

Climate Crisis Solutions

The Ultimate Gender Lens Investment Strategy



Women bear the heaviest burdens of climate crisis impacts, including flooding, drought, other natural disasters, and problematic access to increasingly fragile natural resources. Investing in solutions to mitigate the climate crisis and resource degradation disproportionately benefits women to the equal and opposite extent that failing to address the crisis disproportionately harms women.

About Green Alpha[®]

Green Alpha Advisors has been redefining asset management since 2007 by [Investing in the Next Economy[™]](#)—a low risk, endlessly thriving economy driven by companies creating disruptive solutions to key systemic risks like the climate crisis, resource degradation and scarcity, worsening inequality and deteriorating social cohesion, biodiversity and habitat loss, and human disease burdens.

We consider companies that produce innovative solutions to these risks to be the greatest contributors to economic productivity gains and are therefore the leading growth drivers of the 21st century. Consequently, these companies are our chief opportunity for investments that preserve and grow clients' purchasing power. In terms of impact, directing capital to solutions providers is the most direct way to catalyze change, and public equities—most investors' largest asset class—offers the largest scale means to create change with investment dollars.



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Key Highlights

- **Even the “S” in ESG comes down to “E”:** Extreme weather events, climate-related migration, and insufficient access to natural resources places exceptional pressure on humanity to survive, and within all societal groups, women experience these environmental burdens most acutely.
- **The “S” and “G” won’t matter if we don’t save the world:** Innovative solutions to climate change and increasing resource scarcity are needed now more than ever to protect our most vulnerable populations, especially women and children.
- **Scalable solutions are ready to be deployed:** Never have humans had the tools at their disposal that are available today. It’s time to invest in mass, rapid deployment.

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Even the “S” in ESG Comes Down to “E”

There is a widespread, persistent myth in investing circles that investing in solutions to the climate crisis and resource degradation is not, in itself, a gender-lens strategy. Nevertheless, women bear the heaviest burdens of the impacts of the climate crisis, including drought, flooding, and other natural disasters.

When natural resources are insufficient to meet a community’s needs, women are the primary demographic who go without their share for the benefit of others. Women also suffer the worst consequences of negative changes to resource levels. Consequently, climate change mitigation will meaningfully affect the wellbeing of women, and other vulnerable demographic groups, worldwide.

From a broader perspective, the social parameter of mitigating inequality is crucial to addressing climate: a society divided by inequality is less likely to have the wherewithal to implement and manage things like emissions reductions, carbon capture, and better agricultural practices. Equality between genders then, is likely to accelerate our collective climate response.

Investing in solutions to mitigate the climate crisis and resource degradation disproportionately benefits women to the equal and opposite extent that failing to address the crisis disproportionately harms women.

*“Globally, **women and girls are disproportionately affected by climate displacement** because of already existing inequalities in society. The poorest tend to be **very vulnerable** and that’s women and girls.”*

*- Linnea Engstrom
Former Member, European Parliament*

Increasingly Displaced Communities

Let's look at a case study. When Hurricane Katrina hit the Gulf Coast of the United States in August of 2005, it had devastating effects. It triggered massive flooding in New Orleans, and caused catastrophic damage across Louisiana, Mississippi, and Alabama. As a result, "Katrina caused one of the largest and most abrupt relocations of people in U.S. history: approximately 1.5 million people aged 16 years and older."¹

Fifteen years later, an estimated 400,000 of those 1.5 million remain permanently displaced², with the lowest-income residents having the most difficulty with both the initial relocation and attempts at returning home. Women are among the most affected: more than 83% of New Orleans' poor, single mothers³ were displaced by the storm. Years later, many women and girls still share accommodations with extended family members and acquaintances.

"Globally, women and girls are disproportionately affected by climate displacement because of already existing inequalities in society.⁴ The poorest tend to be very vulnerable and that's women and girls," reports Linnea Engstrom, formerly a Swedish member of the European Parliament.

Besides the obvious impacts on poor, single mothers and their children, females experiencing displacement are especially vulnerable to deprivation, domestic violence, sexually transmitted diseases, and trafficking for prostitution when migration increases.⁵ There are many reasons for this, including such factors as girls and women becoming separated from family and communities that otherwise would protect them, and the

presence of armed men near temporary shelter areas.⁶

Furthermore, females suffer from limited access to general and reproductive health services in displacement scenarios, not to mention the heightened risks during displacement regarding both protection and healthcare needs that transgender, intersex, and non-binary people experience.⁷

The Internal Displacement Monitoring Centre ("the Centre") reports that every year, more than 20 million people⁸ are forced to leave their homes and migrate elsewhere to escape the ravages of an ever-more-extreme climate. In 2020, approximately 40.5 million new displacements were recorded worldwide, with 1.7 million of those people from the United States.⁹ As discussed previously, often the very most vulnerable can't find the means to go or remake their home after an event and a total of 55 million people were living in displacement at year-end 2020.¹⁰

These colossal numbers only begin to factor in how many people are displaced by conflict and violence, which is often caused—in part or in whole—by increasing resource scarcity and degradation, as people are forced to move to seek sustenance. Director of the Centre, Alexandra Bilak, reports "Often it is women and girls who suffer the most from such displacement."

In 2019, the Centre monitored and recorded the largest ever number¹¹ of both disaster-related and conflict-related displacement events that had occurred in a single year up until that time—2,000—a dramatic increase from 600 displacement events in

2016 (the largest number previously recorded in a single year). As climate change dramatically increases the frequency and scale of storms globally, the World Bank predicts that by 2050, more than 143 million people¹² will be displaced due to climate events. Sources from the United Nations, to the IPCC, to the Stern Review on the Economics of Climate Change often cite Oxford University Professor Normal Myers' estimate of "as many as 200 million¹³ people overtaken by disruptions of monsoon systems and other rainfall regimes, by droughts of unprecedented severity and duration, and by sea-level rise and coastal flooding."

Knowing that the poorest and most vulnerable groups are disproportionately impacted by climate-related displacement, and that females form most of these groups, it is clear that an additional 143 to 200 million people—or more—displaced within a few decades is a gender issue worthy of solving.

*"Far from being gender-neutral, climate change, and the use of migration as a coping mechanism, will have **specific gendered impacts**, given that there is a 'strong relationship between poverty and **vulnerability to environmental change**, and the stark fact that **women, as a group, are poorer and less powerful than men.**"*³⁴

- Oli Brown
"Migration and Climate Change"

Rapidly Depleting Resources

Natural and agricultural resource scarcity, which is increasingly exacerbated by the climate crisis, is a gender-lens issue related to and apart from displacement of populations.

Our society's current—and completely outdated—methods of mining many types of resources; extracting fossil fuels; producing petrochemicals; using harmful fertilizers, pesticides, and herbicides; failing to maintain leaky water infrastructure; and carrying out other harmful practices, has led many global communities to experience significant levels of resource scarcity.

In the U.S. alone, soil needed to grow critical crops is eroding 10 times faster¹⁴ than it can be replenished. Because of chemical-heavy farming techniques, deforestation, and global warming, experts agree that by 2075, all of the world's top soil will be gone.¹⁵ Female farmers account for 45-80% of all food production¹⁶ in developing countries, depending on the region. About two-thirds of the female labor force in developing countries, and more than 90% in many African countries, are engaged in agricultural work. This means that as food sources become scarcer, not only will women and their communities experience immediate food shortages, but they will also lose their only secure means of earning income.

Women and girls disproportionately suffer from food insecurity¹⁷ as well, including female farmers. A 2019 report published by Oxfam¹⁸ states, “Patriarchal norms create disadvantages for women farmers, specifically in land rights (small plots, difficulties attaining ownership, discriminatory inheritance rights), productive resources (no access to credit, extension services or inputs), unpaid work, insecure employment and exclusion from decision making and political representation. Within the household, because of weaker bargaining position they frequently eat least, last and least well.”

Another critical natural resource that receives very little protection is water. In the U.S., 17% (1 in 6 gallons¹⁹) of the water we treat is wasted every day due to aging pipes and other leaky infrastructure—that’s 6 billion gallons a day, enough to support 15 million households.

Sadly, we all know about the distressing realities of water pollution in Flint, Michigan. However, these realities are not limited to Flint; a significant number of U.S residents are unaware of how poor their water quality is. Statewide, Texas has the country’s most irradiated drinking water. Numerous other states have shockingly high levels of chemicals like perfluorocarbons,²⁰ in addition to other dangerous substances that do not exist in nature.

Why is water a gender-lens issue? Clearly, it’s an “everyone” issue. But when considered with the fact that lower income groups cannot afford the bottled water or house-wide filters that wealthier Americans can afford, water is a racial equity issue, as well as an income equality issue. Further, since women’s bodies often are tasked with supporting unborn, newborn, and other infant lives along with their own, low-income women are the hardest hit when water sources are polluted and dangerous to one’s health.

Inequality and the Environment:

How climate change and environmental degradation impact vulnerable groups

1/5 children **suffer from asthma** in Imperial County, California — where terminal lakes like the Salton Sea are drying up, producing debilitating dust layers that cause the most extreme forms of asthma, lung infections, and bronchitis. A 27-year-old resident was said to have the lungs of an 80-year-old and was even considered for a lung transplant. Because **25% of the population lives in poverty**, many are unable to relocate.

6,171 oil and gas wells exist in Los Angeles, a city that has been sued for discriminatory drilling permitting practices. Plaintiffs argued that **drilling sites in majority-Black and Latinx neighborhoods were dirtier, louder, and did not protect residents** from pollution. Residents of these neighborhoods experience some of the **highest cancer rates** in Southern California.

45-80% of all food production in developing countries is produced by **women farmers**. As traditional food sources become scarcer and more unpredictable with climate change, **women are more likely to face loss of income and food**. In periods of such scarcity, the health of women and girls has been found to decline more than male health.

Zelenko, Michael, “Dust Rising,” *The Verge*, 2018.

Colgan, David, “Passion for environmental justice fuels urban oil drilling study,” *UCLA Newsroom*, 2017.

Editorial Board, “The Danger of Urban Oil Drilling,” *The New York Times*, 2015.

“Women, Gender Equality and Climate Change,” *UN WomenWatch*.

University of Arizona Professor Stephanie Buechler studied water scarcity and women's rights along the U.S.-Mexico border, and found that decreasing water availability impaired women's ability²¹ to invest in their careers. For example, as livestock owners replaced cows that need a lot of water with cows that need less, the new cows produced materially less milk. With less milk available, women were having a harder time acquiring enough to make the cheese they sell to provide for their families.

Since water and agricultural gender inequalities²² remain strong, women are often excluded from decision making and political representation that affect these types of scenarios. They often do not

have a voice or a vote in economic decisions, and they and those they provide for are left suffering the consequences.

Unfortunately, case studies abound on the direct, indirect, and exacerbating effects of resource scarcity and the climate crisis on women and those who rely on their care giving. "The magnitude and impact of these risks is daunting, but they are not inevitable, nor insurmountable."²³

Having explored how deeply disproportionate the effects of the climate crisis and resource scarcity are for women and children, how can we protect these most vulnerable groups?

"Patriarchal norms create disadvantages for women farmers, specifically in land rights (small plots, difficulties attaining ownership, discriminatory inheritance rights), productive resources (no access to credit, extension services or inputs), unpaid work, insecure employment and exclusion from decision making and political representation. Within the household, because of weaker bargaining position they frequently eat least, last and least well."³⁵

- Helene Botreau and Marc Cohen
Oxfam Report on Gender Inequalities and Food Insecurity

“S” and “G” Won’t Matter if We Don’t Save the World

“We could see increased tensions and conflict as a result of pressure on scarce resources. But that doesn’t have to be the future. While internal climate migration is becoming a reality, it won’t be a crisis if we plan for it now” reports Groundswell – Preparing for Internal Climate Migration²⁴ team lead, Kanta Kumari Rigaud.

With severe weather conditions and other natural disasters increasing rapidly in both size and frequency, and precious resource quality and supplies rapidly declining, it is imperative that we create and rapidly deploy disruptive, innovative solutions that protect our most vulnerable populations—in particular, women and children.

To best do this, we must point every dollar at producing and scaling solutions to the climate crisis and resource degradation. Throughout every sector in the economy, products and services exist to produce and consume everything we need in a more sustainable way such that we can consume sufficient quantities utilizing fewer economic inputs.

We—quite simply—need to decide that existing without overtopping earth’s carrying capacity is important enough to us.

Included below are just a few of the myriad examples that exist of ways we could power our lives more efficiently and efficiently; thereby mitigating the worst potential outcomes of the climate crisis.

Renewable Energy

Climate change is a threat multiplier²⁵ exacerbating many pre-existing risks— including limiting supplies of usable natural resources and systemic inequalities between demographic groups. We posit that the most effective system-level solution we can institute to protect women from the effects of climate change is to end the climate crisis’s biggest cause: extracting and burning fossil fuels.

The obvious means of quickly transitioning away from a power grid-fueled by oil, gas, and coal is building the infrastructure to efficiently harness the natural power of our most abundant resources: the wind and sun.

Wind power has been the cheapest source of energy for years— costing only half²⁶ of what natural gas cost back in 2017—and is materially cheaper today²⁷ at between \$0.030 and \$0.099/kWh, unsubsidized. Solar power²⁸ has surpassed wind as the cheapest source of energy and given the technology and scale cost curves behind its production, will only continue getting cheaper.

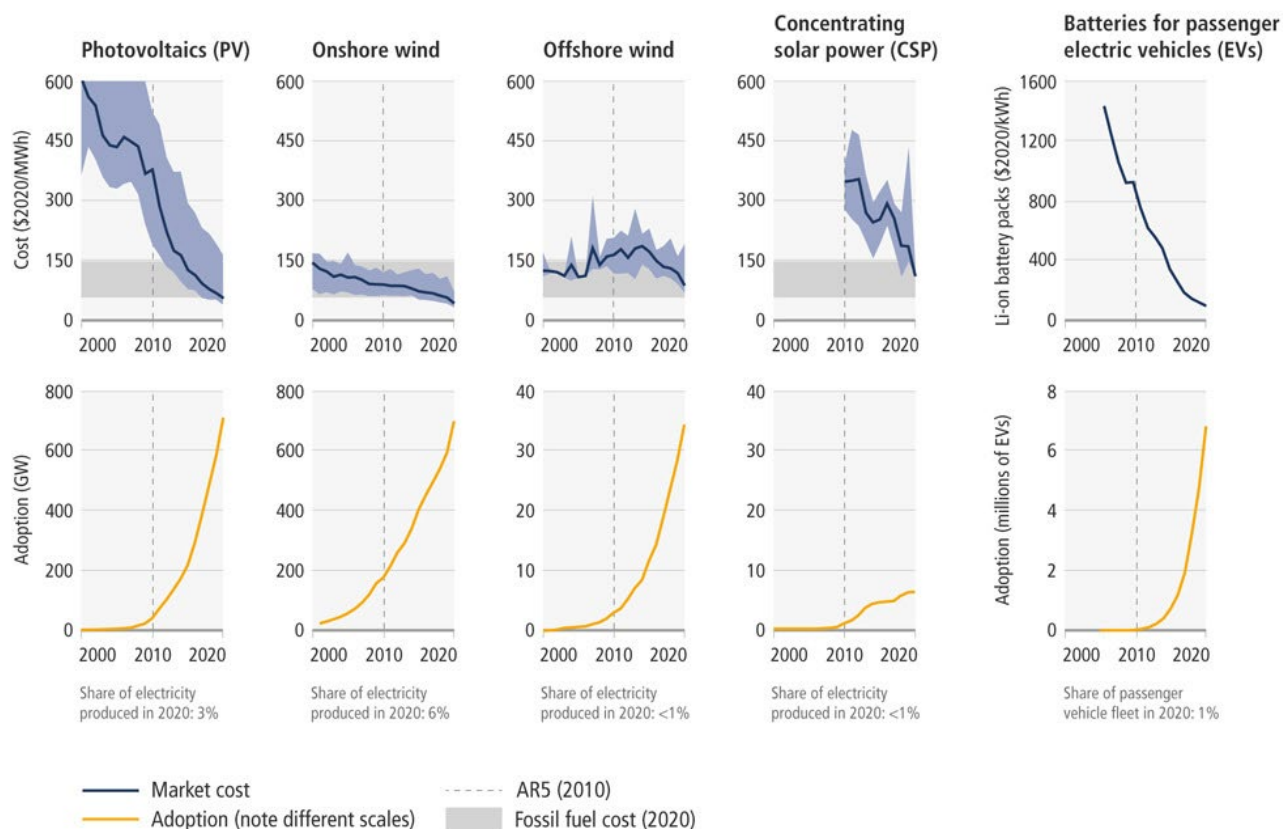
Wind and solar power create energy in a way that does not contribute to the climate crisis, and because both are the cheapest forms of electricity, they help fight widening inequality. With cheaper electricity, low-income communities are better able to keep the lights on at night. They can use electric-powered stoves that are cleaner, safer,

and cheaper to operate, rather than the gas, wood, or coal-burning options so widely in use today. Importantly, by spending less on power, they can divert that income toward food and educational needs.

Many of these remedies rely on distributed—as opposed to utility—solar generating capacity,

either on the dwelling or in the community. If we invest quickly and heavily in renewable energy sources, we protect against material worsening of the climate crisis and related extreme weather events and other natural disasters. This in turn reduces the impact of those burdens on women and unlocks new economic opportunities for everyone.

The unit costs of some forms of renewable energy and of batteries for passenger EVs have fallen, and their use continues to rise.



Source: [IPCC](#)

Water

While it is evident that extracting and burning fossil fuels effects the air we breathe and impacts the climate crisis in general, it is also an immediate and sizable pollutant to clean water supplies around the globe. Whether dealing with fracking in Colorado, drilling for oil in Alaska, pulling an oil tanker into a port in the Gulf of Mexico, or transporting gas through a pipeline stretching across a substantial portion of a country, everything related to drilling, extracting, transporting, and utilizing fossil fuels is extremely harmful to water supplies. Long term, sustainable protection of the world's water means dramatically transforming the global energy infrastructure into one powered entirely by renewables.

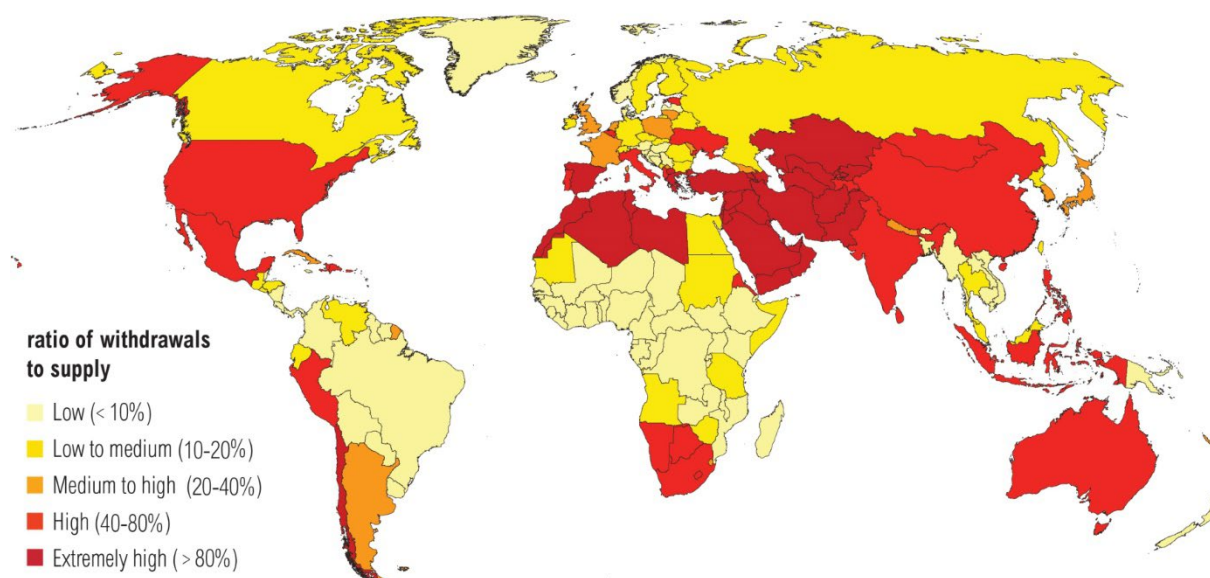
Water infrastructure around the world is outdated and disintegrating. To resolve this issue, we must invest in the technology needed to accurately measure where water exists, and where it is needed. Along the way, water must be routed through modern pipes that are contaminant free

and created by recycling previously used or extracted materials. Further, investing in the construction of desalination plants powered by solar energy will address the need for larger fresh water supplies in areas chronically plagued by drought.

The many pollutants prevalent in our water supplies is another issue. Second to fossil fuels production, farming practices that rely on harmful herbicides, pesticides, and other chemicals are the biggest threat to this valuable resource. Utilizing new practices like vertical and other forms of indoor farming, as well as old practices like organic farming will diminish this risk.

Lack of access to clean water supplies is especially harmful to the female half of the global population. Improving women's quality of life means reevaluating and investing in the means to improve water quality, in addition to how and where water is created, used, and transported.

Water Stress by Country: 2040



Source: [Reliefweb](#)

Sustainable, Inclusive Agriculture

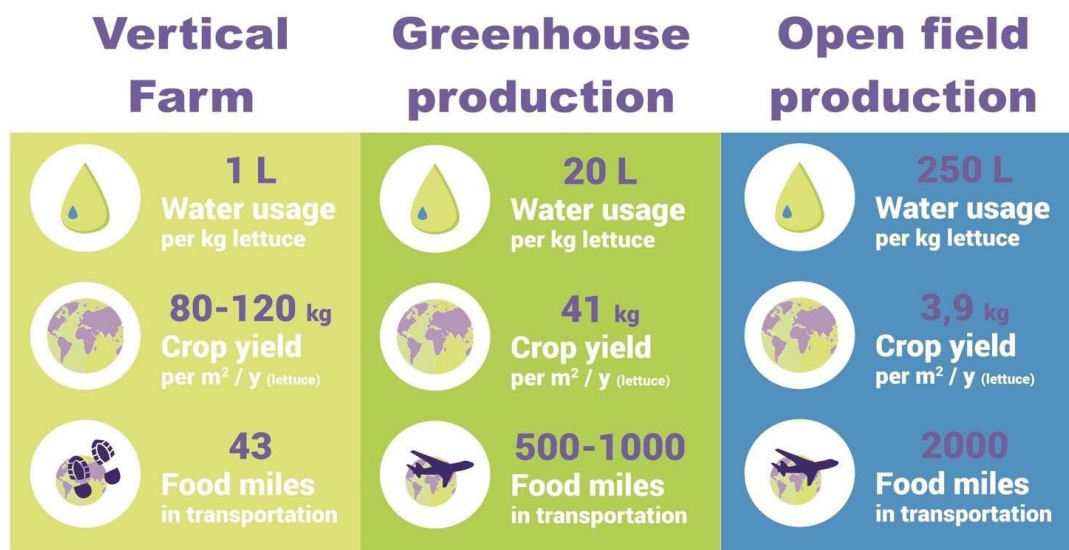
Along with water issues, we have explored the significant gender-specific effects of the reduction of soil quality, loss of topsoil, loss of biodiversity from over-utilizing harmful chemicals, and lopsided decision-making that exists throughout most global food production systems. To address these issues and substantially improve the lives of women and other vulnerable groups, we must proactively invest in their resolution.

Compelling solutions include shifting to natural and organic global food systems and investing in chain-of-custody tracking systems²⁹ to ensure transparent and ethical agricultural practices. Employing such systems would radically reduce all too frequent food safety outbreaks, illnesses, and recalls. Further, by using current Internet of Things (IoT) and artificial intelligence (AI) technologies, autonomous processes which once required 60 people³⁰ could be monitored by just one—making natural and organic foods cheaper and more accessible to everyone.

Another interesting solution is investing in indoor farming infrastructure. No chemicals are utilized

because pests and weeds are kept at bay via physical walls and other safeguards. Crops can be grown year-round and are protected from extreme weather events that would decimate outdoor crops. Indoor farmers can produce significantly more food per acre than traditional farming because produce can be grown both at an angle and vertically. Ninety five percent less water³¹ is required than outdoor farming, and there is no need for topsoil.³² What's more, indoor farms can be efficiently located near population centers and in areas that are too hot or drought-stricken for outdoor farming, reducing the need to transport food over large distances. Since transportation fees constitute a large portion of food prices, reducing that cost expands the portion of the population able to buy and eat ample supplies of nutritious foods.

Indoor farming can also easily be supported by—thereby increasing the benefits from—logical investments in other items like rooftop solar panels, high-efficiency grow lights, and drip irrigation systems.



Source: [Agritecture](#)

Female-led Adaptation Projects & Organizations

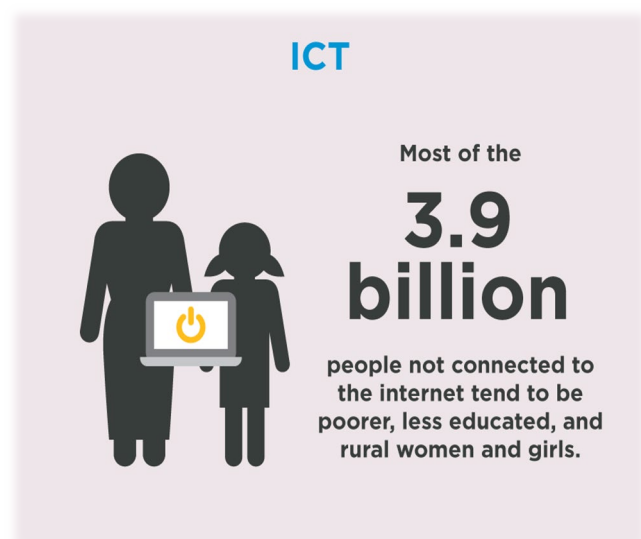
In most countries, climate measures supported by public finance do not adequately prioritize women. Secretary General Sofia Sprechmann Sineiro summarized³³ the findings of a 2020 CARE International report this way: “This report shows us that climate change exacerbates existing gender inequalities, with women displaced on the frontlines of its impacts bearing the heaviest consequences.”

To institute change, we must set and meet or exceed targets to invest in female-led organizations and climate risk mitigation and

adaptation projects. Why? “CARE’s experience tells us that when women lead in crises, entire communities benefit, and more effective and sustainable solutions are found,” said Sineiro.

*“This report shows us that **climate change exacerbates existing gender inequalities**, with women displaced on the frontlines of its impacts **bearing the heaviest consequences**.”*

Access to Information



Source: [G20 Insights](#)

Given the continual threats to daily life caused by the climate crisis, it is especially important to equip vulnerable groups with access to information. That information may come in the form of cheap smart phones and no-cost internet access allowing rural farmers to understand weather patterns or anticipate approaching storms. It may mean accessing water quality or food safety data before serving food and beverages to children or consuming them oneself—especially while displaced by an extreme weather event. Or it may simply mean access to others around the world who have knowledge regarding more resilient farming, building, or energy production practices. Whatever the scenario, giving females access to cheaper, faster, and more accurate information increases their ability to thrive.

Conclusion

When society acts on climate change, communities benefit from clean air and water, resilient cities, sustainable food and agriculture systems, and greater equality—key things that must exist for civilization to thrive.

Today, we have more and better tools at our disposal than ever before. We can halt global warming at 1.5°C. We can mitigate and create meaningful adaptations to the conditions and risks that have changed at that level. It is imperative to act now, using every available tool to protect the most vulnerable portions of our population.

Because an investors' largest asset class is typically publicly-traded equities, that pool of capital is a powerful instrument for change that can be directed at investment strategies proactively seeking the most effective, rapidly deployable, scalable solutions.

Since those most disproportionately harmed by the effects of the climate crisis and resource scarcity—women and children—are major beneficiaries, investing in innovative, disruptive solutions to the climate crisis is clearly the ultimate gender-lens strategy.



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References

- ¹ Jeffrey A. Groen et al., “Going Home after Hurricane Katrina: Determinants of Return Migration and Changes in Affected Areas,” *National Library of Medicine*, 2010, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3000040/>
- ² Sarah Gibbens, “Hurricane Katrina, Explained,” *National Geographic*, January 16, 2019, <https://www.nationalgeographic.com/environment/article/hurricane-katrina>
- ³ Fact Sheet | Climate Change & Women,” *Oxfam*, Winter 2008/09, <https://s3.amazonaws.com/oxfam-us/www/static/media/files/climatechangewomen-factsheet.pdf>
- ⁴ Otto Simonsson, “‘I Did it Only for the Money’: Climate Displacement Pushes Girls into Prostitution,” *Reuters*, October 17, 2018, <https://www.reuters.com/article/us-bangladesh-climatechange-displacement/i-did-it-only-for-the-money-climate-displacement-pushes-girls-into-prostitution-idUSKCN1MR1BP>
- ⁵ “Oil, Gas and Mining Industries: Women’s Rights at Risk,” *Oxfam*, 2015, <https://s3.amazonaws.com/oxfam-us/www/static/media/files/Women-in-EI-final-web.pdf>
- ⁶ Christelle Cazabat et al., “Hidden in Plain Sight,” *Internal Displacement Monitoring Centre*, March 2020, <https://www.internal-displacement.org/sites/default/files/publications/documents/202003-twice-invisible-internally-displaced-women.pdf>
- ⁷ “Gender, Displacement and Climate Change,” *UNCHR The UN Refugee Agency and Potsdam Institute for Climate Impact Research*, July 2020, <https://www.unhcr.org/en-us/protection/environment/5f21565b4/gender-displacement-and-climate-change.html>
- ⁸ Otto Simonsson, “‘I Did it Only for the Money’: Climate Displacement Pushes Girls into Prostitution,” *Reuters*, October 17, 2018, <https://www.reuters.com/article/us-bangladesh-climatechange-displacement/i-did-it-only-for-the-money-climate-displacement-pushes-girls-into-prostitution-idUSKCN1MR1BP>
- ⁹ “Global Report on Internal Displacement 2021,” *Internal Displacement Monitoring Centre*, 2021, https://www.internal-displacement.org/sites/default/files/publications/documents/grid2021_idmc.pdf
- ¹⁰ “Global Report on Internal Displacement 2021,” *Internal Displacement Monitoring Centre*, 2021, https://www.internal-displacement.org/sites/default/files/publications/documents/grid2021_idmc.pdf
- ¹¹ “2019: IDMC at a Glance,” *Internal Displacement Monitoring Centre*, January 2020, https://www.internal-displacement.org/sites/default/files/publications/documents/2019_IDMC_ataglance.pdf
- ¹² “Groundswell: Preparing for Internal Climate Migration,” *World Bank Group*, 2018, <https://openknowledge.worldbank.org/handle/10986/29461>
- ¹³ Oli Brown, “Migration and Climate Change,” *International Organization for Migration*, 2008, https://www.ipcc.ch/apps/njlite/srex/njlite_download.php?id=5866
- ¹⁴ Susan Cosier, “The World Needs Topsoil to Grow 95% of its Food – But its Rapidly Disappearing,” May 30, 2019, <https://www.theguardian.com/us-news/2019/may/30/topsoil-farming-agriculture-food-toxic-america#:~:text=In%20the%20US%20alone%2C%20soil,UN's%20Food%20and%20Agriculture%20Organization>
- ¹⁵ Chris Arsenault, “Only 60 Years of Farming Left If Soil Degradation Continues,” *Reuters*, <https://www.scientificamerican.com/article/only-60-years-of-farming-left-if-soil-degradation-continues/>
- ¹⁶ “Women, Gender Equality and Climate Change Fact Sheet,” *UN Women Watch*, https://www.un.org/womenwatch/feature/climate_change/factsheet.html#food
- ¹⁷ “Gender Inequalities and Food Insecurity: Ten years after the food price crisis, why are women farmers still food-insecure?,” *Oxfam*, July 15, 2019, <https://reliefweb.int/report/world/gender-inequalities-and-food-insecurity-ten-years-after-food-price-crisis-why-are-women>

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- ¹⁸ “Gender Inequalities and Food Insecurity: Ten years after the food price crisis, why are women farmers still food-insecure?,” *Oxfam*, July 15, 2019, <https://reliefweb.int/report/world/gender-inequalities-and-food-insecurity-ten-years-after-food-price-crisis-why-are-women>
- ¹⁹ “Drinking Water,” *Infrastructure Report Card*, 2017, <https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Drinking-Water-Final.pdf>
- ²⁰ Aria Bendix, “12 Cities with the Worst Tap Water in the US,” *Insider*, March 17, 2020, <https://www.businessinsider.com/cities-worst-tap-water-us-2019-3>
- ²¹ Joe McCarthy, “Understanding Why Climate Change Impacts Women More Than Men,” *Global Citizen*, <https://www.globalcitizen.org/en/content/how-climate-change-affects-women/>
- ²² “Gender Inequalities and Food Insecurity: Ten years after the food price crisis, why are women farmers still food-insecure?,” *Oxfam*, July 15, 2019, <https://reliefweb.int/report/world/gender-inequalities-and-food-insecurity-ten-years-after-food-price-crisis-why-are-women>
- ²³ United Nations Office for the Coordination of Humanitarian Affairs, et al., “Broken Bodies, Broken Dreams: Violence Against Women Exposed,” *Peace Women*, November 1, 2005, <https://www.peacewomen.org/node/89497>
- ²⁴ “Groundswell - Preparing for Internal Climate Migration,” *The World Bank*, March 19, 2018, <https://www.worldbank.org/en/news/press-release/2018/03/19/climate-change-could-force-over-140-million-to-migrate-within-countries-by-2050-world-bank-report>
- ²⁵ “Climate Change Overview,” *The World Bank*, April 2022, <https://www.worldbank.org/en/topic/climatechange/overview#1>
- ²⁶ Robert Fares, “Wind Energy is One of the Cheapest Sources of Electricity, and It’s Getting Cheaper,” *Scientific American*, August 28, 2017, <https://blogs.scientificamerican.com/plugged-in/wind-energy-is-one-of-the-cheapest-sources-of-electricity-and-its-getting-cheaper/>
- ²⁷ “Wind Power,” *International Renewable Energy Agency*, <https://www.irena.org/costs/Power-Generation-Costs/Wind-Power#:~:text=The%20global%20weighted%20average%20cost,%2FkWh%2C%20without%20financial%20support>
- ²⁸ Simon Evans, “Solar is now ‘cheapest in history,’ confirms IEA,” *CarbonBrief*, October 13, 2020, <https://www.carbonbrief.org/solar-is-now-cheapest-electricity-in-history-confirms-iea/>
- ²⁹ James Curtis, “Securing the Food Supply Chain: Achieving Traceability and Chain-of-Custody to Minimize Risk,” *Food Logistics*, December 30, 2019, <https://www.foodlogistics.com/software-technology/article/21097808/one-network-enterprises-securing-the-food-supply-chain-achieving-traceability-and-chainofcustody-to-minimize-risk>
- ³⁰ James Curtis, “Securing the Food Supply Chain: Achieving Traceability and Chain-of-Custody to Minimize Risk,” *Food Logistics*, December 30, 2019, <https://www.foodlogistics.com/software-technology/article/21097808/one-network-enterprises-securing-the-food-supply-chain-achieving-traceability-and-chainofcustody-to-minimize-risk>
- ³¹ “Vertical Farm – 95% Less Water and No Soil,” *The Water Network*, 2016, https://thewaternetwork.com/article-FfV/vertical-farm-95-less-water-and-no-soil-zsP9I_Vwv-LLvzMOK1tSeg
- ³² Rob Dongoski, “Next Up: Mark Oshima – Farming Up,” *EY Americas*, July 15, 2020, https://www.ey.com/en_us/purpose/next-up-mark-oshima-farming-up
- ³³ Megan Rowling, “Climate Woes Growing for Women, Hit Worst by Displacement and Migration,” *Reuters*, July 7, 2020, <https://www.reuters.com/article/us-global-women-climatechange-disaster/climate-woes-growing-for-women-hit-worst-by-displacement-and-migration-idUSKBN2480ON>
- ³⁴ Oli Brown, “Migration and Climate Change,” *International Organization for Migration*, 2008, https://www.ipcc.ch/apps/nj-lite/srex/nj-lite_download.php?id=5866
- ³⁵ “Gender Inequalities and Food Insecurity: Ten years after the food price crisis, why are women farmers still food-insecure?,” *Oxfam*, July 15, 2019, <https://reliefweb.int/report/world/gender-inequalities-and-food-insecurity-ten-years-after-food-price-crisis-why-are-women>