

Ways to Gender-Smart Climate Finance: Sustainable manufacturing

A gender-smart climate finance investment can be defined as Paris aligned and meeting climate finance and [2X criteria](#).

The extended value chains of the manufacturing sector are responsible for roughly one-third of global greenhouse gas emissions (GHG) emissions¹ and includes some of the harder sectors to fully decarbonise. A fundamental paradigm shift supported by technological innovation is needed to reach net zero emissions by 2050.² At the same time, manufacturing faces physical and transition risks related to climate change. More frequent extreme weather events (a feature of warming climate) can disrupt supply chains and can threaten manufacturing assets.³ Transition risks arise from the change in business models and policy environment needed to transform the economy, impacting high carbon manufacturing processes and demand for products such as fossil-fuel driven cars.

The transition to net zero emissions also means new opportunities for the manufacturing sector through new clean technologies and innovation of manufacturing processes, particularly in the shift to a circular economy. For example, one study estimates that from a baseline of 18- 21 million jobs today in renewable energy, employment could increase by up to 8 million additional jobs in 2050. A large proportion of these renewable energy jobs (36 per cent) would involve manufacturing solar and wind energy.⁴ The proportion of women in manufacturing jobs remains low – around 30 per cent according to the limited data provided to the United Nations Industrial Development Organization (UNIDO).⁵ Addressing the barriers to women’s participation in manufacturing will open up new economic opportunities for women and provide companies with access to a broader, more diverse talent pool. We also know companies that perform well on sustainability⁶ and gender diversity⁷ also operate more profitably. Diversity of perspectives and approaches can achieve the innovation required in various parts of the manufacturing value chain.

What is a gender-smart climate finance investment?

Put simply, it is an investment that delivers both significant climate outcomes and promotes gender equality and women’s empowerment. A gender-smart climate finance investment can be defined as:

1. Being ‘Paris aligned’ – assessed as consistent with a pathway towards low GHG emissions and climate-resilient development in line with the objectives of the Paris Agreement. Paris aligned projects are characterised by:
 - A carbon footprint or carbon intensity that is limited or declining in line with a Paris aligned trajectory;
 - Limited vulnerability to physical climate hazards;
 - Low transition risk and carbon lock-in risk; and
 - Does not indirectly support non-aligned activities.
2. Meeting climate finance criteria.
3. Meeting [2X criteria](#).

Methodologies that assess Paris alignment at the transaction and institution level are emerging, for example Multilateral Development Banks (MDBs) have developed a [joint Paris alignment approach](#) and [CDC has also published its own approach](#). Climate finance eligibility, either as mitigation or adaptation finance (or both), can be defined through an established criteria or taxonomies, such as the joint MDB methodology for tracking climate finance or the European Union (EU) taxonomy for sustainable finance.

We encourage users of this guide to select a credible Paris alignment approach and climate finance definition which can then be overlaid with the 2X criteria to reveal the intersection of gender and climate finance. 2X is an industry standard aiming to mobilise investments in businesses that contribute to gender equality and women’s economic empowerment.

This brief is part of a series of gender and climate finance thematic and sector briefs produced by the 2X Climate Finance Taskforce. You can access the series [here](#).



When should I use this sector note?

This sector note supports development finance institutions (DFIs), MDBs, fund managers, and other financial institutions to pursue gender-responsive climate investments in line with the 2X criteria, climate eligibility frameworks, as well as specific impact frameworks (such as environmental social and governance (ESG) considerations, development impact and transition impact).



The global share of women workers in the manufacturing and production sector is currently 20%, with a high gender pay gap standing at 32%

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1. Why? Applying a gender-smart climate lens to investments through the manufacturing sector

Transformation is needed to reduce emissions and ensure resilience

To deliver a net zero economy, the manufacturing sector needs to transform both demand and production. On demand, Chart 1, created by the Ellen MacArthur Foundation, illustrates circular economy principles. Mainstreaming these principles increases the lifespan of products and 'designs out waste', decoupling production from the consumption of finite resources.⁸ For production, action is needed to increase energy efficiency, electrify energy demand, reduce the carbon content of non-electric fuels and deploy innovative processes for carbon capture and storage.⁹ These actions all require investment. The additional investment needed to decarbonise energy-intensive industries (steel, cement and chemicals) is estimated at \$50 billion per year between now and 2050.¹⁰ This scale is much less than for the energy sector but still represents a significant increase over current investment.¹¹

Exposure to both physical and transitional climate risks represent a significant financial threat to manufacturing businesses. The companies that manage these risks successfully are likely to be more successful in the medium and long term.¹² To do this, the manufacturing sector needs to adapt to the impacts of climate change, build resilience in primary economic activities and supply chains, and respond agilely to changing demand for products. Investment is therefore urgently needed to accelerate the transition towards net zero emissions and to build more resilient, inclusive manufacturing systems.

Manufacturing is rapidly transforming, because of the manufacturing technologies of the 'Fourth Industrial Revolution' (4IR). These technologies have the potential

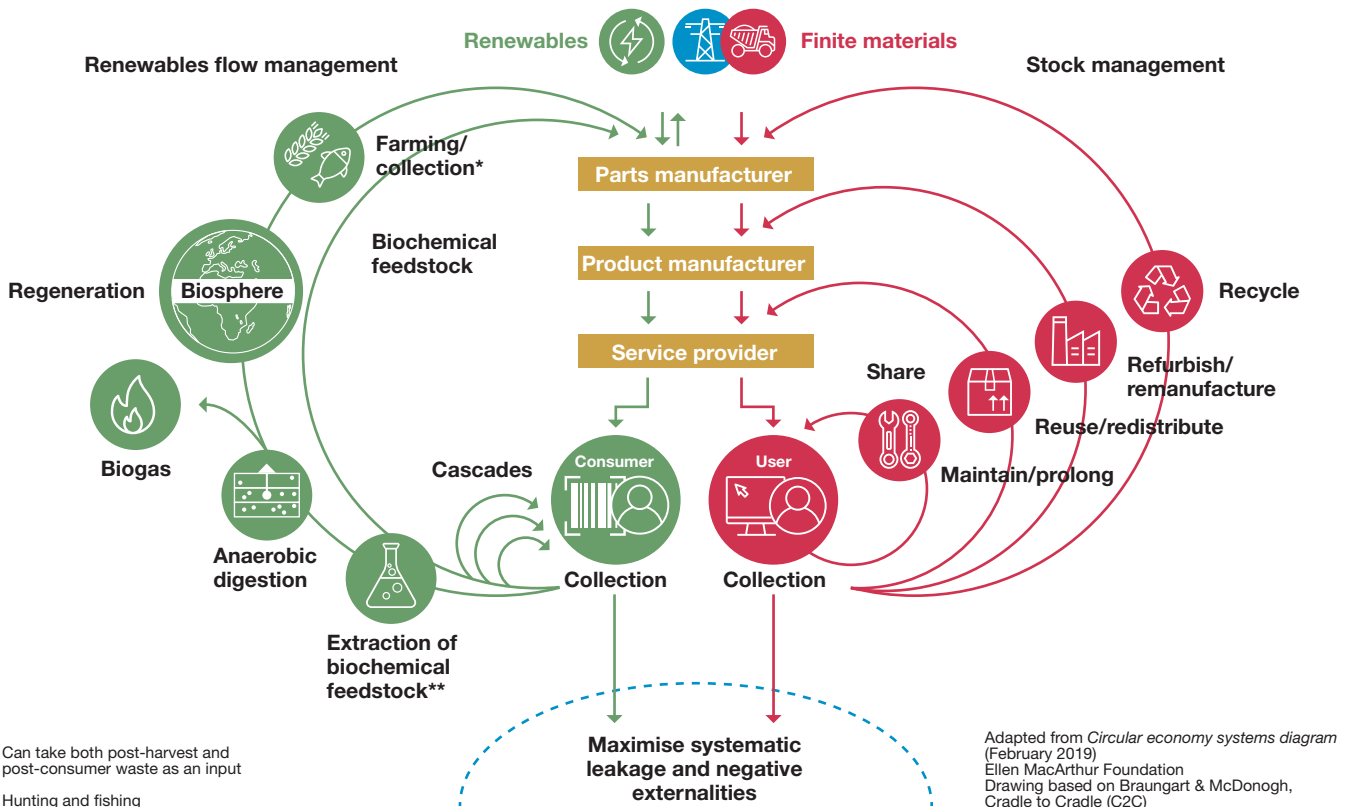
to tackle global sustainable development challenges, including climate change and gender equality, but that potential is not currently being reached.¹³

4IR is delivering automation, changing the nature of work and employment. Combined with shifts to greener modes of production and consumption, this has a direct impact on job gains and losses for men and women.¹⁴ Action is needed to ensure that 4IR delivers sustainable outcomes across society.¹⁵

Gender-smart mitigation and adaptation interventions in the manufacturing sector lead to better climate and business outcomes

Manufacturing is forecast to be a major driver of job growth in emerging markets between now and 2030, along with accommodation, retail and construction sectors.¹⁶ With the exception of Asia, men are more widely employed in the manufacturing sector than women. The global share of women workers in the manufacturing and production sector is currently 20 per cent, with a high gender pay gap standing at 32 per cent.¹⁷

Closing the gender gap in manufacturing – by tapping into underutilised female talent and/or allowing women employees to progress – can also lead to significant climate and economic gains. The changing nature of work and employment requires constant reskilling, upskilling, productivity enhancement and redeployment through technological advancements. By 2030, demand for skilled workers is projected to outstrip supply, resulting in a global talent shortage of more than 85.2 million workers.¹⁸



* Can take both post-harvest and post-consumer waste as an input
 ** Hunting and fishing

Attracting the right talent will increasingly become a key differentiator as companies struggle to find enough highly-skilled workers.¹⁹ Women can be part of the solution, as an untapped resource and active agents of change. Ultimately, the transition to more responsible production and consumption strategies can give rise to more ‘green jobs’ for women.²⁰

Increasing the representation of women-owned micro, small-and medium-sized enterprises (MSMEs) in manufacturing supply chains can help anticipate customer needs, drive green innovation and competition, and enhance brands and corporate reputations.²¹ Research from an Australian green entrepreneurship training programme showed that women were more committed to the programme than men, suggesting women entrepreneurs may be more engaged in green issues than male counterparts.²²

Global consumers and markets are increasingly concerned about how manufactured goods and products are sourced, procured and assembled. As a result, manufacturing companies (particularly exporters) may be subject to additional reporting requirements around gender diversity, climate change and biodiversity, driven by companies having to disclose their climate and nature-related financial performance.²³ Ensuring that supply chain and sourcing practices benefit women entrepreneurs – and help promote women’s participation in the economy – can therefore strengthen ‘green’ product impact, positioning and marketing, while tackling gender gaps in access to entrepreneurship and economic opportunity. This is critical, given the dominance of women as key decision-makers in household spending and consumption decisions.

BOX 1: Women-founded apparel manufacturer Orange Fiber creates luxury fabrics from the by-product of the citrus juice industry

Orange Fiber was founded by women entrepreneurs in response to the climate emergency. The company applies the circular economy model to the fashion industry and has patented a process that creates sustainable fabrics from citrus juice by-products. This is a prime example of combining innovation and sustainability in the fashion industry.²⁴

Investors can opt for gender-smart climate solutions that deliver the following benefits for women:

- Enhancing job quality by promoting women’s employment opportunities in traditionally-male dominated sectors, better work standards, gender-equitable practices and skills development;
- Improving their access to high value-added jobs;
- Promoting more participation in science, technology, engineering and mathematics (STEM) occupations, through apprenticeships and upskilling programmes that address the emerging skilled labour shortage and the transition to green and circular models of production; and
- Supporting them in leadership positions to deliver competitive and innovative green production, improving resource efficiency and resilience.

Business Case



- Expand marketing and customer base for green products:** Women consumers influence 80 per cent of purchasing decisions globally.²⁵ Research from Sweden indicates that single mothers, are one of the groups most ready to pay for eco-labelling and green products, despite also being one of the poorest.²⁶ Women consumers are often more receptive to green behaviours and are more likely to recycle, minimise waste and buy organic food and ecological products.²⁷
- Developing resilient and inclusive supply chains:** Evidence shows companies that prioritise supplier diversity have a 133 per cent greater return on procurement investments and spend 20 per cent on buying operations.²⁸ Gender-inclusive supply chains enhance companies' resilience by enabling them to tap into a larger pool of suppliers when they seek to build a more diverse and inclusive supplier base.²⁹
- Build resilience to reduce operational risk:** If companies avoid addressing the combined impacts of gender inequality and climate change, business risks can be exacerbated. Impacts on women from climate change – such as poorer health outcomes for themselves and their family or more time spent obtaining clean water – can result in higher rates of absenteeism or more staff turnover.³⁰ This can present a high risk factor for women-dependent sectors such as the garment industry, where women constitute about 80 per cent of the global workforce.³¹ This workforce risk will combine with physical risks from climate change, such as supply chain disruption.
- Minimise exposure to financial risk to maximise long-term returns:** Mainstreaming climate risk (both physical and transition) as a financial risk in investment decisions by adopting the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), is crucial to the long-term success of companies and financial institutions. Interestingly, early adopters of TCFD recommendations also show higher gender diversity than peer companies.³²

Impact Case



- Economic empowerment:** Enabling women to participate equally in the global economy could add \$28 trillion in GDP growth by 2025.³³ Ultimately, the transition to more responsible production and consumption strategies can give rise to more green jobs for women.³⁴ Women can advance from low-skill, entry-level positions to high-skill, higher-paying green jobs, train for jobs that are traditionally male-dominated and become green entrepreneurs by starting their own green businesses – effectively becoming green employers rather than employees.³⁵
- Enhance decision-making to reduce GHG emissions:** Companies with a higher proportion of women on boards are more likely to improve energy efficiency, lower company costs and invest in renewable power generation.³⁶ From 2013 to 2018, companies with improved gender diversity on boards were 60 per cent and 39 per cent more likely than those without to reduce the intensity of energy consumption and GHG emissions.³⁷
- Increasing green innovation:** Transitioning to a circular economy and achieving net zero by 2050 will require considerable investment in research and development (R&D). Research from China's manufacturing sector indicates that green innovation at the company level is systematically related to women's representation on the board. Women can have a positive and sizable effect on green innovation in cases where least two board seats are occupied by women.³⁸



Women entrepreneurs may be more engaged in green issues than male counterparts

2. How to invest with a gender-smart climate lens: sustainable manufacturing

A gender-smart climate finance investment can be defined as Paris aligned and meeting climate finance and 2X criteria. This section maps potential investments in sustainable manufacturing sector and explains how to interpret the 2X criteria.

Climate finance eligibility

Broadly, there are two types of climate finance eligible activities in the manufacturing sector:

- (1) Investment in R&D as well as manufacturing low and zero carbon technologies.
- (2) Finance dedicated to reducing GHG emissions or increasing the climate resilience of manufacturing processes.

Some examples include finance for:

- **Manufacture and sale of finished products** that when used substantially decrease GHG emissions (such as making electric vehicles).
- **Adopting circular economy principles** into manufacturing practices and processes.
- **Industrial energy efficiency improvements** in existing manufacturing facilities through retrofitting more efficient equipment, changes in processes, reduction of heat losses, and greater waste heat recovery.
- Reducing GHG emissions through **industrial process improvements and promotion of cleaner production** (for example, cement and chemical production, excluding carbon capture and storage)
- **Replacing existing refrigerant infrastructure** to use cooling agents with lower potential for global warming.
- **R&D of renewable energy or energy-efficiency technologies, or low and zero carbon technologies.**
- **Improving manufacturing assets and supply chains to be more resilient to the impacts of climate change.**

2X eligibility

To qualify as a 2X investment, investments must meet or commit to targets under at least ONE of the 2X's criteria – women's entrepreneurship, leadership, employment, consumption, or financial intermediaries. More details on how to invest and apply the 2X criteria can be found in the [2X Challenge Working Group's 'Guide to the 2X Criteria'](#).

Women consumers influence 80% of purchasing decisions globally



Examples of potential climate finance investments that align with the 2X criteria in the manufacturing sector:

Women Entrepreneurs

Investment in women-founded or women-owned (51 per cent) manufacturing companies producing climate mitigation or adaptation solutions, or dedicated finance for reducing GHG emissions or increasing climate resilience.

Example: A women-founded manufacturer of a clean technology product such as off-grid solar panels.

Women Leaders

Investment in manufacturing companies producing climate mitigation or adaptation solutions, or dedicated finance for reducing GHG emissions or increasing climate resilience, in which the share of women in senior management stands at 20-30 per cent, or the share of women on the board or investment committee is at least 30 per cent.

Example: A loan to a cement manufacturing company, specifically to finance a reduction in GHG emissions along a Paris aligned trajectory, whose leadership is composed of 50 per cent women.

Women Employees

Investment in manufacturing companies producing climate mitigation or adaptation solutions, or dedicated finance for reducing GHG emissions or increasing climate resilience, in which the share of women in the workforce stands at either 40 per cent (heavy manufacturing) or 50 per cent (light manufacturing) and there is one 'quality' indicator beyond compliance (such as mentoring, equal pay, skills development or employee resource network).

Example: Dedicated finance for Paris aligned energy efficiency interventions in a packaging manufacturer that employs 52 per cent women workers and developed a specific training programme to advance women to mid-manager level.

Women Consumers

Investment in manufacturing companies producing climate mitigation or adaptation solutions, or dedicated finance for reducing GHG emissions or increasing climate resilience that specifically or disproportionately benefit women.

Example: Finance for circular economy interventions that substantially reduce net GHG emissions in a manufacturer that produces and sells eco-friendly maternal health and baby care products, with a customer base of 90 per cent women.

Impact via Financial Intermediaries

Investments in on-lending facilities where 30 per cent of the investor or financial institution (FI) loan proceeds or 30 per cent of the FI's portfolio or percentage of companies supported by the fund are climate finance qualifying manufacturing companies that meet direct 2x criteria.

Example: A fund investee meets the indirect criteria by investing 35 per cent of their portfolio in women owned or led MSMEs in the manufacturing sector, substantially contributing to climate mitigation or adaptation, which is 2X aligned based on the leadership and entrepreneurship criteria.

3. What? Gender-smart climate finance in practice

The following investments by 2X members provide an overview of what a gender-smart climate investment can look like in the sustainable manufacturing sector.



- EMPLOYMENT
- CLIMATE MITIGATION

Enhancing women's opportunities under the Ford Otosan EV Syndicated Loan project in Turkey

Setting the scene: In Turkey, the EBRD has provided a €650 million long-term syndicated loan to support Ford Otomotiv Sanayi A.S. (Ford Otosan) at its production facilities in Kocaeli. The investment will be used to finance the production of one-tonne commercial vehicles with battery electrical and plug-in hybrid vehicles. The project will help Ford Otosan become the first European integrated production centre for the assembly of electric vehicles in Turkey.

Approach and impact: The project promotes gender equality by maintaining and implementing higher standards on gender inclusion. Throughout the years, Ford Otosan has been extensively working on the promotion of gender equality and committed to actively improving women's career opportunities. For instance, it introduced a 50 per cent women quota for its internship programmes, as well as working towards recruiting women to 50 per cent of white collar positions and introducing a 25 per cent target for blue collar workers. In 2020, Ford Otosan conducted women-only workshops and trained women on Gender-Based Violence and Harassment (GBVH) risks while raising awareness on reporting and support mechanisms. With this project, Ford Otosan will continue to develop and implement new training on GBVH, with a particular lens on digitalising work at all facilities throughout 2021 and beyond, including with value chain partners.



BOX 2: SMV Green Solutions e-rickshaws³⁹

Since 2015, SMV Green Solutions (SMV), a social enterprise backed by the Shell Foundation, makes electric 'e-rickshaws' that empower women drivers in seven cities in India. SMV launched *Project Vahini*, an initiative to manufacture and promote safe and affordable transport for female commuters and improve safety and income for women drivers by supporting women to set up and run e-rickshaw micro-enterprises.

While helping to reduce emissions, SMV provides men and women drivers with a number of benefits, including ownership of modern and safe e-rickshaws, vehicle registration, insurance and license support, access to formal finance, and training in business management, financial literacy and road safety. SMV's model also includes partnering with schools to inform young women of the income available by becoming e-rickshaw drivers. SMV also ensures the safety of women owners and passengers by installing a cloud-based onboard camera, and issuing smartphones to women drivers for emergency calls. The programme saw women micro-entrepreneurs increase their income and formal savings. Perceptions of safety for female passengers were improved through more women-driven e-rickshaws in Uttar Pradesh. SMV plans to add 1,000 more women under *Project Vahini* in the next few years.





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- 39 [Shell Foundation. How SMV is Leading the Charge for E-Vehicles in India \(2020\)](#)

The following resources provide guidance on gender-climate impact measurement for this sector:

- [CDC Group, Gender Sector Brief: Manufacturing](#)
- [Deloitte, Women in Manufacturing: Stepping up to make an impact that matters \(2017\)](#)
- [ICRW, Women in Manufacturing: Mainstreaming gender and inclusion in Kenya \(2020\)](#)

SDGs IMPACT  **Investing with a gender and climate lens in this sector can help enhance your contribution to the following SDGs:**

	<p>Achieve gender equality and empower all women and girls</p>		<p>Reduce inequality within and among countries</p>
	<p>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</p>		<p>Ensure sustainable consumption and production patterns</p>
	<p>Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation</p>		<p>Take urgent action to combat climate change and its impacts</p>

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