Women Climate Entrepreneurs: The Face of a Livable Planet

An opportunities-framing white paper to spark discussion and inspiration

Acknowledgements

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Executive Summary

Climate change brings about a range of interconnected consequences with significant economic and development implications. It disproportionately affects women, particularly those living in poverty. Recognizing the intricate connection between gender and climate change is vital, because achieving sustainable development necessitates addressing both challenges simultaneously.

WE-FI AIMS TO SUPPORT THE NEXUS OF CLIMATE AND WOMEN'S ENTREPRENEURSHIP BY ADDRESSING TWO MAIN AREAS IN THE CLIMATE SPACE:

+ Boosting the prospects for women innovators and leaders of climate businesses who will drive green and blue transitions.
+ Building the climate resilience of women-led small and medium enterprises (WSMEs) across all sectors.

The paper offers guidance for those considering funding or designing interventions targeting women climate entrepreneurs and WSME-responsive climate initiatives by addressing the following questions: Why is it important to focus on women climate entrepreneurs? Where are areas of opportunity for women climate entrepreneurs and implementing partner support—including sectors that are emerging as critical to a low-carbon economy? What actions, initiatives, and efforts are happening now? Who are the key players? Where are the challenges?

Ramping up an integrated focus on WSMEs and climate is critical, given that gender equality is considered a primary objective in less than 1 percent of climate-oriented official development assistance (ODA) provided by governments for economic development in emerging markets and fragile economies.

First, the paper highlights the need for a gender-differentiated approach to climate action in general. It then discusses the importance of prioritizing the needs of women climate entrepreneurs, with insights on green and blue sectors. The next section details the state of play: organizations that are supporting gender-responsive climate action and those focused on the nexus of women's entrepreneurship and climate along with a report on the status of financing for such initiatives. It concludes with recommended courses of action for development organizations, impact investors and other partners to take as they consider new projects and initiatives.

Key Takeaways

Women entrepreneurs face a “triple differential vulnerability” to climate change.

They are more climate-vulnerable, due to the concentration in certain sectors and types of enterprises.

They face extra barriers to adaptation and mitigation, including the lack of access to finance, technologies, information, and supportive policies.

They often must balance managing their own households’ climate risks, adding to their burden.

Women climate entrepreneurs should be engaged as business leaders as they have an important opportunity to both shape and thrive in new green and blue economies.

Several areas of opportunity (such as energy systems, circular economy, and food systems) appear to be attracting many women entrepreneurs, while other areas would benefit from increased levels of women’s entrepreneurship. An intentional approach, in particular in male-dominated sectors, will be needed to ensure women-led businesses are at the forefront and leading in these rapidly growing and evolving markets, and advocates for more inclusive just transitions.

Donor financing flows at the gender-climate nexus are limited; assistance remains siloed.

•2.4 percent: Proportion of climate-related donor assistance with any gender component.

•6.9 percent: Proportion of climate tech venture capital received by women founders globally, in the first quarter of 2023.

Very few development organizations and intermediaries have a double focus on climate and gender.

Of the development organizations and intermediaries reviewed that do have a focus on both climate and gender, most are small, and do not provide financing.

Sources of finance need to be scaled and targeted to close the gender financing gaps.

Venture capital, blended finance, results-based instruments, and gender and climate bonds can help drive and catalyze private capital investment in innovative women climate entrepreneurial businesses, or women-led businesses seeking to improve their resilience to climate change.

Radical collaboration is needed across the climate, gender, and SME spaces to drive support and finance to where it is needed most.

It is especially important to build bridges between the know-how and capabilities of entities focused on women’s economic empowerment that have the networks and instruments to target and reach WSMEs and institutions that have a strong track record on climate change and climate technologies.

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Introduction

The global climate agenda comes with two imperatives: boosting resilience to the impacts of climate change and enabling just transitions to a low-carbon world. Women and women-owned and -led businesses have a critical stake in both.

Climate change is not gender neutral. According to the OECD, women make up 80 percent of the population displaced by climate change and biodiversity loss, while environmental degradation limits available land and resources. All of this increases women's vulnerability to food insecurity, poverty, gender-based violence, human trafficking, sexual exploitation, and abuse.

As with women in general, women small and medium enterprises (WSMEs) are feeling the pain of climate change, in some cases more deeply than men's businesses, especially in climate-vulnerable regions, countries in fragile or conflict-affected situations, and in economies where gender norms create additional barriers.

WSMEs also represent enormous potential as agents of a livable planet—dynamic, creative, and practical problem-solvers. Women climate entrepreneurs are taking the lead in strengthening their communities' resilience and assuming roles in building a net-zero global economy. Already, women's businesses are delivering novel solutions that reduce waste and emissions, improve energy efficiency, and enhance sustainability—strengthening their families and communities as builders of a new, inclusive, green and blue economy.

But women entrepreneurs across all sectors remain seriously under-financed and under-resourced. For women climate entrepreneurs, the issue is even more acute, since very little of the global donor assistance and funding for climate-related initiatives integrates a gender lens into the effort, much less a specific WSME lens. Despite the important role women businesses can play—and despite the disproportionate impact of climate change on women—the amount of climate aid that is dedicated to gender as a primary objective stood at only 778$ million in 2019–2018, representing just 2.4 percent of climate-focused donor aid.

+

WHAT WE MEAN BY "WOMEN CLIMATE ENTREPRENEURS"

Women whose business ventures offer solutions that address climate challenges and deliver green or blue economy benefits. This includes businesses that help develop solutions as part of the green or blue economy or provide products or services that make businesses resilient to climate change.

BOX 1.1

Challenges for women's businesses in the climate space

Women face several barriers in scaling up innovative climate businesses. These include:

FINANCE GAPS

Female founders struggle more than their male counterparts to find funding, representing a serious finance gap that could have long-term repercussions, in the form of delayed progress towards global climate goals. Women founders received just 6.9 percent of venture dollars in climate tech in the first quarter of 2023, down from 8.9 percent in 2022. And when they do receive funding, women-led ventures typically raise nearly 100,000$ less in equity than men-led ventures and secure less than half as much new debt, according to the Global Accelerator Learning Initiative. In emerging markets, across all sectors, only 7 percent of total private equity and venture funding is targeted towards female-led businesses, of which only a fraction goes into female-led climate businesses, while just 3 percent of philanthropic environmental funding supports girls' and women's environmental activism.

SKILLS MISMATCHES

Women are significantly underrepresented in sectors that will be key to the energy transition and a green economy. And the academic pipeline that will enable participation in these sectors remains heavily skewed towards men: women students make up only 36 percent of those pursuing essential science, technology, engineering, and math (STEM) degrees—fields in which the majority of higher value-add green business opportunities are found.

DISABLING POLICIES AND LIMITED ACCESS TO RESOURCES

In some countries, women face constraints on asset ownership (e.g., land), as well as other legal barriers, which prevent them from starting businesses and from accessing resources like information, technology, and networks to grow their businesses.

CARE RESPONSIBILITIES

The lack of access to affordable childcare remains a significant hurdle for women entrepreneurs in all types of businesses. In addition, the impacts of climate change can increase women's time spent on household tasks, reducing time for business. For example, longer journeys for resources such as water or cooking fuel due to droughts could decrease women's business time and increase exposure to gender-based violence.

IMPLICIT BIAS, GENDER NORMS, AND LIMITED REPRESENTATION IN CLIMATE POLICY FORUMS

The business innovation and disruption universe remains rife with gender bias—from biases embedded in the data to artificial intelligence algorithm coders who embed their biases in the formulas used for credit approvals to the challenges faced by women tech founders in accessing a more equitable share of venture capital. Societal pressure and gender norms in some countries may prevent women from pursuing advanced education and STEM degrees, limiting the pipeline of women with the skills and capabilities to build the engineering- and technology-based businesses that will be central to the green economy. And despite some progress, such as the United Nations Intergovernmental Panel on Climate Change's (IPCC) efforts to diversify the pool of climate scientists that contribute to their decisions, women remain underrepresented in climate policy forums.

GENDER-BASED VIOLENCE

Women-led businesses operating in the renewable energy sector, such as off-grid solar, may be especially vulnerable to GBV and harassment, as they may be working in remote areas. For instance, an IEA survey found that in India, women were reluctant to pursue opportunities in renewables, due in part to safety and security concerns.

The finance and resource gaps are preventing WSMEs from hardening their own businesses against the impacts of climate change, developing solutions that would help others boost their resilience, and capitalizing on the estimated 26$ trillion business opportunity presented by the shift towards a low-carbon economy, in sectors such as zero-impact and climate-resilient agriculture, recycling and the circular economy, renewable energy, and zero-emissions transport. This lack of access to finance and support represents an enormous opportunity cost for the world: losing out on the full potential of women entrepreneurs in the fight against climate change.

With some studies suggesting that current climate mitigation and adaptation strategies, which do not account for the differentiated climate change impacts faced by women—or for the role women businesses can play in just transitions—could delay the attainment of gender equity by 15 to 20 years.. Accordingly, efforts to enable women climate entrepreneurs and ensure that WSMEs are integrated into climate action are more critical than ever. Just transitions to a green and blue global economy will require innovation, disruption, finance, and the creation of new markets —along with policy changes and collective action. And it will require that women have equitable access to climate and transition finance, as well as inclusion in climate policies. If provided the right support and access, women businesses represent a powerful force to accelerate progress towards an inclusive, net-zero world that leaves nobody behind.

WHAT WE MEAN BY “JUST TRANSITIONS”

Just transitions refer to a country’s approach to equitably distribute the costs and benefits of climate action, ensuring that:

Social dialogue and stakeholder engagement take place among workers, employers, governments, communities and civil society.

Affected workers and communities receive the support, social protection and investments they need to work and thrive in a zero-carbon future.

Revenue streams that governments currently receive from fossil fuel production will be replaced in equitable ways.

Companies create decent jobs and contribute to economic growth while taking positive action on climate change.

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Opportunities for women climate entrepreneurs

WHY IS IT IMPORTANT TO FOCUS ON WOMEN CLIMATE ENTREPRENEURS?

Women's entrepreneurship and leadership play a crucial role in addressing the climate crisis and creating innovative business solutions for mitigating and adapting to climate change.

Putting climate at the center: Research shows that companies with gender-balanced boards and management tend to prioritize strong environmental, social, and governance (ESG) standards, including climate, resulting in tangible improvements such as notable reductions in greenhouse gas emissions.

Catalyzing green and blue innovations: Evidence indicates that women entrepreneurs are more likely to start sustainability-focused businesses, and they are willing to disrupt and innovate—which positions women well in green and blue sectors. Women entrepreneurs have an important role in driving innovations and business solutions to address challenges faced by climate change.

Accelerating the uptake of climate-smart solutions: Women entrepreneurs are uniquely positioned to help accelerate the adoption of novel climate solutions. Given their extensive community networks and deep understanding of user needs, they are critical for encouraging the behavioral changes often required to adopt new technologies or practices. For example, evidence suggests that buyers (frequently women) are more likely to use solar cook stoves on a regular basis when they are purchased from women.

Women's entrepreneurship is also important for job creation, economic growth, and women's economic empowerment.

Creating jobs and contributing to women's labor force participation: Having women entrepreneurs at the forefront of green and blue markets creates a huge opportunity for employment. This is an important aspect, given that the shift away from fossil fuels will also result in job losses—including loss of jobs for women. At the current trajectory, women will only hold 25 percent of green jobs. Research shows that women entrepreneurs hire on average 2.5 times more women in the early stages of their businesses and up to six times more as they become more established. Additional studies underscore women entrepreneurs' important contributions to women's labor force participation.

Driving just transitions: Supporting women entrepreneurs so they have a leading role in the creation of future green businesses and integrating a gender lens into climate action will be critical to ensuring that women benefit equitably from future green job creation. Entrepreneurship also represents a pathway for women to move out of lower-value or at-risk industries into green-adjacent jobs—those that are not directly related to climate-forward sectors, but those that contribute to the overall green economy transition.

Boosting economic growth: If women and men participated equally as entrepreneurs, it could boost the global economy by up to 5$ to 6 trillion. Such a boost would contribute to the fiscal space needed to finance climate change mitigation and adaptation.

AREAS OF OPPORTUNITY FOR WOMEN'S CLIMATE ENTREPRENEURSHIP

Women already have strong foundations in various climate sectors.

This section identifies several areas of business activity in the green and blue economy where women entrepreneurs are well positioned. Women-owned and -led businesses in these areas encompass micro-enterprises and SMEs, highlighting growth opportunities and opportunities for scale.

Energy systems and last-mile solutions

ACHIEVING JUST TRANSITIONS REQUIRES A SIGNIFICANT SCALE UP OF SUSTAINABLE AND ACCESSIBLE ENERGY SYSTEMS. THIS MEANS EXPANDING CAPACITY IN AREAS SUCH AS:

+ Production of renewable energy from natural sources such as solar, wind, and hydro, which will decarbonize energy grids by reducing reliance on emissions-intensive fossil fuels for electricity and heat.

+ Expansion of renewable energy last-mile solutions, including businesses focused on integrating renewable energy into grids, storage systems, grid digitization, and smart grid technologies, and energy efficiency equipment to reduce emissions and increase productivity.

Worldwide employment in renewable energy reached 13.7 million jobs in 2022, up from 12.7 million in 2021. The renewable energy market is expected to reach more than 2$ trillion by 2030. Solar is the fastest-growing subsector within the renewable energy sector, employing more than a third of the current global renewable energy workforce.

The energy sector is widely regarded as one of the least gender-diverse among all industries, with women representing only about 11 percent of founders, although studies suggest that women-led businesses in energy-system supply chains tend to perform as well or better than male counterparts. However, there are positive shifts in the renewable energy sector. While women make up 22 percent of the labor force in the oil and gas industries, they account for 32 percent of the global renewables workforce.

Solar energy

Solar energy leads all other renewables subsectors in terms of gender balance, with 40 percent of jobs held by women.

Women interested in building their own solar businesses are well positioned based on their expertise, technical knowledge, and understanding of customer needs. And because solar businesses require relatively large workforces—for installation, distribution, and operations and maintenance—they can offer important employment opportunities for other women.

MEET BASIMA ABDULRAHMAN

Basima Abdulrahman is the founder and CEO of KESK, the first company in Iraq to offer green energy engineering services and smart solar photovoltaic products. The company's smart systems are controlled by a centralized KESK software platform for both on and off-grid projects. KESK combines hardware and software to provide real-time monitoring of solar energy assets. It also operates a carbon credit market, which helps clients monetize their carbon offsets.

MEET ANGELLA RAINFORD

Angella Rainford is CEO and founder of Soleco Energy—Jamaica's largest solar facility and one of the largest in the Caribbean. She has built her business with a gender lens. For example, to begin to address the gender gap in renewable energy employment, Soleco Energy conducted a free, three-day solar photovoltaic (PV) training seminar for 19 women in Kingston, equipping them with the skills to qualify for jobs in the industry.

Last-mile solutions and services

Many of the top regions for solar technologies, including Africa and South Asia, have needs for last-mile distribution solutions and services.

Women entrepreneurs can lead the delivery of sustainable energy solutions, such as solar home systems, lanterns, and cookstoves, particularly given that they are primary energy users at the household level and that they have extensive social networks. In addition, gendered social or cultural norms in some regions could give women sales agents better access to female customers, who are the primary sales targets, since they are the main users and household spending decision makers. In fact, the evidence suggests that women sales agents sell three times as many solar cook stoves as male sales agents—and that buyers are more likely to use their stoves on a regular basis when they are purchased from women. Women also can leverage their active roles in communities, enabling them to build relationships with potential customers, especially women. This positions them to help drive community adoption of renewables, such as decentralized energy networks and mini-grids. Evidence also shows that increased adoption of renewables at the household and community level enables greater economic opportunity for women. For example, clean cooking solutions decrease the time women spend collecting firewood, increasing the time available for productive and income-generating activities. In South Africa, rural electrification resulted in a 9.5 percent increase in female employment, in particular through women establishing microenterprises.

MEET MONIQUE NTUMNGIA

Monique Ntumngia is the founder of Green Girls Organization, a nonprofit organization that provides lighting and clean energy cooking solutions in remote and off-grid areas of Cameroon, the Central African Republic, and the Democratic Republic of Congo. Green Girls trains women in rural communities on how to assemble and sell solar lanterns and biodigesters. Since 2015, Green Girls has trained 4,500 women and adolescent girls across 68

Circular economy

Waste abounds in virtually every industry, but it is most prevalent in plastics, textiles, electronics, food, and capital equipment such as machinery, agricultural equipment, and manufacturing infrastructure. Research suggests that the circular economy represents a $4.5 trillion economic opportunity by reducing waste, stimulating innovation, and creating employment. New business models focused on reuse, repair, remanufacturing and sharing models offer significant innovation opportunities. In the coming years, the circular economy is projected to generate nearly 2 million jobs and reduce emissions by 40 percent.

Women make 80-70 percent of all consumer purchasing decisions. And studies suggest that women they are predisposed to sustainable purchasing and supporting the circular economy, making them likely early adopters of circular economy principles and well-positioned to build businesses aimed at reducing waste and reusing existing materials. A recent study of Indonesia by the United Nations Development Program estimated that women could hold nearly 75 percent of the new jobs created by circular economy opportunities in that country, in sectors including construction, electronics, textiles, and wholesale and retail trade.

+

WHAT WE MEAN BY "CIRCULAR ECONOMY"
While there is no single agreed-upon definition of the circular economy, the Ellen McArthur Foundation defines it as "a system where materials never become waste and nature is regenerated through processes like maintenance, reuse, refurbishment, remanufacture, recycling, and composting."

Source: Ellen McArthur Foundation

Garments and textiles

Women represent an estimated 80 percent of workers in the garment and textile industry.

Historically, the industry has been dominated by male owners and managers. However, the transformative agency of women to understand the specific challenges and opportunities of the industry and develop circular economy business models could represent a changing paradigm. For example, women have the potential to lead the shift to recycled and recyclable materials, thereby reducing the resources needed to produce new clothes. And they can drive a change consumption patterns by developing rental and consignment markets to keep clothes in use for longer.

MEET RUBY GHUZNABI

Ruby Ghuznabi is the founder of Aranya Crafts in Bangladesh. Ruby's vision to build a green and sustainable fashion value chain has guided her entrepreneurial path. Aranya Crafts collaborates with women artisans in villages to produce local, naturally dyed textiles. The dyes are made from materials previously thought of as waste, such as marigolds that had been used to decorate weddings and other festive occasions, and food waste such as onion skins. Aranya's natural dyes are competitive with other products on the market and the company has earned international recognition for its goods.

Recycling/repair/rental

Women also drive innovation by developing new business models focused on reuse, repair, and remanufacturing.

Women-led enterprises in recycling, repair, and rental can offer new employment opportunities and improved conditions for the millions of informal workers, such as waste pickers, at the base of the recycling value chain, most of whom are women. Women-led businesses can help other women ascend the recycling value chain and leverage their knowledge and expertise to increase household recycling and affect behavior change at community level.

MEET VANESSA PIERRE

Vanessa Pierre, PhD, is founder and Chief Recycling Officer at EcoRenew Solutions in Haiti. EcoRenew Solutions is focused on reducing pollution from waste by engaging in land and sea sweeps and using recyclable materials as a form of currency so that people can exchange recyclables for credits that can be used to pay bills or purchase goods. EcoRenew Solutions has been part of 1863 Ventures, Endeavor, SheBuilds Global Initiative, and other initiatives.

Food waste

Women entrepreneurs are leading the battle against food waste—critical to building sustainable food systems, given that about one-third of all food is lost or wasted today.

From companies that repurpose food waste in their products to those preventing food waste, women entrepreneurs are at the forefront of developing new and profitable business models that reduce energy usage and emissions and contribute to the circular economy. Examples include using food byproducts to create new food products and textiles and converting food waste into bioenergy.

MEET EMMASTELLA GAKUO

Emmastella Gakuo is the co-founder and COO of Savanna Circuit Technologies, a Kenya-based, youth-led manufacturing and last-mile distribution company providing hardware and software solutions for use in post-production. Savanna Circuit Technologies builds solar cooling milk chillers, solar dryers, and dairy management solutions, which allow smallholder farmers to reduce their post-harvest losses while cutting carbon emissions. Solar-powered mobile chillers facilitate an innovative cold chain for dairy businesses, so the company can maintain high quality standards, enabling expansion of the customer base to include cooperatives.

MEET ISIS ESPITIA

Isis Espitia is the co-founder and chief operating officer of EatCloud, a foodtech startup from Colombia that is salvaging thousands of tons of unsold food and directing it towards those facing food insecurity and hunger. The social enterprise automates the food rescue process based on SaaS (software as a service) and a subscription-based model for non-profit organizations and charities needing food. By significantly reducing food waste, the company is contributing to the circular economy while lowering greenhouse gas emissions: In 2021 alone, the company saved the food industry more than 30$ million in waste, delivering 40 million plates of food to those in need—and reducing the industry's carbon footprint by nearly 500 tons of CO2.

Food systems and food security

THIS AREA HAS STRONG OVERLAPS WITH THE ENERGY AND CIRCULAR ECONOMY. FOOD SYSTEMS ENCOMPASS ACTIVITIES IN:

- Production of agricultural and other food products
- Processing, transport, and distribution of food, linking production to consumption
- Retail sales and marketing of food products
- Consumption of food products at households and restaurants
- Disposal of food products and recovering valuable compounds from food waste

Food systems present a sizeable business opportunity, with an estimated asset value of 14$ trillion, equivalent to between 16 percent to 20 percent of global GDP. About 1.23 billion people were employed in the world's agrifood systems as of 2019, and almost half the world's population live in households linked to agrifood systems. Agriculture is often the largest sector employing women in low- and lower-middle-income countries. In Sub-Saharan Africa, 66 percent of women's employment is in agrifood systems, compared with 60 percent of men's employment. And yet, women hold only 23 percent of agribusiness management positions and represent only 5.4 percent of agri-entrepreneurs. Women also have received less than 1 percent of total agriculture financing.

Despite this, women entrepreneurs have a significant role in fostering sustainable food systems and promoting food security. They are already making strides in efficiency, environmental impact reduction, and innovation across various sectors like agribusinesses, restaurants, and grocery stores through practices like food-to-table and low-waste initiatives.

Sustainable agriculture, land use, and value chains for increased food security

Today, with traditional farming approaches, there is a 24 percent gender gap in productivity between male and female-managed farms.

But this gap represents an important opportunity to support women-led sustainable agribusinesses, helping them to access climate-resilient materials such as drought-resistant seeds, as well as new technologies that could reduce farming waste, conserve water, and improve productivity and food security. The Food and Agriculture Organization estimates that if women farmers had equal access to climate-friendly resources, their farm yields would increase by up to 30 percent, improve soil fertility, and protect ecosystems, while potentially reducing global hunger by nearly 17 percent.

MEET PRISCILLA VERAS

Priscilla Veras is founder of Muda Meu Mundo, a digital startup in Brazil that expands smallholder farmers' access to retail channels and reduces supply chain waste. Through its digital marketplace, Muda Meu Mundo works with retailers to offer farmers access to credit, advances on receivables, discounts on seeds and fertilizers, and logistical and technical support. Women account for 49 percent of Muda Meu Mundo's producer base.

Studies show that women are more likely to be early adopters of climate-smart practices, leading to increased resilience, productivity, innovation, and enterprise creation. Women are also well-positioned to drive innovation in agricultural value chains, focusing on areas like supply chain connectivity, digitalization, and storage solutions.

Climate resilience services

Climate resilience services spans a range of offerings, such as the collection, analysis, and provision of climate-related data to support adaption, mitigation, and resilience/disaster risk reduction, in a software-as-a-service (SaaS) subscription model.

These services can help ensure agribusiness resilience. They offer high-value and scalable business opportunities that leverage technologies like artificial intelligence (AI). Opportunities for women-led businesses to enable climate resilience also include the provision of financial services such as insurance for weather-related crop losses and tailored, agri-smart services that combine data and knowledge to help improve crop yields. Given women's active community roles, they can be effective agents to encourage uptake of new products and services that would boost resilience of other women-led businesses.

MEET MÓNICA ABARCA

Mónica Abarca, an engineer by training, is co-founder and CEO of qAIRa, a Peruvian startup with a social mission. The company uses a customized hybrid drone to collect air quality data in Madre de Dios—a region where illegal mining is rampant and pollution is causing health problems for local residents. The drone's sensors measure the levels of several types of pollutants, data that is used to create maps that identify areas of high pollutant concentrations. The company's founders made a strategic decision to open source the data collection and analysis code they developed to encourage collaboration in the field of air quality monitoring.

MEET TATIANA MALVASIO

Tatiana Malvasio is co-founder and chief operating officer of Argentina-based Kilimo. The company's crop monitoring and risk management platform enables growers to determine with precision the optimal amount of water their crops need on a given day. The platform collects and analyzes meteorological, satellite, and field data, giving platform subscribers the ability to balance their irrigation, thereby reducing water usage, saving money, and helping to optimize crop yields. To date, Kilimo clients--including 185 medium and large agribusinesses, with a reach of 2,000 microproducers—have conserved 72 billion liters of water.

Opportunities in underrepresented climate areas

Other areas of opportunity, not specifically discussed in this paper, include carbon capture and storage, sustainable transportation, manufacturing, or environmental engineering, among other male-dominated areas. These areas are characterized by their technical complexity and the need for substantial financial investment, which have historically been barriers to entry for many women. The leadership and workforce in these sectors tend to be predominantly male, often resulting in a lack of role models and mentors for aspiring women entrepreneurs. Unconscious biases, societal norms, lack of exposure to the sector, and time and capital constraints are just some factors holding women back from entering male-dominated climate sectors.

There is some evidence that shows how business performance often depends on the sector and the role of women entrepreneurs therewithin. For example, a mixed methods study from Uganda found that women entrepreneurs who shifted into male-dominated industries, including climate sectors, earned as much as men and three times more than women in female-dominated sectors.

It is fundamental to support more women entrepreneurs enter or cross-over into these profitable areas to develop innovative climate mitigation solutions. This involves creating more inclusive networks, providing access to financing, and promoting policies that foster gender diversity in technical fields. By addressing these barriers and encouraging diversity in these areas, we can ensure that women have the opportunity to contribute their unique perspectives and skills in all areas and sectors critical to fight climate change.

Up to date, very little research has been conducted to identify the factors that support women to enter or cross-over into male-dominated climate sectors.

Moreover, the lack of data across growing green sectors hampers the ability to measure women's participation rates in green industries and to better understand barriers and effective interventions. More sector-specific data and research is needed to understand how women entrepreneurs can be best supported in their specific sectors and how they can be encouraged to cross over into more profitable green sectors of the future.

Funding gaps for female climate entrepreneurs persist: In Q1 2023, women founders received just 6.9 percent of climatetech venture dollars, down from 8.9 percent in 2022.

3

State of play: Landscape for WSME-responsive climate action

This section provides an overview of climate-related financing flows that also include gender objectives, using data from the OECD Development Assistance Committee (DAC). The DAC monitors development finance flows targeting the objectives of the Rio Conventions including funding flows for climate adaptation and mitigation, which are cross-checked for a gender component and its degree of importance to the project goals.

THE GENDER MARKER DISTINGUISHES AMONG THREE LEVELS OF EMPHASIS WITHIN THE CLIMATE PROJECT:

+ Gender equality as a principal objective and fundamental driver of the climate project: A primary project goal.
+ Gender equality as a significant objective of the climate project: An important but secondary project goal.
+ No gender equality objective associated with the climate project: Gender not factored into the project at all.

It is worth noting that limitations in sex-disaggregated data availability make it difficult to drill down further, to learn more about the amount of funding that flows specifically to women climate entrepreneurs. For purposes of this analysis, we use the gender component as a proxy for support to WSMEs.

The climate financing analysis is followed by a mapping of entities supporting climate action, gender equality, and those entities at the nexus of both, to shed more light on what various institutions are doing—and to highlight opportunities for partnership and collaboration on future efforts to boost women's climate entrepreneurship.

Donor financing flows supporting both climate and gender

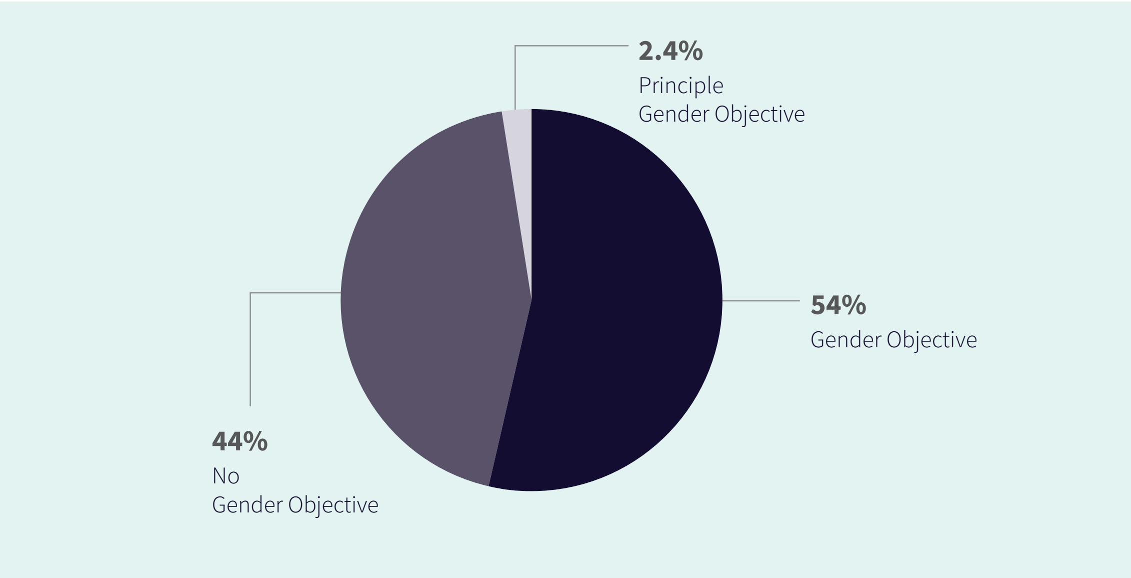
Official donor assistance (ODA) for climate has increased in recent years, from $26.9 billion in the year 2014–2015 to $33.1 billion in the year 2018–2019.

During this same time period, donor funding for climate initiatives that included a gender component increased as well, from 9.6$ billion in 2015–2014 to 18.9$ billion in 2019–2018. In fact, the majority—about 57 percent—of climate aid flows also included a gender component, which represents progress.

However, only 2.4 percent of all climate-related ODA included gender as a principal objective, totaling just 778$ million (figure 3.1). The most recent figures suggest that this gap persists. In 2021 only 867$ million in ODA aimed to tackle climate change and reduce gender inequalities as principal objectives. Of the share of climate ODA that included a gender component, 60 percent went toward adaption programs, while 46 percent went toward climate change mitigation.

More action is needed to increase the amount of donor climate financing that reaches WSMEs. This will require cooperation and coordination to 1) mobilize private capital, typically through financial institutions, and to some extend through corporations; 2) improving skills, networks and access to technology and 3) policy reforms to unlock markets and the barriers preventing women-led businesses from starting up and growing their businesses.

Figure 3.1. By the numbers: Climate financing towards gender equality



BOX 3.1

Why having more—and more detailed—data matters

The lack of reliable sex-disaggregated climate finance flows data and the lack of well-organized data makes it challenging to assess impact or identify where the great needs are.

When carrying out this landscape analysis, the limited detail on the types of activities and funding flows made it difficult to determine the number and types of beneficiaries—including whether they were women businesses, employees, or community members—and measure details such as organizational size.

There is a significant amount of work being ramped up to track climate financing by banks and ODA. This is an opportune time to ensure that data tracked is also sex disaggregated. For example, there could be opportunities to incorporate gender dimensions in climate financing reporting standards, such as the Task Force on Climate-related Financial Disclosures (TCFD). In addition, there are opportunities to collaborate with initiatives like WE Finance Code, a global multi-stakeholder approach that aims to eliminate constraints and financing gaps for women entrepreneurs around the world by engaging public and private institutions to work together to 1) Strengthen leadership on this issue at an institutional, national and global level. 2) Improve the collection, analysis, and use of supply-side data on the level and quality of funding to women-led enterprises. 3) Take action in their relevant domain to help close financing gaps for women entrepreneurs.

Mapping of organizations working on gender and climate

A mapping of organizations active in both the gender and climate spaces finds that there are a limited number of entities with a clear double focus on the nexus of gender and climate, and there is an even larger gap for those prioritizing climate finance for women.

Most organizations reviewed have a primary focus on either climate or gender. They may have a secondary or limited focus on one or the other, or none all. Of the organizations with a strong focus on both climate and gender, most are small, and do not provide financing—or did not have financing climate and gender action as a primary priority. Larger climate initiatives, while they often include gender as a cross-cutting priority, do not explicitly focus on ensuring funding reaches women or women entrepreneurs directly. Similarly, larger gender-equality initiatives lack programming or focus on climate action, nor have they embedded it into their activities.

Table 3.1 and figure 3.2 offer an overview of the various actors in the gender and climate spaces and what they are doing. The information provided does not represent the entire universe of climate and gender activity; rather it is designed to highlight a cross-section of activity happening and help catalyze further engagement across the gender-climate nexus.

Table 3.1 Who’s who in the climate and gender space

1	2X (Challenge and Global)						
2	Adaptation Fund						
3	African Women in Energy and Power (AWEaP)						
4	African Women›s Netwk for Com Mgmt of Forests (REFACOF)						
5	Alterfin						
6	Amplifica Capital						
7	Bill & Melinda Gates Foundation						
8	Clean Cooking Alliance						
9							
10							
11							
12							
13							

Institutional limitations, lack of coordination impede progress

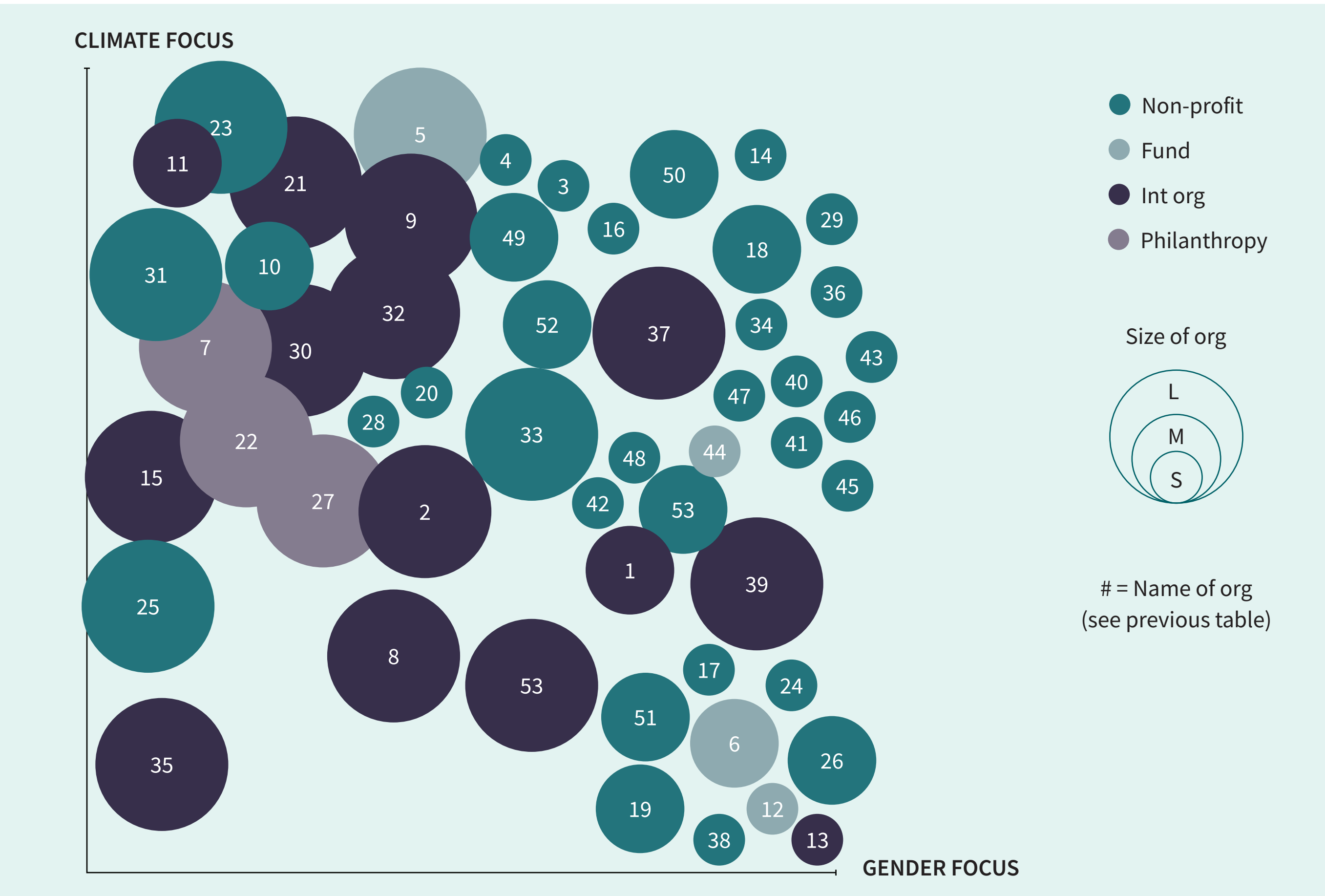
While the analysis showed a number of organizations involved at the gender and climate nexus, it also revealed that the majority of organizations active are small, nonprofits, with limited sources of funding.

Advocacy, networking, and capacity building are the most common activities provided by these organizations—all of which are all essential to ensuring that women entrepreneurs have the skills, tools, and market access they need to succeed. However, they do not close the finance gaps. Additional research would be required to determine whether these organizations did not include climate finance based on needs assessments of their beneficiaries, or if the lack of funding and resources available to them steered them away from offering climate finance to their beneficiaries.

Limited access to funding or uncertain budget flows impacts an organization's ability to plan and can potentially create distortions in the ecosystem on the types of services or support provided. In addition, without a level of certainty and continuity, organizations are unable to take a medium- or long-term approach, which ultimately impacts the beneficiaries they are serving. The absence of leadership, resources, and effective communication also can prevent initiatives from reaching their potential.

Intentional donors support focused on key issues or specific targets (e.g., closing the gender climate financing gap) could help improve coordination and ultimately impact. Having a specific objective and strategy that is backed by adequate donor funding can help drive ecosystem coordination, avoid duplication of efforts, and build on the technical strengths, footprint and reach which the various organizations bring.

Figure 3.2. Mapping of organizations engaged in climate and gender action



Catalyzing climate finance

Several types of financial instruments are demonstrating their potential in catalyzing finance for climate and gender. This section explores the potential of blended finance, gender and climate bonds, and result-based instruments in bridging the finance gaps.

VENTURE CAPITAL

Early-stage risk capital is needed to fuel the growth of women-led climate entrepreneurs who are either too small or lack proven business models, or the growth trajectories, targeted by traditional funds. Fund managers often lack the experience, and knowledge to invest in early stage, climate-focused businesses, and can benefit from the support and technical know-how to effectively engage at the gender and climate nexus. Emerging evidence shows that gender-balanced investment teams (i.e., an increased number of female partners) lead to higher fund returns and profits. According to a study in the Harvard Business Review, VC firms that increased the number of female partners by 10 percent experienced a 1.5 percent increase in fund returns each year, plus 9.7 percent more profitable exits. Furthermore, IFC research based on data from over 700 funds operating in emerging markets found that, in 2019, VC and PE funds with gender-balanced senior investment teams generated up to 20 percent higher returns compared to other funds.

Amazon recently invested 53$ million to accelerate women›s climate innovation, with 3$ million to support the Climate Gender Equity Fund (CGEF), a new public-private financing facility launched by USAID—the United States Agency for International Development (box 3.1). Amazon is also contributing 50$ million directly to women-run climate tech companies run by women.

BOX 3.1

About the USAID Climate-Gender Equity Fund

Launched with the support of Amazon, USAID's Climate-Gender Equity Fund (CGEF) aims to scale climate finance that advances gender-equitable climate action—part of a broader, $250 million USAID initiative to accelerate climate innovation.

CGEF will increase access to climate finance for gender-responsive, women-led, and women-benefiting organizations that address climate change. With an initial 3$ million commitment from both USAID and Amazon, CGEF plans to leverage at least 60$ million in capital from corporations, foundations, bi/multilaterals, and other funders.

BLENDED FINANCE

Blended finance has become a critical tool to unlock private capital to support gender-lens and climate finance. Blended finance can encourage intermediaries, such as banks, to extend their lending to meet gender- or climate-related portfolio targets, ultimately validating the business case for sustained financing.

In 13.4$,2021 billion in projects across all sectors by development finance institutions were supported by 1.9$ billion in concessional funds, of which 344$ million went to support SMEs through financial institutions, projects that frequently focused on women entrepreneurs. The data underscores the fact that investors have confidence in gender-dedicated blended finance instruments, with expectations of annual returns topping 20 percent. And yet, gender-dedicated blended finance represents only 1 percent of banks' assets under management—1$ billion. Much of this financing has focused on either climate or gender—but not the nexus of the two.

There is great potential going forward to deploy blended finance to enable financial intermediaries to integrate gender and climate targets, which can ensure that climate finance is reaching women and women-led businesses.

A recent OECD study noted that the most common reason cited by investors for dedicating a blended-finance vehicle to gender equality investors was the potential for return enhancement. Investors recognize that women-led firms can outperform and have higher returns than those led by men.

GENDER AND CLIMATE BONDS

Gender and climate bonds—which enable bond issuers to use the proceeds towards projects that boost their social and environmental sustainability—are also gaining traction as a way to mobilize private capital for gender and climate goals. For example, in 2020, IFC invested 200$ million in privately placed gender and green bonds issued by Bank OCBC NISP as part of the bank's sustainability bond program. The proceeds from the gender bond, which also featured a performance-based incentive supported by We-Fi, enabled the bank to increase lending to women entrepreneurs—representing the first such instrument issued in Indonesia. To date, 320 WSMEs have accessed a total of 105$ million in new financing. The green bond enabled the bank to expand its green financing, particularly development of green projects and financing of green mortgages.

While the existence and use of such instruments represents a positive development, more evolution is needed to reduce the silos and ensure that an equitable portion of climate finance reaches women-led businesses. This would require a future state in which the bond's design and core goals would drive objectives at the gender-climate nexus.

RESULTS-BASED INSTRUMENTS

Results-based instruments, such as social impact bonds, have the potential to simultaneously catalyze climate finance and support to women-led green businesses by building incentives and development objectives into their structure. For example, in South Africa, the creation of the Green Outcomes Fund has helped to overcome investors' hesitation about green businesses, due to the perception of risk and high upfront costs. The fund—a public-private partnership—provides outcomes-based match funding to local investment funds that invest in green MSMEs (box 3.3).

BOX 3.2

Scaling Climate Action by Lowering Emissions (SCALE)

SCALE, an umbrella multi-partner trust fund, is the one-stop shop for all World Bank-administered results-based climate finance programs. SCALE is not just a source of climate finance, but also an instrument for policy dialogue and broader engagement to incentivize low carbon development.

SCALE builds on the World Bank's 20 years' experience supporting projects that generate high-quality, high-integrity emissions reductions credits using results-based climate finance: grant payments for achieving pre-agreed climate-related results, such as verified emission reductions. Technical advice and capacity strengthening supported by SCALE will help bridge the gap between the supply of and demand for high-quality emission reductions and help unlock additional private sector finance from international carbon markets, including for areas such as the just energy transition and preventing deforestation.

Source: World Bank

BOX 3.3

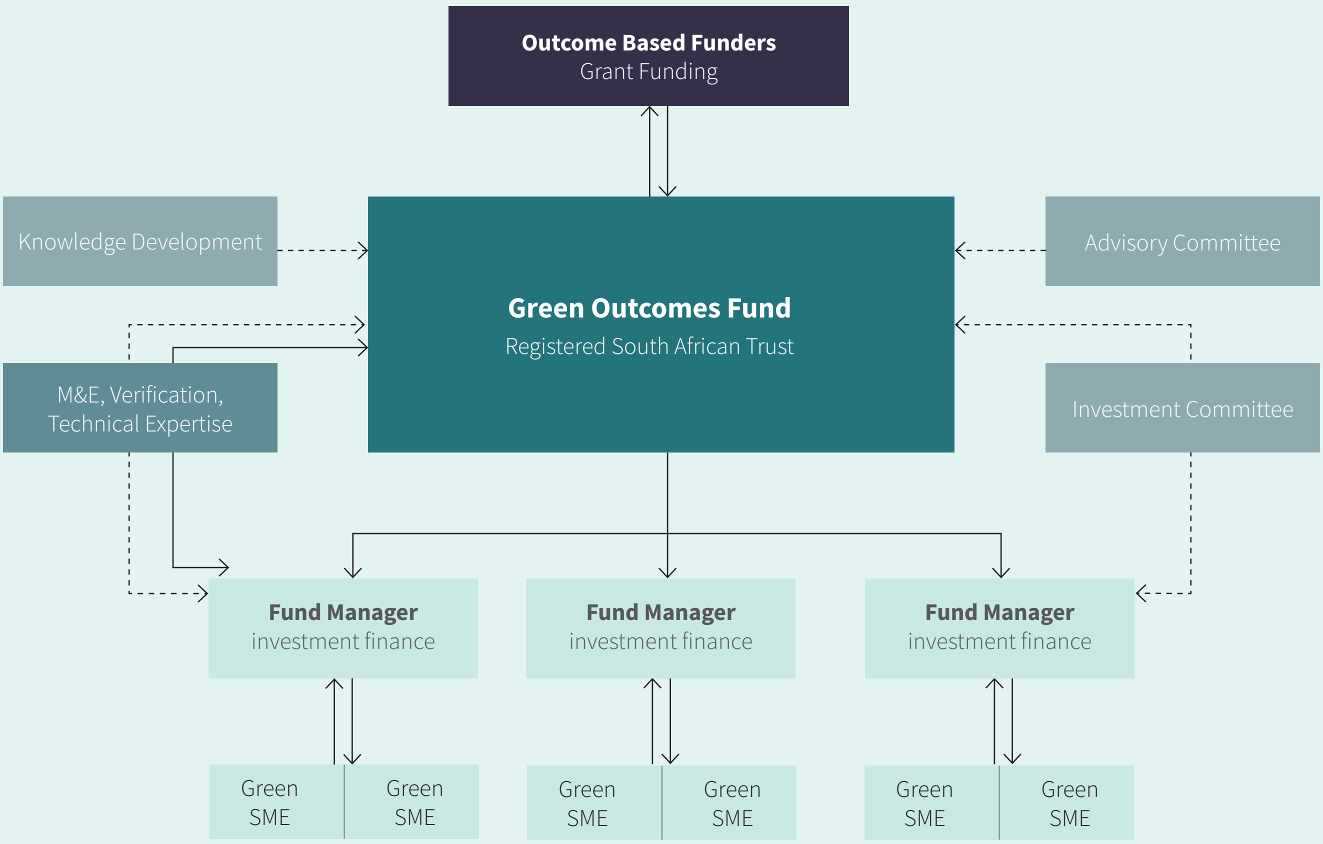
The Green Outcomes Fund: How it works

The structure of the Green Outcomes Fund (GOF) helps mitigate performance risk.

Support to fund managers is conditional on the successful delivery of pre-agreed impacts between the outcome-based funders, GOF, and the fund managers. The GOF also introduces a level of competition between recipient fund managers for the delivery of green outcomes by way of a call for expression of interest process. This results in transparency on pricing around delivery of these impact outcomes. Ultimately, GOF will blend concessionary funding with private capital, so participating fund managers can develop and adapt their SME investment criteria and support services in ways that were not previously possible, thereby realizing greater impact in terms of the types of SMEs funded and green outcomes created.

Once approved, fund managers use outcome payments to de-risk investments, support SMEs, and further invest in green SMEs. The outcomes payments are designed to reduce the risk and cost of reaching green SMEs that otherwise might not have received funding. The GOF intentionally gives fund managers flexibility (within defined parameters) on how they allocate funding. In doing so, it is breaking down the most prominent barriers preventing finance to green SMEs. Examples of the use of outcomes payments include business development support, technical assistance, training and mentoring, in-house technical expertise, innovative pricing models that reduce interest rates, subsidized cost of capital, on-lending, and investing. Fund managers are required to report on achieved outcomes. Upon verification of these outcomes, payments to the managers are disbursed.

Source: Green Outcomes Fund



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Call to action

This white paper highlighted the opportunities for women climate entrepreneurs. Enabling these businesses to reach their full potential will require support on multiple fronts. Here are some suggested actions that can make a difference.

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Access to finance

Mobilize additional sources of funding, including private capital mobilization: This includes the use of blended finance, sustainable finance and other results-based instruments. More capital is needed, well beyond what donor funding can provide. Such instruments can increase the flow of private capital and incentivize financial intermediaries to boost lending to climate focused WSMEs and create new products and services specifically targeting this women's market customer segment.

Develop targeted financial products such as climate risk insurance and financing for climate-adaptive activities and equipment: Alternative credit scoring platforms and digital financial services give women pathways to access the funds they need to adapt to or mitigate the impacts of climate change.

Expand support for venture capital funds—including those helmed by women—focused on women-led climate startups: VC funds and accelerators can provide needed risk capital, as well as facilitate networking and collaboration among women climate founders, creating opportunities for mentorship, knowledge sharing, and access to a wider pool of investors.

Facilitate the inclusion of gender metrics for capital providers, including banks, impact investors and funds targeting early-stage climate businesses.

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Access to markets and technology

Work with financial institutions and impact investors to encourage the evolution of sustainable finance and include a merged focus at the climate-gender nexus: This might include incentivizing women entrepreneurs' participation in companies' green value chains through integrated climate and gender targets and key performance indicators.

Work with sustainability-focused companies to set gender targets for local sourcing, including specific key performance indicators to measure progress.

Create platforms that connect green WSME businesses with commercial customers—and with each other.

Assist WSMEs in accessing the technologies best suited to their businesses and their own skillsets: Technology limitations often tie directly to financing gaps, as the cost of installing equipment that enhances energy efficiency or reduces carbon footprints can be prohibitive. WSMEs, which operate across a diverse array of sectors and business models, have varying technology needs that must be addressed with targeted support.

Conduct research to identify green sectors and areas of opportunity with the greatest potential for WSME penetration.

Training, mentoring, and networks

Support financial intermediaries in developing non-financial services for women entrepreneurs to include reskilling, upskilling, and climate-adaptive practices.

Support the creation of supplier development programs so WSMEs can adopt desired sustainability standards and pre-qualify for future tenders.

Mobilize and convene platforms that bring together funders and women-led climate startups to increase the flow of venture capital to women founders.

Provide training for local women climate advisors who can use their social networks to engage with peers on strengthening resilience and reducing their climate risks.

Improve access to information on how to fortify businesses against climate shocks, prepare for disaster, and reduce carbon footprints: Such efforts can include locally relevant climate communications campaigns—from easy-to-read billboards and radio ads to mobile messaging—and capacity-building programs to ensure wide and inclusive reach.

Enabling environment

Encourage the integration of a gender lens into climate legislation and address regulatory barriers preventing women's participation climate sectors.

Convene forums that bring together policymakers and successful women climate entrepreneurs to amplify women's voice and participation in climate-related decisions.

Work with policy makers on reforms to equalize women's property rights and control over natural resources. For example, in some countries, the ability to adapt smallholder agribusinesses by altering crops or incorporating sustainable farming techniques may be limited because of gender-based restrictions on asset ownership.

Provide unconscious/conscious bias training for climate fund decision makers: By educating investors about the potential biases they may hold, such as gender or socioeconomic biases, they can learn to recognize and challenge their own assumptions and judgments. Bias training can also provide investors with tools and techniques to make more objective assessments of investment opportunities.

Create opportunities to increase understanding about the diverse universe of women-led businesses—and that a one-size-fits-all approach to financing and support will not work. Women's businesses span the range of sectors, and women entrepreneurs bring their own passions, motivations, experiences, education, and financial and non-financial needs to their business journey. For donors and investors, a segmented approach—one that recognizes and accounts for this diversity—will enhance the effectiveness of the support and increase the potential for positive, sustainable outcomes.

Encourage the collection of gender-disaggregated data on women entrepreneurs' participation in the climate space. Without accurate and timely data, it is impossible to assess the extent of the gaps, for example—gaps in access to clean energy—or the role women businesses are playing in building climate resilience and creating net-zero pathways. This will require a collective effort from a variety of stakeholders, including funders, governments, and civil society organizations.

Looking ahead

This white paper underscores the huge potential for women climate entrepreneurs and the urgent need for collaborative efforts at the intersection of climate change and women›s entrepreneurship. As we navigate the landscape of gender-responsive climate initiatives and seek to bridge financing gaps, we are presented with unprecedented opportunities to catalyze positive change. This includes boosting the prospects for women innovators and leaders of climate businesses that will drive green and blue transitions, as well as building the climate resilience of women-led businesses across all sectors. Embracing these strategies not only strengthens our global response to climate challenges but also fosters inclusive and sustainable economic growth for all, on a livable planet.

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