the Ministry of Agriculture and Environment.

GIZ. 2024. *The Roles and Participation of Women in the Energy Sector in Viet Nam.* GIZ: Hanoi. https://www.giz.de/en/downloads_els/241003-Brochure-PNTNNL-final-ENG-formatted.pdf

Global Alliance on Health and Pollution. 2019. *Pollution and health metrics: Global, regional, and country analysis.* https://www.gahp.org/reports/pollution-and-health-metrics

Global Energy Monitor. 2024. *A Race to the Top: Southeast Asia.* https://globalenergymonitor.org/wp-content/uploads/2024/01/GEM_Race-To-The-Top_SE-Asia-2024.pdf

Global Plastic Action Partnership. 2023. *Intersectional Gender Context Assessment of the Plastic Value Chain in Viet Nam.* https://weforum.ent.box.com/s/8y10a2qcpko0qnoc8lprgff52yg8gw11

Government of Viet Nam. 2022. *Nationally Determined Contribution* (Updated 2022). UNFCCC: Bonn. https://unfccc.int/sites/default/files/NDC/2022-11/Viet%20Nam_NDC_2022_Eng.pdf

Hoang, Minh. N.d. *"Powering the future: Viet Nam's solar industry growth, trends, and projections."* Global Referral Group. https://globalreferral.group/powering-the-future-Vietnams-solar-industry-growth-trends-and-projections/

IFC. 2024. *Gender-responsive climate governance and the role of women leaders.* IFC: Washington D.C. https://www.ifc.org/content/dam/ifc/doc/2024/gender-responsive-climate-governance-report.pdf

IFC. N.d. *Inclusive Employment and Leadership.* https://www.ifc.org/en/what-we-do/sector-expertise/gender/inclusive-employment-and-leadership

ILO. 2019. *Working on a Warmer Planet: The impact of heat stress on labour productivity and decent work.* ILO: Geneva. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_711919.pdf

ILO. 2023. *Decent Work Country Programme Viet Nam 2022 - 2026.* ILO: Geneva. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-hanoi/documents/publication/wcms_872736.pdf

IRENA. 2019. *Renewable Energy: A Gender Perspective.* IRENA: Masdar City. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jan/IRENA_Gender_perspective_2019.pdf

IRENA. 2022. *Wind Energy: A Gender Perspective.* IRENA: Masdar City. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Sep/IRENA_Solar_PV_Gender_perspective_2022.pdf

Nguyen, Sy Linh. 2021. *The State of Gender Equality and Climate Change in Viet Nam.* ISPONRE. Hanoi. https://asiapacific.unwomen.org/sites/default/files/Field%20Office%20ESEAsia/Docs/Publications/2021/04/publication_Viet Nam%20report_digital2%20%281%29.pdf

McKinsey. 2023. *Diversity Matters Even More: The case for holistic impact.* McKinsey & Co.: New York City. https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-matters-even-more-the-case-for-holistic-impact

Ministry of Industry and Trade. 2023. *Nâng cao vai trò của phụ nữ trong quản lý chất thải nhựa.* Cổng thông tin điện t Bộ Công Thương: Hanoi. https://moit.gov.vn/bao-ve-moi-truong/nang-cao-vai-tro-cua-phu-nu-trong-quan-ly-chat-thai-nhua.html

Ministry of Investment and Planning. 2021. *Viet Nam Socio-Economic Development Strategy: 2021–2030.* https://Viet Nam.gov.vn/socio-economic-development-plans/socio-economic-development-plan-for-2021-2025-12056314

Nguyễn, Phuong. 2024. *Accelerating Women and Girls' engagement in STEM fields in Viet Nam.* Nguyen Tat Thanh University: Ho Chi Minh City. https://ntt.edu.vn/en/accelerating-women-and-girls-engagement-in-stem-fields-in-vietnam/

Nhat Lam Duyen, T. et al. 2021. *'A comparative analysis of gender and youth issues in rice production in North, Central, and South Viet Nam', Climate and Development,* 13(2), pp. 115–127. https://doi.org/10.1080/17565529.2020.1734771

Nu Quy Linh Tran et al. 2023. *"Climate change and human health in Viet Nam: a systematic review and additional analyses on current impacts, future risk, and adaptation"*, Lancet Regional Health West Pacific, 15(40). https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(23)00261-4/fulltext

Rikolto. 2024. *A Sustainable and Inclusive Rice Sector in Vietnam.* Rikolto, 27 September 2024. https://southeastasia.rikolto.org/projects/a-sustainable-and-inclusive-rice-sector-in-vietnam

Thapa, K. et al. 2024 '*Towards a Just Circular Economy Transition: The Case of European Plastic Waste Trade to Viet Nam for Recycling',* Circular Economy and Sustainability 4, 851–876. https://doi.org/10.1007/s43615-023-00330-w

The Anh, D., Tran Van Tinh, and Nguyen Ngoc Vang. 2020. "The Domestic Rice Value Chain in the Mekong Delta." *White Gold: The Commercialisation of Rice Farming in the Lower Mekong Basin*, Palgrave Macmillan: Singapore. https://link.springer.com/chapter/10.1007/978-981-15-0998-8_18

The Circulate Initiative. 2023. *Mapping Local Plastic Recycling Supply Chains: Insights from Selected Cities in Cities in India, Indonesia, Thailand and Viet Nam.* https://www.thecirculateinitiative.org/wp-content/uploads/Mapping-Local-Plastic-Recycling-Supply-Chains-Insights-from-Selected-Cities-in-India-Indonesia-Thailand-and-Viet-Nam.pdf

Thu Nguyen. 2025. "Implementation plan next for revised PDP8." Vietnam Investment Review, May 10, 2025. https://vir.com.vn/implementation-plan-next-for-revised-pdp8-128192.html

Tuan, C.M. et al. 2024. 'Can women empowerment enhance rice productivity? The case of Viet Nam', *Sustainable Development.* Volume 32, Issue 6, 6274-6285. https://doi.org/10.1002/sd.3025

Tuan, et al. 2020. *Adapting to Succeed: Assessing the Impact of Climate Change on Vietnamese Businesses.* The Asia Foundation. https://pcivietnam.vn/uploads//EN-Nghien-cuu-khac/EN.-2020_VCCI_TAF_UPS_Impacts-of-Climate-Change-on-Vietnam-firms.pdf

Tuan, Vu. 2023."Viet Nam sets goal of one million students in STEM fields by 2030." *VNExpress.* March 24,2025. https://vnexpress.net/viet-nam-dat-muc-tieu-mot-trieu-sinh-vien-nganh-stem-nam-2030-4865280.html

UN Women. 2024. *Progress on the Sustainable Development Goals: The gender snapshot 2024.* UN Women: New York City. https://www.unwomen.org/en/digital-library/publications/2024/09/progress-on-the-sustainable-development-goals-the-gender-snapshot-2024

Vietnam Chamber of Commerce and Industry. "Exporting sustainably to the EU, businesses must be green." VCCI, September 27, 2023. https://wtocenter.vn/chuyen-de/22810-exporting-sustainably-to-the-eu-businesses-must-be-green

Viet Nam General Statistics Office. 2021. *Report on Labour Force Survey 2021.* https://www.gso.gov.vn/wp-content/uploads/2023/03/Sach-Bao-cao-LD-viec-lam-TA-Can-1.pdf

Vietnam Power Group (EVN). 2024. "Overview of national power sources in 2023", Press release, 1 June 2024. https://en.evn.com.vn/d6/news/Overview-of-national-power-sources-in-2023-66-142-4147.aspx

Vu, H. et al. 2022. *NDC Analysis for Viet Nam's agriculture sector targets by 2030.* https://cgspace.cgiar.org/server/api/core/bitstreams/a3b22258-153d-4aa6-90f9-acd0fd7c7d48/content

WHO. 2018. "More than 60,000 deaths in Viet Nam each year from air pollution", Press release, 2 May. https://www.who.int/Viet Nam/news/detail/02-05-2018-more-than-60-000-deaths-in-viet-nam-each-year-linked-to-air-pollution

World Bank. 2022a. *Viet Nam: Country climate and development report.* World Bank: Washington: D.C. https://openknowledge.worldbank.org/server/api/core/bitstreams/a27f1b05-910d-59ab-ba2c-84206bf107c2/content

World Bank. 2022b. *Accelerating clean, green, and climate-resilient growth in Viet Nam: A country environmental analysis.* World Bank: Washington: D.C. https://openknowledge.worldbank.org/entities/publication/b11c8c18-f440-56f7-aa24-4557a71376fc

World Bank. 2022c. *Spearheading Viet Nam's Green Agricultural Transformation: Moving to Low-Carbon Rice.* World Bank: Washington: D.C. https://doi.org/10.1596/38074

World Bank and Asian Development Bank. 2021. *Climate risk country profile: Viet Nam.* World Bank: Washington: D.C. https://openknowledge.worldbank.org/entities/publication/e5668ec4-5147-5f5f-9bf5-d2532c74375d

World Bank Group. 2021. *Market Study for Viet Nam: Plastics circularity opportunities and barriers.* World Bank: Washington: D.C. https://www.ifc.org/content/dam/ifc/doc/mgrt/market-study-for-Viet Nam-plastics-circularity-opportunities-and-barriers.pdf

World Bank Group. 2022. *Viet Nam: Plastic Pollution Diagnostics.* World Bank: Washington: D.C. https://documents1.worldbank.org/curated/en/099731406282241639/pdf/P1673071d02f2c0be180741356b6b0e3deb.pdf

World Bank Group. 2023. *Upskilling and Reskilling - Viet Nam's Workforce for a Greener Economy.* World Bank: Washington D.C. https://documents1.worldbank.org/curated/en/099091823063517461/pdf/P1781121e19c8506719ff81042e6be4e00b.pdf

World Economic Forum. 2021. *Solar power in Viet Nam attained a 25-fold increase last year.* WEF: Cologny. https://www.weforum.org/agenda/2021/02/viet-nam-solar-power-surge/

Annex 1 – Methodology

The research for this diagnostic incorporated a combination of quantitative and qualitative data collection. A key component of the research was an enterprise survey with companies conducted online and via telephone interview from October to November 2024. The survey generated data for descriptive statistics relevant to the key research questions, including:

- Women's participation in the workforce, including in technical and non-technical roles;
- Women's participation in leadership, including in senior management and at board level;
- Potential barriers to women's participation, including in relation to recruitment, retention, and career progression.

Overall, 63 companies completed the survey. The research team also carried out twelve semi-structured key informant interviews between July to November 2024. They included private sector companies in the three focus sectors, as well as investors and policymakers. Questions were tailored according to the speciality of the interviewees, and covered topics such as opportunities and challenges for women in employment and leadership in the focus sectors, trends in skills development, and opportunities for best practice within the private sector. Findings were triangulated with a literature review of existing sources on women inclusion and climate in Viet Namese context.

The study focused on three priority sectors that are important for climate adaptation or mitigation in Viet Nam: the rice value chain, solar energy, and plastics recycling. These sectors were selected though initial shortlisting where sectors were assessed against 'primary criteria'. Sectors that met all primary criteria were then assessed against secondary criteria to further determine their relative suitability.

Enterprise survey respondents:

- 23 companies in rice sector
- 23 companies in solar sector
- 17 companies in plastics circular economy.

Key informant interviews:

- 3 in rice sector
- 4 in solar sector
- 4 in plastics recycling sector
- 1 in policy

PRIMARY CRITERIA	
High priority climate sector: Sectors / subsectors must meet at least one of the following criteria related to climate impact.	
1. Climate vulnerable	Sector / subsector is especially vulnerable to the impacts of climate change and/or environmental degradation (e.g., agribusiness, tourism).
2. NDC mitigation priority	Sector / subsector is identified as a priority sector / subsector for mitigation under the latest NDC.[8]
3. Transition	Sector / subsector is a key enabler of transition to low-carbon and environmentally sustainable economies (e.g., renewable energy, climate finance, electric vehicles).
Investor priorities in Viet Nam: Sectors / subsectors must meet at least one of the following criteria related to investment potential.	
1. Current priority sector	Sector / subsector is a current priority for climate investment by IFC or other investors.
2. Investment potential	Sector / subsector has strong potential for expanded investment by IFC or other investors and an enabling environment for future investment.
SECONDARY CRITERIA	
Women inclusion impact: sectors (or subsectors) should be particularly relevant to women's current and potential employment and entrepreneurship opportunities.	
1. Gendered employment	A large existing female direct workforce or a large direct workforce overall in which women are especially under-represented
2. Green jobs potential	A high potential for future green jobs creation.
3. Entrepreneurship	A high potential to support existing and/or future (green) female entrepreneurship.
Feasibility: sectors (or subsectors) should offer a realistic prospect for securing the data required to carry out the diagnostic.	
1. Sufficient number	Sufficient number of enterprises and/or workers in the sector to generate useful quantitative enterprise data.[9]
2. Networks	Existing IFC and/or project team networks or contacts to facilitate outreach and engagement.
3.Sector association	Presence of relevant sector associations that may be able to play a role in facilitating outreach and engagement with member companies.

A key limitation of the enterprise survey was that it only covered employees of companies within the formal sector. This kept large parts of the value chains in the focus sectors—including smallholder farmers in the rice sector and informal waste pickers in the plastics sector—out of scope. In addition, the diagnostic focused on employment and leadership, rather than entrepreneurship.

8 Viet Nam Nationally Determined Contribution (NDC), 2022.
9 This includes consideration of the extent to which enterprises are likely to be 'accessible' for engagement. For example, sectors with a large number of micro, small and medium enterprises, operating in dispersed rural areas and/or primarily in the informal economy, may fail the test of 'sufficient Number' on accessibility / feasibility grounds.

This report was commissioned by IFC through its Gender and Economic Inclusion Department. This report has been funded by the Australian government through the Department of Foreign Affairs and Trade.

For more information please contact:

Franziska Deininger
Inclusive Climate Lead
IFC Gender and Econcomic Inclusion Department
fdeininger@ifc.org