

GENDER-TRANSFORMATIVE CLIMATE CHANGE ADAPTATION: ADVANCING SOCIAL EQUITY

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Executive Summary

Power and gender inequalities can constrain and undermine climate change adaptation. Those who are vulnerable and marginalized, with limited access to resources and assets, are already facing formidable barriers in adapting to climate change. Ignoring this challenge is maladaptive, as it adds to the vulnerabilities of those already burdened disproportionately and encourages new types of exclusions. Meeting the challenge requires that we transform our societies into fairer and more just organizations. Unfettering the agency of individuals and collective groups, through policies and actions that promote gender-transformative adaptation, can help achieve this change.

In this background paper, we are seeking ways to use a gender-transformative lens to account for the social nature of major adaptation efforts in key systems and to understand the political, economic, social, and cultural practices and norms that shape, but may also distort, people's adaptation efforts. Specifically, the paper aims to:

About this paper

This paper is part of a series of background papers commissioned by the Global Commission on Adaptation to inform its 2019 flagship report. This paper reflects the views of the authors and not necessarily those of the Global Commission on Adaptation.

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- Explore how gender is an important way to understand inequalities in emerging adaptation efforts and programs in key systems; and
- Recommend actions, based on the report findings about specific systems and institutions engaged in climate change adaptation, that enable gender-transformative adaptation.

The paper is organized according to systems with planned and operational adaptation measures. The systems include the natural environment; food security, rural livelihoods and agriculture; sustainable cities; infrastructure; industry and supply chains; and finance. The paper also highlights gender-transformative adaptation initiatives. This is followed by a stocktaking of institutional enablers of change that can be utilized and tapped to strengthen efforts at gender-transformative climate change adaptation. The paper ends with a summary of main findings and their respective recommendations.

The team of authors conducted a review of the relevant peer-reviewed research and gray literature on gender and climate change adaptation emerging over the last decade and covering gender and adaptation in the Global North and South. Our review leans more toward adaptation contexts in the Global South due in large part to availability of literature. The paper has been reviewed in iterative stages by external reviewers and was discussed in a one-and-a-half-day participatory review workshop attended by selected representatives from government, international finance, research, civil society, and UN organizations.

There are three sets of findings with recommendations as follows.

Findings: Broader structural realities that obstruct transformative adaptation

- The broader political ecology and economy compromise local livelihoods through exploitation, appropriation, and extraction of resources by a few powerful players in the name of economic growth. These predatory dynamics disregard the interests of significant populations of small producers and poor households, including women from diverse groups who depend on these resources for their daily livelihoods and survival.
- Intersecting inequalities – such as low income, migrant status, sexuality, ethnic background, age, (dis)

ability, and/or gender – undermine people's benefits, assets, opportunities, and adaptive capacities.

Recommendations for analysis and planning:

- Conduct rigorous, multi-scalar, participatory and holistic gender analyses that identify ways to redress context-specific constraints as an intrinsic part of the modus operandi of custom-designing adaptation measures.
- Use gender analyses to explore ways of breaking procedural habits that marginalize persons, peoples, and communities, with the objective of transforming the broader political and economic trends to enable adaptation practices at the macro level, as well as across local realities and conditions.
- Utilize these comprehensive analyses as a basis for critical reflection and dialog with scientists, policymakers, planners, and stakeholders to identify strategies for change and to then formulate, and follow through on, appropriate measures and indicators in pursuit of transformative adaptation.
- Ensure that specialists in gender and social justice lead and conduct the analyses, so they are not passed on to non-specialists as token compliance with project, donor, or international requirements.
- Recognize that gender-transformative adaptation is an iterative process shaped by multiple feedbacks and loopholes in addressing power relations. Thus, gender-transformative adaptation is an inherently political and dynamic set of measures and strategies; it is not a technical process made up of fixed and one-size-fits-all prescriptions.

Findings: Practices that create gender inequalities in society

- Inequitable access to and control of resources and a lack of democratic rights limit the benefits and opportunities for groups of women.
- Patriarchal gender practices, by definition, control and constrict women's autonomy, voices, and bodies, perpetuating vulnerabilities that are compounded by intensifying climate change hazards.

- Unequal gender relations lead to women's time poverty and to disproportionate burdens of care that intensify during crises.

Recommendations for supporting the agency of women and other groups:

- Promote policy and legislative reforms and programs to enable equal and fair access to and control of resources for traditionally excluded women and men.
- Invest in basic social services and infrastructure – particularly health care, water, sanitation, childcare, and labor-saving technologies – that reduce women's workloads and build resilience without further curtailing their time and self-determination.
- Create opportunities for women's self-organization, critical reflection, and partnerships with civic organizations to strengthen women's claims to their own bodies, to social and natural resources, and to authorities' accountability. Create spaces where women's voices and rights are duly recognized and exercised. Promote women's equal participation and voice in existing civic organizations to share experiences and solutions across groups and sectors, including transnationally.
- Support and create gender-awareness and skills-training opportunities for men and women in different systems and institutions, with the intention to redistribute care work and to cultivate alternative views of care for people and environment.
- Identify and closely liaise with gender-equality champions in well-known organizations to support efforts encouraging less visible groups to adapt positively in transformative ways.
- Invoke and utilize various national and international gender agreements and other change enablers to legitimize attention to promote women's empowerment holistically through the citizen sphere, the policy sphere, the organizational sphere, and the delivery sphere.

Findings: Positioning gender equality in climate change programs

- The (re) masculinization and elite capture of new opportunities – under the aegis of the green economy through climate change programs such as carbon markets and industrial agriculture – will sanction old and new gender, class, and ethnic exclusions; therefore, it is maladaptive.
- Climate-proofing supply chains often avoids or ignores highly unequal power relations within supply chains and their implications for exploitative labor practices and social injustice.
- Some gender-transformative adaptation initiatives and programs already exist in all systems that do not burden women further and do ensure equitable benefits to all.

Recommendations for gender mainstreaming in existing sectoral programs:

- Improve the gender balance of planning and decision-making bodies at different administrative scales – even in traditionally technical systems like infrastructure, natural environment, finance and agriculture – not only by incorporating women but by recognizing which women and which men participate, and who it is that they do or do not represent.
- Place labor issues at the forefront of climate risk analyses of industry supply chains to ensure social protection for employees facing climate change threats.
- Ensure that high-quality and rigorous gender analyses inform the design of sustainability and finance projects that require monitoring for results and lessons to avoid new exclusions or harm.
- Systematically track, monitor and evaluate adaptation financing across systems. This is necessary to ensure relevant gender requirements are met and to identify gaps and opportunities that accelerate transformative change.
- Learn from existing gender-transformative adaptation programs by applying and contextualizing lessons and good principles in other places. Good principles include avoiding assignment of further burdens on women, exercising democratic rights to express needs and interests, demanding accountability when necessary, and ensuring benefits are equitable.

1. Introduction: Concepts, objectives and rationale

The effects of climate change will be felt by all, but they will not affect all people equally. Those who are vulnerable and marginalized, with limited access to resources and assets, are already facing formidable barriers in adapting to climate change. Given the carbon dioxide that humans have already released into the atmosphere, we will be adapting to the effects of changing climate for the next 1000 years.¹ To avoid the worst outcomes, successful climate change adaptation requires that we transform our societies into fairer and more just organizations.

In this background paper on gender and climate change adaptation, we align our discussions with the need for transformative adaptation that aims to address the roots of vulnerability and exclusion through action “...that changes the fundamental attributes of a system in response to climate and its effects.”^{2,3} Adopting this vision can no longer follow business as usual if we rise to the challenge of gender equality and societal transformation to improve the living conditions and chances of survival for those most adversely affected. Current critical thinking on transformative adaptation advocates that adaptation activity should change aspects beyond those elements directly related to climate change.⁴ Important aspects requiring transformation are social inequities and gender inequality. These are conditions that compound the vulnerabilities of society as a whole. We therefore situate the aspirations for practicing gender-transformative climate change adaptation within these critical lines of thinking.^{5,6,7}

As a starting point for characterizing gender-transformative climate change adaptation, we will show how the unequally distributed damages from climate change and from some of its mitigating measures are intrinsically gendered. As well, we will explain how intersecting conditions and identities multiply vulnerability, especially in the developing regions of the world.

The paper is organized according to systems with planned and operational adaptation measures. The systems include the natural environment; food security, rural livelihoods and agriculture; sustainable cities; infrastructure; industry and supply chains; and finance. The paper also highlights gender-transformative adaptation initiatives. This is followed by a stocktaking of institutional enablers of change that can

be utilized and tapped to strengthen efforts at gender-transformative climate change adaptation. The paper ends with a summary of main findings and their respective recommendations. Table 1 offers some examples of how climate change is already heightening contradictions of gender inequality and social inequity.

The consequences listed in Table 1 demonstrate that climate change is now amplifying gendered inequalities. Addressing these inequalities requires gender considerations that are foundational to any successful adaptation program, effort, or policy. Table 1 also shows that persons who face several inequalities in their everyday lives due to discrimination are those least likely to successfully adapt to climate changes. Gender is not a binary concept nor a dichotomy of differences and inequalities between women and men. Rather, gender intersects with multiple forms of discrimination – based on ethnicity, class, race, sexuality, age, caste – and these contribute to unique experiences of marginalization, especially in contexts of changing climate.^{8,9,10} Adaptation measures that neglect recognizing these multiple and intersecting forms of discrimination are thus likely to exacerbate social injustice and inequalities that can lead to further maladaptation.^{11,12,13}

Table 1 describes results of social, political, economic and cultural drivers of vulnerability that are compounded by climate change. For example, women’s limited access to and control over agricultural resources such as land and capital is not directly an effect of climate change stressors but of social, political and economic discriminatory gendered practices and norms. These gendered roles, responsibilities, practices and norms are taken for granted as normal. As normal, they are silently accepted and remain unaddressed even in adaptation programs. For adaptation to be transformative, these social drivers of vulnerability have to be drastically altered. Gendered vulnerability to disasters and climate risk is not an essential or intrinsic property of women, instead vulnerability indicates historically and culturally specific patterns of practices, processes and power relations that render some groups or persons disadvantaged.^{14,15}

Cases described in Table 1 compel us to aspire for gender equality and for women’s empowerment in climate change adaptation through fairness and justice in resource distribution, in decision-making, and in planning for adaptation measures.¹⁶ Gender inequality is inscribed upon women’s bodies and can be magnified by climate change crises, as described in Box 1.^{17,18,19}

Women’s empowerment involves being aware of gender inequalities, expanding opportunities and choices, increasing access to and control over resources, and transforming the structures and institutions that reinforce and perpetuate gender discrimination and inequality.²⁰ This can be done by first understanding the economic, political, ecological and cultural causes of vulnerabilities of different groups of women, men, and children and then addressing the causes.

Experts call for transformative adaptation. For women – at least half the human population – and other marginalized groups, there is no real change unless the power dynamics defined by patriarchy, privilege and prejudice are transformed.

TABLE 1 Some examples of how climate change leads to gender inequalities

System	Example
Natural environment	As climate extremes degrade ecosystems, burdens of care on women and girls increase, resulting in time and vitality deficiencies that lead to loss of education and income generation opportunities and that increase their exposure to violence, including sexual assaults. ²¹
	In general, male members of households experience a decrease in availability of natural resources, such as timber, fish and bushmeat, that constrains their income-earning abilities. This often leads to forced labor migration and an increase in female-headed households. ²²
	Climate change-related effects on wetlands’ hydrological regimes multiply the burden of women’s water collection and management responsibilities in developing regions. ²³
	Marginalized communities, especially women bound to their homes where they care for less mobile family members, are more likely to suffer and die from the effects of climate-related disasters, including storms and floods. ²⁴
	Climate change produces conditions, including flooding and high temperatures, that promote the spread of diseases such as malaria. ²⁵
	Pregnant women are four times more likely to suffer from attacks of symptomatic malaria than other adults. Growing evidence indicates that gender-specific effects of malaria are felt most acutely by poor, marginalized, and rural young women. ²⁶
	Marginalized communities of LGBTQI people often do not receive proper warning before, during, or after disasters. In the aftermath of Hurricane Katrina, these groups were subjected to heightened hostilities: Like many minorities throughout history, overwrought religious groups blamed them for inviting heaven’s wrath with their alternative ways. ²⁷
Food security, rural livelihoods and agriculture	Women’s access to productive agricultural resources and services is not equal to men’s access. This reduces women’s adaptive capacities, especially during climate-related extreme events. This makes women disproportionately affected by climate change, a maladaptive outcome, and any related adaptation efforts are less likely to succeed. ²⁸
	As a coping strategy in the face of scarcity, women are more likely than men to reduce their food and water intake. ²⁹
	The fuel, food price, and financial crises of 2007-2008 brought many land-use rivalries into high relief: food crops against biofuels, agricultural production against infrastructure development, producing crops against conserving nature, and large-scale agribusiness against small-scale family farming. ^{30, 31, 32, 33, 34, 35}
	Heightened competition accelerated land-grab and resource conflicts compounded by intensifying climate change. Such conflicts affect poor women disproportionately by constraining their access to land and natural resources, reducing their livelihood security, and exposing them to gender-based violence. ^{36, 37, 38, 39}
	These debilitating conditions weaken adaptive capacity – of women, of the families who depend upon them, and of the agricultural communities they support – in the face of climate change.

Sustainable cities	Women, the poor, and the elderly are significantly vulnerable during heat waves due to their lack of access to cooling; in the case of pregnant women, and other vulnerable populations, this is exacerbated by their bodies' compromised ability to thermoregulate. ^{40, 41, 42, 43}
	Occupational risks are also a significant factor in understanding the socially differentiated effects of heat, as studies have shown that men who are employed in outside activities are particularly at risk as their rate of exposure is greater. ⁴⁴
	Women and men food vendors who were relocated to peripheral areas of Hanoi, Vietnam, utilize rural-urban migration networks to explore new agricultural opportunities as a way to cope with uncertainty and change. Their capacity to adapt is a function of social relations and networks rather than economic condition. ⁴⁵
	Poor design and materials of housing on city peripheries increases exposure of occupants to climate shocks like high temperatures during the day, when women and the elderly are working at home. ⁴⁶
	Extreme events intensify women's domestic responsibilities, particularly when they must take care of injured or sick family members. This limits their mobility to acquire emergency resources, such as food, fuel, and other donations or public services. ^{47, 48}
	The right of women to own property, often denied, is an important requirement for post-hazard reconstruction of human settlements. Ownership or occupancy rights preclude eviction and enhance security. In the post-hazard reconstruction phase, rebuilding as storm-resistant and gender-sensitive structures will reduce the damage of climate-related hazards in the future. ⁴⁹
Infrastructure	Low socio-economic status, hazardous housing, and environmental conditions make women more vulnerable to the effects of flooding. ⁵⁰
	During crises, sanitation systems break down. Research in Bangladesh has shown that, in both rural and urban areas, woman faced sanitation and bathing difficulties and developed urinary tract infections, while men reported no difficulties. ⁵¹
	The lack of utility service provision for informal settlements and slums is highly gendered and disproportionately affects poor women whose legal status, race, and other intersecting social circumstances can exacerbate inequities and make women more vulnerable to climate shocks. ^{52, 53}
	Low socio-economic status, hazardous housing, and environmental conditions make women more vulnerable to the effects of flooding. ⁵⁴
Industry and supply chains	At manufacturing sites, extreme heat events and high temperatures can cause excessive dehydration, headaches, kidney disease, and heat stroke in exposed workers, who are over-represented by young women, especially within free or special economic zones. ^{55, 56}
	In West Bengal, India, brick manufacturing employs a large number of young female brick carriers and brick molders, who are exposed to very high seasonal heat as well as heat from the brick kiln. ⁵⁷
	A lack of toilets in factories motivates women to drink less and avoid urination. This aggravates dehydration caused by heat exposure and increases the potential risk of kidney disease and malnutrition. ⁵⁸
	Risks faced by women workers are compounded by care responsibilities and precarious labor contracts. These risks are often exacerbated when extreme events occur. ⁵⁹
	Women managers assist in flood recovery and provide emotional and physical support to employees, as well as to the enterprise, more than their male counterparts. ⁶⁰
	The psychological trauma was higher among these women assisting employees, as they needed to balance their domestic-care responsibilities, normal and flood-related, with their professional roles. ⁶¹
Finance	When facing disasters, woman managers depend more on personal savings or loans from family and friends, rather than risk-transfer tools, such as insurance and loans from banks and other financial institutions. ⁶²
	In areas where climate stresses affect resources, poor women sell their small assets and take loans from money lenders and their social networks. ⁶³

Gender-transformative adaptation is fundamental to addressing how vulnerability and exclusion are produced.^{64, 65, 66} It involves adjustments that individuals and collective groups create to reduce their respective vulnerabilities in a given context in response to climate change along with other socio-economic and political stressors.^{67, 68} Agency is integral to adaptation as it is the power of people or collective groups to change or entrench prevailing vulnerable conditions.^{69, 70} Women must have agency to adapt to climate change, but adaptation is often not an easy or straightforward process for them.

What are the targets of gender-transformative adaptation? In general, it aims to transform the power dynamics and structures that serve to reinforce social and gendered inequalities.⁷¹ Specifically, it intends to change discriminatory political, social and economic practices and the patriarchal norms that obstruct positive adaptation in climate change contexts.⁷² Gender-transformative adaptation is committed to undertake rigorous gender and power analyses, to actuate true institutional change, and to

enable empowering consequences through meaningful and equal participation of women and men in leadership, policy and decision-making processes. It offers a more holistic multi-dimensional approach and moves beyond programs that fundamentally hide and ignore deep-seated power relations and structures.

Some examples of such programs are those seeking individual women's self-improvement, changing men's behavior and attitudes, and adopting 'women only' approaches. While well-meaning, they fail to address the drivers of gender inequality that maintain women's disproportionate care-work burdens, as they undervalue their work and their bodies.

Apart from the gender-transformative approach, existing programmatic procedures that advance gender equality in policies and programs include the gender-sensitive approach that attempts to redress gender inequalities and the gender-responsive approach that determines how much a program has deviated from or come near the goal of gender equality.⁷³

BOX 1

Climate repercussions for the lives and bodies of women

Climate change is identified with extreme events. The repercussions reverberate through society in different ways for the rich and the poor, the strong and the weak. Droughts, floods, erosion and salinization of soil and water resources cause many families to live in constant awareness that things fall apart.^{74, 75} The insecurity of their settlements, food supplies, and incomes pervades decisions about sustaining their homes and loved ones in the shadow of looming personal and family disaster. Too often these pressures add to the burdens of girls and women through traumatic and often tragic outcomes.

In many countries, girls' schooling and climbing literacy rates are a development success story, but with climate-related stresses and strains that success may be brief. In some climate-vulnerable countries, girls may be taken out of school to reduce the drain on household resources, while boys continue their education throughout the crisis period.^{76, 77} All too often, the girls are sent to an early marriage.⁷⁸

As a coping strategy for tackling loss and damage from climate pressures, the logic of early marriage follows a range of paths. Parents may consider early marriage to secure a place for their daughter in their in-law's less insecure home. As groundwater degrades from saltwater intrusion along coastlines and estuaries, saline water is used more often in daily chores. This can blemish the skin, threatening a girl's marriageability and motivating parents to marry daughters off early for fear they become less attractive.⁷⁹ Stressful home lives associated with chronic insecurity can lead to early puberty among girls.^{80, 81, 82, 83} Early marriage itself can also lead to menarche among young girls.⁸⁴

But marriage does not necessarily offer protection from harm. As ecosystems degrade from climate extremes, household burdens on women and girls can increase, forcing them to search for resources in insecure areas, increasing their exposure to violence and sexual assault. Such threats are even higher if families are displaced and relegated to camps while they wait for new opportunities.⁸⁵ Just staying home is not the answer either, as families suffering resource scarcity are more prone to domestic violence generally and to gender-based violence specifically.⁸⁶



Photo: SEI Asia

Overall, this background paper aims to use a gender-transformative lens to account for the social nature of major adaptation efforts in key systems and likewise to understand the political, economic, social, and cultural practices and norms that shape, but also distort, people's adaptation efforts.

Specifically, we aim to:

- Explore how gender is an important way to understand inequalities in emerging adaptation efforts and programs in key systems; and
- Recommend actions, based on the report findings about specific systems and institutions engaged in climate change adaptation, that enable gender-transformative adaptation.

We have conducted a review of the research and gray literature produced in the last decade on gender and climate change adaptation in the context of environmental, agricultural, urban, environmental, infrastructural, finance, and industrial development. The scope of this paper spans both the Global South and North to demonstrate not only the universality of gender issues in climate change adaptation, but also the wide diversity in vulnerabilities and adaptations in an array of ecological, social, economic, and geographical contexts.

2. Natural environment

Climate change multiplies existing pressures on the environment, such as overexploitation and pollution, and acts as a driver of biodiversity loss.^{87, 88, 89, 90, 91} According to the 2019 Global Assessment by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, climate change acts as a driver of biodiversity loss that will soon become a dominant factor.⁹² Worldwide degradation of ecosystems – compounded by droughts, flooding and recession of glaciers – poses direct challenges to economic development, but especially to rural poor communities whose livelihoods are based on ecosystem services.^{93, 94, 95, 96, 97, 98} These ecological disruptions threaten livelihood securities, and exacerbate poverty, gender inequality, involuntary migration, and displacement, as well as pose the risk of violent conflicts.^{99, 100, 101} Degradation of the environment is further limiting the capacity to adapt to climate change¹⁰² and worsens inequality.¹⁰³ This chapter shows how women’s rights of access to and control over natural resources enable nature-based solutions for adaptation to climate change.

2.1 Nature-based adaptation strategies and gendered rights to resources

In the face of climate change challenges, nature-based solutions are adaptation approaches that protect, sustainably manage, and restore natural or modified ecosystems.¹⁰⁴ Landscape restoration is one important strategy for climate adaptation and mitigation that can increase income-generating opportunities, secure tenure, improve ecosystem services, and enhance knowledge and skills.^{105, 106} However, such benefits do not simply reach all evenly. Gender inequality can be an under-recognized but important factor that impairs restoration and the fair distribution of benefits. Restoration can undermine women if their priorities, rights to resources, and contributions of labor and knowledge are overlooked. Women, and other marginalized people with informal or insecure land rights, can lose access to land claimed for restoration.¹⁰⁷

Access to and control over resources is gender-differentiated, with women often at a disadvantage made worse by considerations of age, marital status, and ethnic background. While 164 countries explicitly recognize women’s



Photo: annie spratt / Unsplash

right to own, work, and use land as collateral, only 52 countries guarantee these rights in law and in practice.¹⁰⁸ In more than 100 countries, traditional, religious and customary laws and practices limit women's freedom to claim and protect land assets.¹⁰⁹ These customs limit women's capacity to participate in biodiversity conservation and climate adaptation measures. Access to water – so necessary for human health and welfare – and other natural resources is closely linked with access to land.¹¹⁰ However, a few bright spots demonstrate that women's land rights can contribute to nature-based solutions.

India's 2006 Forest Rights Act allows forest access to those who can prove their ancestral link to the land.¹¹¹ In 2019, nearly two million forest dwellers faced mass evictions from an order by the Supreme Court, in response to a petition submitted by wildlife and conservation groups claiming that local people are encroaching into protected land.¹¹² Indigenous groups, supported by national and international NGOs, have rebuked these claims, arguing that they are the best group to protect nature and the climate.¹¹³ Women are particularly threatened because of their precarious access to either legal records or land rights.

A team of researchers evaluating a pilot land-regulating program in Rwanda found that the program improved land access for legally married women particularly and promoted recording of inheritance rights without gender bias. The program significantly improved investment in and maintenance of soil conservation. These findings applied mainly to female-headed households that had suffered previously from high levels of tenure insecurity.¹¹⁴

If the needs and perspectives of women are taken into account, benefits from restored landscapes will be more gender-responsive and effective. This was demonstrated by the Restoration Opportunities Assessment Methodology in the Yucatan Peninsula, Mexico. Separate groups of men and of women identified those tree species that were significant for them. Although both groups named around 40 species, few species were on both lists. If women had not been included, the assessment would have missed nearly half the important tree species.¹¹⁵ Similarly, Nepal's women-led Dumrithumka Adarsh Mahila Community Forest User Group played a key role in forest restoration and enhancing livelihoods in their landslide-prone area in Udayapur district. This gender-re-

sponsive initiative – supported by the International Centre for Integrated Mountain Development (ICIMOD) and Bird Conservation Nepal – is a model for restoration in surrounding areas.¹¹⁶

In the context of ecosystem-based climate adaptation and mitigation, nature conservation plays an important role. This can coincide with social objectives, as has been shown by the Coalition des Femmes Leaders pour l'Environnement et le Développement Durable (CFLEDD) in the Democratic Republic of Congo, winner of the Gender Just Climate Solutions 2018 Transformational Change Prize.¹¹⁷ CFLEDD strives for the recognition of indigenous women's land and forest rights in the provinces of Equateur and Maindombe. Its successful advocacy enabled dialog between indigenous women and the traditional chiefs and provincial authorities. This resulted in the adoption of provincial edicts that guarantee women's land and forest rights: essential conditions for women's active participation and decision-making in forest governance, climate adaptation and conservation, as well as for the transformation of patriarchal norms and practices.¹¹⁸

2.2 Constraining and enabling factors

Practices in local communities clearly show the importance of traditional knowledge and of leadership in women-led adaptation efforts. Cases from the Hindu Kush Himalayan region demonstrate the importance of including women in forest, water, and fishery management groups for governance and conservation.^{119, 120} In parts of India's Uttarakhand State, women became active forests stewards. They divide the forests into sections, with some open to the community for limited periods and others closed. Women set and implement rules on harvesting wood and non-timber forest products, ensuring forest reserves are used sustainably and equitably.¹²¹

Wetland management is another form of ecosystem-based adaptation. The Ramsar Convention Strategic Plan for wetland conservation and management recognizes their relevance to meet all Sustainable Development Goals (SDGs), including SDG 5 on gender equality and women's empowerment.¹²² When wetland ecosystems are seriously threatened, conflicts may arise in households and in communities. In northern Uganda's Otuke District, CARE International works with communities to restore wetlands through the Women's Empowerment in Natural Resource Governance (WENG) program. Participation of local wom-

en, worst affected by the social breakdown as wetland degrade, is crucial for the effort. The WENG program builds capacity in local communities and works with the local governments on wetland policies. Women lead as negotiators and mediators, mobilize other women, and make decisions about their immediate environment and its resources. Notable outcomes include pre-emptive water harvesting during the rainy season, setting up early-warning systems around water depletion, and increasing commitments by local governments.¹²³ Similarly, in Guyana, the government recognized the potential threat from climate change on its low-lying coastal wetland zone and initiated a project to restore its mangrove forest in combination with socio-economic development. The project not only offers physical protection and restoration of coastal mangroves, but it particularly benefits single female-headed households, poor coastal households, farmers and fishermen. Women are at the forefront, forming 80 percent of community participation. They were trained, earned an income from nursing mangrove seedlings, and formed the Mangrove Reserve Producers Cooperative Society.¹²⁴

While women in Ghana's Upper West Region contribute about 80 percent of household food needs, their land access and land tenure security are constrained by patriarchal norms and institutions. To help strengthen adaptive capacities of these women, the Adaptation at Scale in Semi-Arid Regions project provided training on eco-inclusive livelihoods, access to and use of climate information, and financial management. Now, women-based platforms advocate for local women's rights, for access to land, credits and financial institutions, and for training.^{125, 126} The Participatory Disaster Preparation and Mitigation Project in Viet Nam – supported by Oxfam through its interactive Living with Floods Information, Education and Communication Clubs – resulted in shared responsibilities between women and men, changed lives, and modified stereotypes. As a farming couple involved in the project declared, "Laundry is not only women's work."^{127, 128}

2.3 Conclusion

We need radical improvements in natural resource management in our climate-stressed world. Nature-based solutions for climate resilience will not be fully possible without recognizing gender equality in the rights to resource management. This means that measures must be developed and implemented with full involvement of, and benefit sharing by, women and men of diverse ages, ethnicities, and income classes. The evidence shows that women's resource rights enable nature-based solutions for adaptation, as well as fulfill human rights requirements and address SDGs 5, 10 and 15.¹²⁹ The important enabling factors for gender-transformative nature-based solutions for adaptation are recognizing the value of women's work on providing, managing and safeguarding resources and of equal rights to access and control over natural resources. This would entail their full participation and leadership in the governance of natural resources at different institutional levels and at the household, community, sub-national and national scales. Action to advance gender equality should be developed for existing contexts based on rigorous gender analysis using gender-specific data and indicators.¹³⁰



3. Food security, rural livelihoods and agriculture

Several reports highlight the severe impacts that climate change will have on agriculture and food systems worldwide, aggravating the existing challenge of producing more food to meet growing consumer demand on a shrinking and depleted natural resource base.^{131, 132} Among those most affected will be poorer households in developing countries that rely entirely or partially on agriculture and access to natural resources for food and livelihoods – currently that is about 750 million people or two-thirds of the world's extremely poor.¹³³ In developing countries, women comprise about 50 percent of the agricultural labor force.¹³⁴ Rural women play key roles in food security, rural livelihoods and agriculture, as well as in agro-biodiversity conservation and natural resource management. However, they face serious obstacles to accessing, controlling and using resources such as land, water, forests, finance, technologies and information and, ultimately, to making their voices heard.¹³⁵ At the same time, their strategic interests are unaccounted for in key decisions on small- or large-scale commercial food production that may also encroach on their existing, but increasingly dwindling, assets. To worsen their situation, they are most adversely affected by climate-related flooding, drought and biodiversity loss that significantly places their food and livelihood security at risk.^{136, 137, 138} Addressing this complex challenge calls for a comprehensive, multi-scalar approach, based on strong gender analyses of people, resources, and policies in agricultural contexts.

This chapter will highlight the evidence on rural women's lack of resources for both food and livelihood security that places imminent risks on their climate adaptive capacities. Conversely, the chapter will also describe promising adaptation practices that strengthen food and livelihood security as well as climate resilience.

3.1 Resources for food and livelihood security

Introducing adaptation initiatives without an understanding of context-specific power, gender and social dynamics can lead to maladaptation.¹³⁹ For example, Rao and others highlight a Botswana project where farming packages, which included drought-resistant crop varieties and ground-water irrigation, did not reach the intended beneficiaries,

particularly women. Designed as a solution to crop failures for smallholder farmers, in practice these packages could only be bought by the more affluent farmers engaged in commercial farming. In addition, class differences between farmers inhibited reciprocity practices that are traditionally used to benefit households, and particularly women, in times of crises.¹⁴⁰

Irrigation is important for buffering threats from climate variability, but women usually lack the capital to afford it.¹⁴¹ However, existing evidence indicates that when women do have access to irrigation, they tend to plant a wider variety of crops than men, drawing from their experience and knowledge of the labor requirements of each crop and their respective market prices. This strengthens their households' economic resilience and food security, enabling them to adapt to critical climate-related shortfall periods. A case from Mexico shows that during an intense drought, women who were allowed to decide what to cultivate chose to plant more beans than corn because they knew that beans were more expensive and could generate better incomes. This is a case where women's traditional role as market consumers informed their crop decisions.¹⁴² However, preferences and patterns of gendered control and negotiation over different crops needs to be carefully considered.^{143, 144}

A study conducted in Uganda and Malawi found that women are generally controlling those commodities that generate lower income compared to high-value commodities sold on the market that are controlled by men.¹⁴⁵ In many countries, rural development, agrarian change, migration and climate change can induce a (re)masculinization of rural spaces.¹⁴⁶ In Morocco, for instance, disruptions of family farming, coupled with increased land values, are redefining farming as an entrepreneurial and masculine activity through a process of "professionalization and masculinization of farming activities."¹⁴⁷ This leaves women with less access to resources, marginalized in low value crops, and with increased workloads and responsibilities. Similarly, in rich countries in the Global North, climate change responses are being cast as men's domains through the creation of masculine spaces and jobs in industrial agriculture, carbon markets, and the green economy.^{148, 149}

Information communication technologies (ICTs) can help promote the wider dissemination of climate services;

however, existing inequalities could deepen if the services are not accessible to all or fail to address diverse needs. In Rwanda, a Climate Change, Agriculture, and Food Security project uses interactive radio programs to promote sharing agro-climatic information. Baseline data on men and women's asset control and access to communication channels were used to inform the design of the ICT tools. In some cases, farmer to farmer dissemination and community-based groups are especially effective in overcoming those barriers that prevent women from joining formal groups. Such barriers include absence of land ownership or social norms that restrict their mobility or interaction with male strangers.¹⁵⁰ Preferences and differences that shape the ways people socialize, acquire, and share information are also gendered. A study in China's Anhui Province found that the sex of the household head influences access to information and attitudes toward adaptation. Female farmers prefer social networks to share information they value, including on climate change, impacts on food security, and strategies to mitigate them. Through social sharing, women also become more open to change and adaptation.¹⁵¹

Women's time poverty and work drudgery also inhibit women's adaptive capacities. For instance, agroforestry adoption among smallholder farmers in Kenya is constrained by women's work burden, as well as by farmers' urge to prioritize food security and health concerns over agroforestry.¹⁵² A study of smallholder responses to climate stress in Kenya and Tanzania found that a combination of the burden of care work, together with local taboos, hindered married women's participation in income-generating activities.¹⁵³ The introduction of labor-saving and women-friendly technologies – including for drinking water, irrigation, cooking, and agro-processing – have proven effective in freeing up women's time and improving the quality of their lives.¹⁵⁴ In Saint-Louis, Senegal, the non-profit organization Le Partenariat introduced a sustainable, economic, and ecological bio-diesel energy solution to a group of 700 women fish-processors. By recovering waste from their processing activities through composting units and mechanization, this technology brings ecological, health and economic benefits to the women. The time spent on wood collection is reduced together with the negative health impacts of wood burning. The cost of energy has decreased, and revenues have increased. In addition, the women are able to generate extra income with the production of digestate, which they sell as fertilizer.¹⁵⁵

3.2 Gender dimensions of adaptation strategies

In recent years, climate-smart agriculture (CSA) has become popular as a broad approach that supports building climate resilience while contributing to food and nutrition security, development, and mitigation.¹⁵⁶ Launched by the Food and Agriculture Organization (FAO) in 2010, CSA has been embraced by many actors and organizations, including from civil society, although with differing understandings and approaches.¹⁵⁷ CSA has addressed gender issues, but this remains rather tenuous. For instance, when CSA practices are carried out and funded at large scale by states and corporate firms, their strong productivity-driven goals may sidestep and diminish resource rights and benefits of rural women.¹⁵⁸ A review by FAO-CARE confronts this and highlights benefits to food and nutrition security and to broader development outcomes when CSA simultaneously addresses gender inequalities.¹⁵⁹

Successful adaptation strategies also build from the bottom up. In Nepal, a project by the National Indigenous Women Forum supported marginalized women and communities affected by the 2016 earthquake to rebuild their livelihoods through climate-resilient farming practices. Women's groups in Thami and Bankaria indigenous communities trained in soil testing, selecting and preserving seeds, maintaining plant nurseries, preparing organic fertilizer, using integrated pest management, and selling vegetables in markets. Women farmers groups were also established to facilitate and keep group savings. Finally, becoming increasingly aware of their human and collective rights, women were empowered to advocate for their representation rights as women, wives, daughters, sisters, and mothers.¹⁶⁰

In many parts of the world, off-farm seasonal migration, particularly of men, has become a common adaptation strategy. Women who are left behind enact a number of strategies to manage farming, including altering cropping patterns to mitigate risks of crop failure and growing more vegetables, fruit and cash crops for the market, that can have unanticipated empowering effects.¹⁶¹ In Mexico¹⁶²,¹⁶³ and Bolivia,¹⁶⁴ women have gained enhanced roles in agrobiodiversity, household resilience, and food and nutrition through home gardening. With men moving away, women become agricultural decision-makers and preservers of knowledge about plant and seed varieties.¹⁶⁵ Similar findings are reported in Nepal and Bangladesh.^{166, 167} Another study

in Mexico highlights an additional benefit of male outmigration. After men moved away, many women transferred land ownership to themselves to avoid land expropriation. This reduced their vulnerability to climate change by increasing their tenure security, even though it sometimes created intrahousehold conflicts when men returned.¹⁶⁸ This emphasizes the importance of engaging men as part of long-term solutions and promoting change.

Women and men have been adapting to change for centuries by using indigenous and local strategies that allow them to better respond to climate change. A 2018 case study by ICIMOD highlights indigenous women's roles in the conservation of genetic resources and agrobiodiversity in Sikkim, India. Women have home gardens where they grow a variety of species, including plants that enhance soil nutrients, adapt to local climatic conditions, and are resistant to pest and diseases. As seed managers, they also preserve highly adaptive local seeds based on the traditional knowledge of seed selection, processing, and preservation that is passed down from mother to daughter, generation after generation. Vegetables and spices grown in the home gardens allow women to generate income to cover the family's food needs and children's education, while giving them access to markets and social networks. This, in turn, increases women's position and decision-making power within the household.¹⁶⁹

Strengthening traditional knowledge is at the center of a project on agriculture and sustainable water management implemented by ASOBONGO in Cordoba, Colombia, where rural areas experience tropical storms and drought that affect access to clean water and food security. The project rehabilitates ancestral knowledge, using locally adapted seeds and small livestock species, to support climate-resilient traditional agriculture and to promote sustainable water gathering, storage, and management. Among the 200 beneficiary families, 38 have participated in ecological training to restore 20 ancient crops, create organic fertilizer out of compost, increase crop yields, and reinsert two livestock species in their farming ecosystems. The strong gender approach empowered young women to take on leading roles in the water committees, as their time is freed up from the heavy burden of water gathering.¹⁷⁰

Finally, the policy environment is key to ensuring that adaptation strategies in the agricultural and food security systems contribute to the reduction of rural women and men's vulnerabilities. This can include ensuring that

National Adaptation Plans (NAPs) are gender-responsive in all aspects and sectors, including in agriculture. The FAO and UNDP Integrating Agriculture into National Adaptation Plans (NAP-Ag) program has made the integration of gender concerns into adaptation planning and budgeting for the agricultural sectors one of its main pillars.¹⁷¹ The program supports development of capacities, knowledge exchange, stocktaking and prioritization of adaptation activities related to the agriculture sectors, as well as access to international climate finance. To support gender mainstreaming, the program has developed a series of gender-training workshops, tools and knowledge materials.

3.3 Conclusion

This chapter has attempted to identify some of the key elements enabling adaptation in agricultural contexts that responds to the needs and supports the agency of women and men from diverse social backgrounds. Equal access and control rights to resources such as irrigation, ICTs, and enabling policy environments can strengthen livelihood and food security that will in turn increase climate resilience and adaptive capacities. It is also important to recognize the importance of women having sufficient time to use available resources and adapt effectively to climate change, not adding adaptation to their already long list of caring roles. Scaled-up and large-scale adaptation strategies and programs, if not carefully monitored, may sidestep rural women's needs and interests and re-masculinize rural spaces for the sole purpose of realizing corporate profits without benefits to smallholders – depriving women of control over livelihood spaces and food production processes and possibly worsening environmental conditions. Women's involvement in adaptation programs should also simultaneously empower them with equal resource and voice rights, not just mobilizing them with their already stretched time and labor. Long-standing indigenous adaptation practices can be harnessed especially if they serve to enhance climate resilience. Finally, migration as an adaptation option should be approached cautiously, as it may result in positive outcomes under certain conditions but may also pose risks to livelihood security under others. It appears then that climate change adaptation is an iterative process shaped by multiple feedbacks and by women's and men's local knowledge and experiences. Overall, gender-transformative adaptation in rural contexts is unlocked when interventions challenge power dynamics and discriminatory norms and practices that threaten livelihood and food security.

4. Sustainable cities

Climate change is expected to have costly consequences for urban infrastructure, basic services, housing, livelihoods, and well-being. Coastal cities, 65 percent of all cities globally, are also threatened with flooding and salinization from sea-level rise, as well as from increased frequency and intensity of storms.¹⁷² Globally, socio-economic flood costs were estimated to be approximately US\$6 billion per year in 2005 and projected to increase to US\$52 billion by 2050.¹⁷³ In addition to flooding, roughly 14 percent of the world's population would be exposed to severe heat waves at least once every five years with a 1.5° rise of global average temperature; this figure jumps to 37 percent with a 2° temperature rise.¹⁷⁴ The vulnerability of cities to extreme events results from their dense populations and the varying resilience of the infrastructure. That vulnerability is experienced most severely by already marginalized city dwellers and the safety of women and children causes particular concern.¹⁷⁵ These climate change effects in cities are likely to affect women, men and children in different ways and adaptive responses are also unevenly sufficient. Therefore, prevention and adaptation through climate-resilient urban

planning mechanisms will be a key strategy to support gender-equitable outcomes. Below are some promising adaptation strategies incorporating gender in urban transport, housing and planning.

4.1 Gender-transformative urban transport

Many cities are exploring options to reduce their carbon footprints by upgrading or improving public transportation. At a minimum, transportation planning for climate change must be based on the recognition of women's distinct roles, needs, and experiences. Offering safe and efficient public transportation has multiple benefits, including allowing women access to employment, education, and other services that strengthen households' resilience and increasing ridership, a prerequisite for emissions reductions.¹⁷⁶ Yet, making the transition toward a zero-carbon society and supporting transformative adaptation requires more than addressing the different transportation needs of men and women, and it requires more than introducing resource efficient technologies.^{177, 178, 179} It also requires planning that addresses the underlying vulnerabilities and root causes of structural inequities.



Photo: Monika Krystyna

Several cities are working toward more gender-sensitive transportation, an important first step. Cities like Berlin, Bogotá, Malmö, Medellín, Montreal, and Vienna have prioritized women's perspectives through participatory planning.^{180, 181, 182} The results include wider pavements, pedestrian-friendly traffic lights, and a general sense of safety.¹⁸³ Additionally, constructing specific lanes for rickshaws and bicycles can reduce burdens for low and middle-income women and children.¹⁸⁴ Women-only rail, bus, and taxi transportation is one of several measures to reduce violence and harassment against women in public transportation, increasing safety and reducing anxiety.^{185, 186} In addition to safety, accessibility for a range of needs is crucial. Providing lower steps and lifts on buses as well as information in multiple languages, written and audio, are a few recommendations to accommodate various limitations.

However, attention to non-commuter and care-work travel, primarily undertaken by women, has proven most difficult for planners. Incorporating gendered needs and preferences, as well as the structural root causes of transportation barriers, is essential to support the adaptation options of all urban residents.

4.2 Urban housing access, rights, and infrastructure

Access to safe and secure forms of housing is another factor that shapes gendered adaptation to climate change in urban areas at various scales. Strengthening women's property rights in urban areas can also have wider benefits, including protecting them from eviction and increasing their safety and security, which is usually at risk especially during climate stresses.¹⁸⁷ There is need to invest in post-disaster rebuilt housing and storm-resistant shelters for future resilience.¹⁸⁸

However, individuals whose gender or gender expression falls outside of normative categories are not able to exercise their land and housing rights and so are often excluded from response, relief, and recovery efforts following an extreme climate event.¹⁸⁹ They face significant social and religious stigma that further excludes them from such resources and limits their mobility during and after disasters.¹⁹⁰ This makes finding post-disaster housing and employment extremely difficult, particularly for low-income transgender women.¹⁹¹ As well, the experiences and needs of migrant and homeless youth are often neglected

in post-disaster management.¹⁹² Thus, any analysis of the gendered nature of disasters in urban areas should move beyond binary relations of comparing women and men, a habit that does little to capture the social relations of power that shape livelihoods and responses to disasters. Such an analysis can reveal both opportunities and constraints for adaptation, not only between men and women, but also between women of different backgrounds and privileges.

The vulnerability of residents in slums and informal settlements to climate shocks will be particularly palpable. Demographic trends suggest that increasing numbers of women and girls in female-headed households will live in cities and many will reside in informal settlements.¹⁹³ Thus, upgrading housing infrastructure, particularly in urban peripheries, should take an inclusive approach based on collaboration with women and community groups to avoid further marginalization. For instance, relocating slums to remote areas is often considered a viable adaptation strategy in a number of cities with areas vulnerable to environmental hazards, or where livelihoods and employment are usually difficult. However, this type of relocation of informal settlements could increase the difficulties of women to access formal jobs and might lead to the further exclusion of slum dwellers.¹⁹⁴ Access to adequate housing also provides women greater opportunities to develop and control climate-resilient strategies and spaces within their household.^{195, 196} Cities can therefore invest in basic social services and infrastructure – particularly health care, water, sanitation, and child care – to reduce women's workloads and to build their resilience without additional burdens to their time.¹⁹⁷

4.3 Gender-transformative urban planning

Access to air-conditioned space during heat waves, particularly for vulnerable urban populations, is a known means to reduce heat-related illnesses and mortality.^{198, 199} Many potential public cooling centers – libraries, swimming pools, supermarkets, movie theaters, hospitals, and shopping malls – may be available in emergencies, but they discourage frequent occupation by marginalized populations, particularly the poor. Studies in the US and South Korea show that even during emergencies reasons such centers are not used include a lack of awareness or transportation, mental or physical incapacity, and individuals unable to identify their own need – particularly among women, the

elderly and the homeless.^{200, 201} Furthermore, in smaller cities in Bangladesh, publicly available cooling centers do little to reduce low-income women's prolonged exposure to high heat as they accomplish their daily work burden in the home. While using electric fans and opening doors and windows is a common means of cooling homes, the fact remains that the home itself is a significantly gendered space. Thus, the amount of time women spend in that space and their care activities may increase their exposure and limit their ability to go to public centers.²⁰²

Although gender is still largely unaddressed in urban climate change planning, a few examples exist. From 2015 to 2018, Gender CC partnered with several women's organizations in four countries to make gender-responsive policy recommendations in seven cities.²⁰³ While Johannesburg and Tshwane, South Africa, both have mandates to incorporate women into economic planning, neither city addresses gender issues in climate change planning.²⁰⁴ Nor do they expand their scope to discuss which women and where, rather than assigning all women to a homogenous group. New Delhi, on the other hand, was one of the only cities to integrate gender considerations – however, only in the sectors of health and education and only in terms of women's needs versus men's needs, broadly.²⁰⁵ Yet, while women are involved in grassroots adaptation efforts in the city of New Delhi, their representation in policy development and planning implementation is negligible, which could contribute to the lack of gender considerations in other sectors.²⁰⁶ Moreover, which women are represented and how is important, as elite women's interests often do not coincide with low-income women's. Thus, to make urban planning and policy more gender-equitable and inclusive, cities and local governments need to improve the gender balance of planning and decision-making bodies within cities not only by incorporating women, but by carefully considering which women and whom they do or do not represent.²⁰⁷

4.4 Conclusion

As this chapter has demonstrated, there is much work to be done to make urban spaces and planning processes attentive to gender in the context of climate change adaptation. On the other hand, urban transportation options in some areas are incorporating women's needs, preferences, and experiences. While not transformative, these measures might be considered gender-sensitive, an important first step. Yet, urban housing access, rights, and infrastructure in cities and their peripheries form another issue that requires a gender analysis. Not only are trans and queer women excluded from temporary shelters and from more permanent housing following climate-related disasters, low-income and migrant women and youth are also in need of adequate, secure, and permanent housing that can significantly enhance their ability to adapt to a changing climate. Lastly, much is yet to be done to make urban planning more gender transformative, including diversifying decision-making bodies, so that a range of interests and needs are met. The design and accessibility of both public and private cooling spaces desperately need a gendered lens. Perhaps most importantly, however, a gender-transformative approach to urban planning requires understanding and addressing unequal power relationships within households and neighborhoods. This approach can ensure equal participation of all women that enables them to voice their needs, preferences, and opinions in spatial zoning and planning urban spaces in ways that will enhance their adaptation to climate change.

5. Infrastructure

Worldwide, 1 billion of the world's population have no reliable sources of energy, over 1 billion people lack access to roads, 2 billion do not have safe drinking water at home, over 4 billion lack satisfactory sanitation facilities, and 4 billion are without modern communication services.^{208, 209, 210} These shortfalls are the focus of the SDGs. The people suffering these shortfalls are, by definition, the poor and marginalized. According to a 2018 World Bank study, while relative poverty rates of women and men vary over lifetimes, generally 5 million more women and girls than men and boys live in poverty.²¹¹

These shortfalls are remedied by infrastructure, the types of infrastructure that enable people to survive the stresses and shocks of climate change. Aging and poorly maintained infrastructure can disrupt services, as can badly built projects. Resilient infrastructure is immediately required in many developing countries to protect citizens, assets and overall economies against climate change. According to tenets of green industrial policy, developing countries have an advantage in attaining sustainability, because most of their energy and urban infrastructure is yet to be built.²¹²

The poor, women, children, the elderly, particular ethnic groups and the disabled are often excluded or denied access to infrastructure in general. This renders them less capable to adapt to climate change, which worsens their conditions. The heaviest burdens fall on women and girls since they are largely responsible for household care, suffering from infrastructure deficiencies as they cover long distances to collect burdensome water and fuel and endure the lack of adequate sanitation facilities and the harm wrought by toxic and smoky cook stoves.^{213, 214} The challenge is to refigure the energy, transport, water, sanitation and waste management sectors to be more climate-resilient, while also promoting gender equality and social justice. This chapter will discuss promising adaptation strategies that make use of climate-resilient and gender-sensitive infrastructure.

5.1 Road infrastructure

Viable and safe road networks and transport systems can enhance the mobility of women and girls, enabling their access to education, markets, and other public services that enable their adaptive capacities to climate change. Urban spaces and transport systems are rarely



Photo: Sarah Dicken / SEI

planned with the mobility needs of women, the elderly and children in mind. However, while rare, there are some promising examples worth noting. For example, an Asian Development Bank project in Bangladesh – focusing on small towns and rural areas to improve minor roads, bridges, landing stages and public transport vehicles – incorporated the needs of poor, rural women for separate public toilets, for accessible steps in buses, and for 15 percent of small business locations along new roads reserved for women. The project provided training and created employment opportunities for more than 2,800 poor landless women in off-pavement road maintenance.²¹⁵

In Liaoning province in China, older women participated in an urban transport infrastructure project that identified their number of daily trips and prompted prioritizing construction of better road pavements, road drainage, hard shoulders, separation between walkways and road, and better lighting and signage. Younger women were also able to raise issues of safety in public buses, long waits due to infrequent services, and lack of pedestrian lanes to access bus stops. The women's interventions led to changes in the initial plan.²¹⁶ Such practices can be replicated in gender-transformative adaptation planning for infrastructure to raise stakeholder awareness of climate change impacts. This could lead to collective review of existing road design standards and construction practices that anticipate adverse climate impacts, as well as enhance coordination among stakeholders to develop resilient road infrastructure.²¹⁷

On the other hand, some climate-resilient practices may pose dangerous climate mitigation-adaptation trade-offs. For example, EU transport policy to reduce transport emissions has led to increased biofuel imports from developing countries. This is maladaptive when it re-configures land rights, since land used for biofuels cultivation is likely marginal and where women plant food crops and vegetable gardens.²¹⁸ These largely subsistence crops can often buffer food shortfalls, an adaptive strategy of smallholder households. In short, mitigating climate change in one way could lead to adaptation failures in another way.

5.2 Energy services

Access to clean energy improves the health of women and girls, while it helps to diminish the threat of climate change. Worldwide, women and girls suffer 60 percent of the premature deaths resulting from unclean fuels and inefficient cookstoves that pollute household air.²¹⁹ Research in various countries also shows that when poor, rural women have access to renewable energy services – solar energy cookers or biogas digesters – their quality of life improves. Their respiratory health revives markedly as indoor smoke pollution decreases and they enjoy more leisure time away from collecting fuelwood, which also encourages men to engage in more domestic tasks such as cooking.^{220, 221, 222, 223} This shows that access to alternative fuel sources generally advances women's well-being and provides additional time for activities that strengthen their economic potential and their adaptation capacities, including participation in decision-making groups and in economic opportunities.

In many countries, women's entrepreneurship in renewable energy technologies has grown. For instance, the Solar Sister projects have demonstrated an increase in rural women's skills as entrepreneurs and have provided affordable and renewable energy to remote rural villages.²²⁴ These small enterprises can also help women adapt to climate-affected natural resource-based livelihoods. However, a recent study in the Mekong region draws attention to inclusion issues in such enterprises, showing that more well-off elite women usually lead them.²²⁵ Planners then have to be sensitive to exclusion issues in the access to energy sources and the emerging entrepreneurial activities around renewable energy technologies. Adaptation may be constrained by such exclusions.

5.3 Water and sanitation

Clean water and sanitation are so vital for the health and well-being of women and girls that they must be central to transformative adaptation. The absence of clean water for health and sanitation during flooding and longer, dry spells pose serious challenges for people to adequately adapt. For instance, in coastal Bangladesh, cyclone shelters were reported in 2008 as unable to meet the water and sanitation needs of adolescent girls and pregnant women.²²⁶ To raise awareness and track gender-related water, sanitation, and health (WASH) deficits, the Stockholm Environment

Institute developed a WASH monitoring tool that tracks who is left behind in terms of access to these services.²²⁷ Other initiatives include one supported by the Self-Employed Women's Association (SEWA) where Gujarati women in India were trained to maintain and repair village hand pumps.²²⁸ These women overcame the gender-based prejudices of both the Gujarat Water Supply and Sewage Board (GWSSB) and their fellow villagers. They proved that the required education standards for the GWSSB training were not needed to fix the pumps. While these initiatives are promising, there is still huge infrastructural deficits in meeting WASH challenges that remain unattended. Globally, 23 per cent of schools were lacking sanitation services in 2016, and a little more than half of them had a basic hygiene service.²²⁹ These affect adolescent girls who often struggle to manage their menstrual hygiene in school. In 2015, 2.1 billion people had poor access to safely managed drinking water. Women and girls are responsible for water collection in 80 per cent of households without access to water on premises.²³⁰ The lack of clean water clearly intensifies women and girls' workloads. To make things worse, the 63rd session of the Commission on the Status of Women states that "...while water and sanitation are among the most transformative investments for women and girls, they are much less likely to be financed through private finance or public-private partnerships than other infrastructure investment such as telecommunications, energy or transport."²³¹

5.4 Emergency services and early warning systems

Infrastructure related to response situations such as health and emergency services are vital during extreme climate change events. Their resilience is crucial to ensure the safety of affected groups. A comparative study on early-warning systems (EWS) in Mali, Egypt and Belgium show that EWS may fail due to diverse technological, social and political problems.²³² EWS help people to better adapt but their designs lack a gender analysis as recent research found in Vietnam on drought forecasting infrastructure. While farmers had access to daily drought forecasting, they did not have access to long-term forecasting, which was provided only to provincial-level agricultural state authorities. This constrained both women and men smallholder farmers from planning their combined off-farm and on-farm livelihood strategies, especially planning for irrigation during

long dry spells. For those women left behind by husbands working in remote towns, they will have to negotiate for irrigation water with more powerful male farmers, adding to women's burden of stress.²³³

5.5 Conclusion

Strengthening people's adaptive capacities to climate change will require better planning for more investments on sustainable and resilient infrastructure systems, as well as ensuring that people – regardless of gender, class, ethnicity, age or race – have inclusive and undisrupted access to them.^{234, 235, 236, 237, 238, 239, 240} As well, the interests and needs of women, children and the elderly will have to be embedded in the design and engineering of these infrastructures. Infrastructure investment needs to integrate gender-equality considerations from the outset and be part of long-term development strategies that are sufficiently matched with dedicated funding.²⁴¹ Finally, gender considerations are increasingly being included in transport, roads and energy projects, but with less priority for water and sanitation. One possible explanation is that energy, transport and roads are huge revenue-generating investments and are productivity-driven. This is less so in water and sanitation, despite being important services for women and girls and that prove to be one of the most transformative investments for them. Renewable energy enterprises are also growing, and women have become a viable constituency for entrepreneurship, especially in view of declining livelihoods affected by climate change. However, their access to sustained capital and technologies – essential to fortify or expand their enterprises – may be limited. This can result in the elite capture of this sector, where only privileged women prosper.



Photo: SEI Asia

6. Industry and supply chains

The characteristics of industry and supply chains – such as their global reach, the production of specialized inputs at specific locations, and reduction of inventories through just in time delivery – render these supply chains increasingly vulnerable to climate stressors like flooding, extreme storms, and heatwaves.²⁴² For example, prolonged flooding of urban and industrial areas in Thailand due to heavy and persistent rain in 2011 caused significant loss of life.²⁴³ As well, the flooding affected globalized supply chains and substantial monetary losses followed, particularly in the electronics and automobile manufacturing sectors. Some estimates suggest lost wages totaled US\$3.5 billion, with significant gendered effects.²⁴⁴ This section, therefore, takes a closer look at a handful of mainstream adaptation strategies being promoted within industry and supply chains, and it analyses the gendered opportunities and the limits these strategies pose.

6.1 Climate-proof supply chains

Globally, there is a broad push for business and industry to not only lighten their carbon footprint, but also build resilience to climate change across the supply chain. Efforts to climate-proof supply chains may include important structural modification for industries that can also deliver co-benefits to employees. Improving industrial infrastructure, for example, could bolster not only industrial resilience, but gendered resilience as well. For example, investing in efficient cooling systems that will not fail during heat waves is a wise strategy that can maintain productivity and the well-being of factory workers.²⁴⁵ However, without attention to gender, some efforts may undermine livelihoods as well as local adaptive strategies.

Supply chain flexibility, particularly for transnational supply chains, is one recommendation for climate-proofing a supply chain that has the potential to undermine livelihoods. The idea is that supply chains will be more resilient to climate change if the sources are diversified, avoiding dependence on supplies from a single location.²⁴⁶ However, avoidance of legally binding contracts for supply, supply spreading, and supplier switching directly affect working conditions at production sites. The affected conditions include poor job security, low wages, the pressure to work overtime, and employment of temporary workers who are often poor semi-skilled and under-skilled women and men

whose labor is considered cheap and flexible.²⁴⁷ In other words, labor conditions for export production do not exist in a vacuum, but are intimately tied to the terms of trade that shape them.²⁴⁸ At the same time, ethical standards adopted to address occupational safety and labor rights in manufacturing, such as those claimed by large retailers and marketers within the garment and textile industries, often fail to reach workers that are more vulnerable.²⁴⁹

6.2 Positioning gender within industry and supply chains

Given the above issues, supply-chain risk assessments should address issues of worker safety, vulnerability, and risks. Yet, these issues are not relegated to the manufacturing sector alone nor limited to transnational supply chains. They need to be accounted for throughout the supply chain and at a variety of scales. Several projects and program notes include gender-sensitive plans and risk assessments in agricultural and fisheries value chains. However, these reports tend to provide recommendations on how to conduct a supply chain risk assessment in the context of climate change or on how to make the sector or program gender transformative. Few do both. Exceptions include recent reports from the Green Climate Fund, the International Fund for Agricultural Development, and FAO.^{250, 251, 252} Even fewer address non-agricultural value chains or incorporate an explicitly gender-transformative approach.^{253, 254, 255} Business for Social Responsibility (BSR) is one of the few industry-oriented networks providing recommendations for reducing non-agricultural business risks in the face of climate change while simultaneously addressing gender and human rights.²⁵⁶ However, several shortcomings are worth noting: First, the recommendations focus exclusively on women, rather than on gender broadly. Second, women are reduced to their value as productive assets within the value chain, which negates the valuable reproductive labor that women do. Finally, citing the economic multiplier effect, the report suggests that empowering women will also empower families, communities, and economies.²⁵⁷ The logic of the last point is that if women participated in the economy equally to men, it would add as much as US\$28 trillion to the annual global GDP by 2025.²⁵⁸ Thus, if women and communities have more economic resources, theoretically their ability to adapt to climate impacts will also increase.

This logic assumes that empowering women will be a linear process with logical and multiple positive effects. However, research shows that the relationship between gender equality and economic empowerment is asymmetrical.²⁵⁹ Specifically, gender equality can lead to economic growth. However, the reverse is not often not so; economic growth often does not lead to gender equality. Such assumptions negate the need to attend to local power dynamics and social drivers of vulnerability, actions that are essential for gender-transformative adaptation, by widely accepted definition.

Consequently, making supply chains climate-proof and adaptive to changing climate requires serious consideration of the highly unequal power relations within supply chains populated by people made vulnerable by their low income, their migrant status, their ethnic background, and/or their gender.²⁶⁰ In particular, nuanced understanding of local social relations and power dynamics – and the composition of livelihoods within the broader political economy – are important to consider in supply-chain risk analyses.²⁶¹ Furthermore, to fully analyze the potential consequences and benefits for workers, whom are often low-income women, an awareness of labor issues should be at the forefront of any supply-chain analysis.²⁶² As Bolwig and colleagues argue, this requires “...going beyond seeing labor as a productive asset and taking into consideration the terms and conditions under which workers participate in value chains and how they are affected by changes in these.”²⁶³ For example, women’s labor within the supply chain and the earnings generated from factory work often constitute a major source of household income. Thus, the risks faced by women workers, often young women workers, are compounded by their care responsibilities, unstable labor opportunities, and precarious labor contracts. Wage losses from climate stressors will also affect workers’ family members, including children and seniors who are increasingly dependent upon the wages these young women earn.²⁶⁴ Additionally, men’s wage losses also affect children and seniors, as well as women who do not work outside the home. It is also important to consider how proposed changes within the supply chain will not only affect the well-being or resource access of a particular group, but also the nature of change in the individual’s or group’s relations with other groups.²⁶⁵

Making supply chains adaptable to climate change also involves supporting small-scale producers within the supply chain, which is particularly important within agri-food supply chains. Attending to the gender dimensions that shape vulnerability, risk, and capacities is an important dimension of supporting producers. Given that women provided much of the agricultural labor in agri-food supply chains, Oxfam suggests that in addition to developing dialogues with producer communities and investing in farmers’ adaptive capacities broadly, companies should develop an understanding of women’s often unseen and unpaid roles and pay attention to their particular vulnerabilities and capacities.²⁶⁶ The BSR report concludes that a business pursues its own interests by understanding the challenges that women face within the supply chain, to enable women’s decision-making and leadership, and to use their influence to address women’s underlying vulnerabilities and inequalities that may limit adaptive capacity.²⁶⁷

6.3 Conclusion

Gender-transformative adaptation requires addressing the social drivers of vulnerability, particularly transforming the power dynamics that reinforce gendered inequities. Supply chain flexibility, especially in climate-vulnerable places, can lead to job insecurity, low wages, the pressure to work overtime, and employment of temporary workers who are often poor semi-skilled and under-skilled women and men whose labor is considered cheap and flexible. However, evidence is emerging that supply chains become more resilient and climate adaptive if they support small-scale producers in their supply chains. This means that they understand the challenges that women workers face within the supply chain and address women’s underlying vulnerabilities. This is perhaps the most important with the greatest potential to facilitate gender-transformative adaptation if implemented widely. Finally, acknowledging that women’s vulnerabilities differ by intersecting characteristics including age, ethnicity, class, location, and mobility and that addressing these differently positioned vulnerabilities and differences among women will facilitate gender-transformative adaptation.

7. Finance and investment

While international finance for climate change has been increasing steadily, it is still far from meeting gender-related needs and, in general, does not focus enough on long-term, low-carbon and sustainable development.^{268, 269}

Gender was not fully incorporated into the original design and implementation of most existing climate financing mechanisms, resulting in gender-blind projects or sub-optimized gender programs.

Due to pressures from women's groups and movements, multilateral climate funds have begun to include gender considerations in a retroactive way to funding criteria and guidelines. The critical challenge remains for more systematic embedding of gender-equality goals beyond being an add-on or afterthought.²⁷⁰ To address this, rigorous gender analysis that informs well-designed and participatory multi-disciplinary projects can strengthen the adaptive capacities of women and men (Annex 1). However, to fully unlock its transformative potential, climate finance must align with national development policy and planning that, in turn, needs to take gender equality seriously. For this, capacity for gender analysis at local level needs to be supported and ownership promoted.

This chapter will look at different financing mechanisms, including climate finance, through a gender lens and extract lessons on whether and how gender considerations are sufficiently embedded in their operations.

7.1 Climate financing and the gendered adaptation gap

The finance gap is gendered. The Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee reports that just 31 percent of their 2014 climate overseas development assistance (ODA) portfolio supported gender equality, totaling US\$8 billion. Of that total ODA, only 3 percent had gender equality as a primary objective, while 28 percent included gender equality as a secondary objective. However, OECD notes that between 2010 and 2014 gender-responsive ODA increased at a faster rate, at 16 percent, than the overall climate ODA, at 3 percent. The analysis also highlights that adaptation ODA targeted gender equality more than mitigation ODA – 46 percent as opposed to 28 percent. Distribution was uneven across sectors, with agriculture and water accounting for 59 percent and 39 percent

respectively, while energy and transport and storage received 8 percent and 20 percent of the total. Since total ODA predominantly targets energy and transport, the numbers suggest a missed opportunity for advancing gender equality in these sectors.²⁷¹

Access to finance is also gendered, with women facing higher barriers, especially in rural areas.^{272, 273} This influences women's adaptation behaviors and choices, including their prospects of building assets and capital to draw on in times of need or of keeping their businesses afloat when they are self-employed.^{274, 275} The International Finance Corporation estimates that in developing countries about 18-22 percent of women-led micro enterprise and 57-71 percent of women-led small and medium enterprises have no, or limited, access to financial services, creating a credit gap of US\$414-508 billion.²⁷⁶

7.2 Multilateral climate funds, public and private finance

Multilateral climate funds are a key source of climate financing, and they offer important opportunities for gender-responsive adaptation. In recent years, all major climate funds have stepped up efforts to integrate gender concerns, mirroring the stronger positioning of gender equality in United Nations Framework Convention on Climate Change (UNFCCC) decisions and the adoption of the Gender Action Plan at its Conference of Parties (COP) in 2017.

The Global Environment Facility (GEF) endorsed its Policy on Gender Equality in 2017 after an evaluation of its earlier Gender Mainstreaming Policy indicated that an insufficient portion of projects integrated gender across all project outcomes and activities. This new policy makes gender analysis mandatory and introduces requirements on monitoring and reporting at project, program, and portfolio level.²⁷⁷ In 2018, the GEF also adopted a new Gender Implementation Strategy that, in addition to systematic gender mainstreaming, identifies strategic entry points for gender equality in programs and projects that have a potential for transformational change. The strategy also assigns roles and accountability to the GEF Council, Secretariat, and implementing agencies.²⁷⁸

The Adaptation Fund adopted its first fully-fledged gender policy and a multi-year gender action plan in 2016, after a review of the Fund's programs found that systematic atten-

tion to gender was lacking. The Fund issued operational guidance on how to improve the gender responsiveness of its projects and programs. The new Adaptation Fund Medium-Term Strategy (2018-2022) highlights support of gender equality as part of the Fund's mission.²⁷⁹

With its 2017 Policy on Gender Equality, the Green Climate Fund (GCF) committed to gender-responsive financing, accountability for gender, and equitable allocation of resources from the outset. Unlike other funds, the GCF places climate investment in the context of sustainable development and seeks a 50/50 allocation between mitigation and adaptation, with a focus on the most vulnerable countries, communities and people.²⁸⁰ The guidelines on gender mainstreaming indicate that gender analysis, a gender action plan, and a monitoring and evaluation framework have to be developed for all projects in full consultation with and participation of local women and men.²⁸¹ Following civil society organization recommendations, the GCF adopted a revised Gender and Social Inclusion Policy and Action Plan in 2018 that accounts for gender identities and intersectionality, but still lacks provisions for adequate staffing, financial resources, and implementation accountability of the Board.²⁸² In 2019, further civil society organization advice called for scaling up adaptation through programming that addresses both climate risks and underlying vulnerabilities. They recommend that such programming should be developed in full consultation with the public and, in particular, with indigenous peoples, local communities, and women.²⁸³

The GCF Readiness and Preparatory Support Programme, a special instrument created to support developing countries in formulating and implementing their NAPs, provides opportunities to meet these recommendations. Established by the UNFCCC's 2010 COP, the NAP process entails the formulation and implementation of gender-responsive strategies and programs based on the identification of countries' adaptation needs.²⁸⁴ Gender equality, environmental and social safeguards and protecting the rights of indigenous people compose one of ten criteria the GCF uses to evaluate NAP funding proposals.²⁸⁵ Efforts such as the In-Country NAP Support Program, implemented by the International Institute for Sustainable Development, build gender capacity at country level, based on an approach that gender and social norms influence vulnerability to climate change and they intersect with other factors, such as age, race, ethnicity and sexual orientation.²⁸⁶

7.3 Public and private finance

Public budgets that have earmarked allocations for gender in their sectoral plans are also an important way to ensure gender-responsive planning and implementation of adaptation initiatives. The Philippines is a good example of how gender-responsive budgeting works together with climate budgeting in a conducive policy environment. Starting in 1995, the Gender and Development (GAD) budget mandated all national and sub-national budgets to earmark at least 5 percent of departmental expenditure on programs for women. While critics argue the effectiveness of this approach, the GAD budget policy has led to the formulation of annual gender plans and budgets in all government departments and local government units. The policy was revised in 2012 to ensure that the gender budget would be not only allocated but also spent effectively on concrete programs.²⁸⁷ Since 2014, Philippine national agencies have been tagging proposed climate change funding, which reaches over 5 percent of the total national budget. Of the total, about 98 percent of the earmarked budget in 2015 was for climate change adaptation and disaster risk reduction.²⁸⁸ Finally the Philippine Disaster Risk Reduction and Management Act of 2010 mandates that all climate change measures be gender-responsive, respectful of human rights, and sensitive to indigenous knowledge systems.²⁸⁹

Private sector investment accounts for the majority of climate investments, totaling 54 percent annually in 2015-2016.²⁹⁰ However, there is no tracking of the share that goes to adaptation or to the promotion of gender equality and women's focused interventions.²⁹¹ In adaptation, private investment is often linked to insurance schemes that cover loss and damage from climate-induced events. Since 2005, there has been an increase in initiatives around disaster risk financing and risk transfer mechanisms, such as insurance.²⁹² However, these schemes are largely biased toward men and inaccessible to the very poor. Insurance schemes have been criticized for placing the burden of climate change on vulnerable countries and people, while diverting the attention from other more socially-just solutions, such as improvements of public social protection schemes.²⁹³ Overall, there is little evidence that assesses the success of insurance schemes in building resilience, the cost benefit analyses of insurance over other schemes, or the consequences for structural gender inequalities.²⁹⁴

In Nepal, a program on biodiversity conservation and climate change adaptation supported 1000 smallholder farms in accessing government crop and livestock insurance and social health insurance schemes. However, the insurance product has requirements of land area for people to qualify, while many of these vulnerable groups, particularly women, are landless or illegal dwellers. Also, the claim process involves complex procedures that are inaccessible to generally illiterate poor and marginal farmers and socially marginalized groups. Specific gender targeting is also needed to avoid the risk that insurance schemes could reinforce control of decisions making and resources toward the male head of household.²⁹⁵

Multilateral climate funds have put facilities in place for private sector projects that can catalyze investment through concessional funding. The Acumen Resilient Agriculture Fund (ARAF) adaptation project, approved by the GCF in 2018, is an interesting example of enforcing private sector accountability for gender results. Through the gender assessment, the project – to be implemented in Uganda, Ghana and Nigeria by Acumen, a nonprofit that invests philanthropic capital in companies and innovators – commits to provide funding to companies that will empower women and men smallholder farmers and will improve women's financial inclusion, financial literacy and decision-making power and participation in extension networks.^{296, 297} Additionally the GCF decision requested ARAF to undertake a gender assessment for each individual investment and develop a gender action plan with funding from the GCF Technical Assistance Facility.²⁹⁸ Where these accountability mechanisms do not exist, it is hard to ensure that private sector finance and investment in adaptation will be truly gender responsive.

Blending of public money and incentive mechanisms could be a way to motivate and reward the private sector's attention to gender equality. For instance, the Women Organizing for Change in Agriculture and Natural Resource Management (WOCAN) W+ Standard certifies projects that create social and economic opportunities while also valuing their contributions to unpaid care work.²⁹⁹ There is a risk, however, that these initiatives may perpetuate the notion that women's work is worthwhile only insofar as it has a monetary value attached to it – a concern voiced by many feminist scholars.^{300, 301, 302, 303} This also resonates with earlier concerns about casting women as a reserve army of labor in climate change and development programs.

7.4 Financial inclusion and services

In the forms of savings, credit and insurance, financial inclusion allows poor and vulnerable households to build resilience and to cope with and adapt to climate-induced stressors and disasters by planning ahead, absorbing shocks, and adapting.^{304, 305} However, more evidence is needed to understand how best to use financial inclusion and to design services in the climate change adaptation context, particularly from a gender perspective. For example, a study in Senegal and Burkina Faso highlighted important gender differences in risk management strategies, comparing demand for savings with demand for weather index insurance. Women requested more access to emergency savings as opposed to men who had a stronger interest in insurance, indicating women's preoccupation with shocks that would not be covered by a weather index product.³⁰⁶ This is also confirmed by further research indicating that due to health risks associated with reproduction and children's health, women are more likely to choose savings, which can be used more flexibly than insurance.³⁰⁷

Microfinance has been promoted for climate change adaptation, although there are questions about its effectiveness in reaching those in need – including poor rural women and men and those in remote locations – and long-term financial viability.^{308, 309} An OECD analysis highlights that the potential of microfinance is not an easy match for adaptation financing but emphasizes the need to carefully assess implications of lending practices promoting unsustainable livelihood strategies, increasing women's work burden, or disregarding the structural barriers that women face.³¹⁰ Conclusions about the effects of microfinance on women's empowerment are mixed but show that microfinance works best when it is part of a holistic approach building women's resilience at the same time it remains sensitive to power dynamics.^{311, 312} For example, many microfinance institutions provide credit plus services that include skills education and training assistance on agricultural and health practices.³¹³

The International Cooperative and Mutual Insurance Federation (ICMIF) promotes mutual and cooperative microinsurance and is owned and operated exclusively for the benefit of their members/customers, in contrast to stock-based/private sector insurance. Together with the Swedish non-profit organization We Effect and

other partners, ICMIF has developed the 5-5-5 Mutual Microinsurance Strategy to improve health and life coverage in five countries in Asia and Latin America, with the aim to support five million households to get out of poverty.³¹⁴ In the Philippines, similar mutual organizations have developed rapidly and contribute 77 percent of the total microinsurance coverage, thanks to circulars by the Insurance Commission that introduced a new tier for microinsurance in the form of Mutual Benefit Associations.³¹⁵ The Philippines' 5-5-5 initiative, implemented with a local partner made of 17 Mutual Benefit Associations, aims to advance gender equality by providing affordable health and life coverage in case of extreme disasters and to help build the resilience of poor communities with their sustainable rural development approach.³¹⁶

Climate-specific social protection includes schemes that link social protection management and information with early-warning systems or credit. Social protection programming is also being increasingly used to prepare for, and respond to, large-scale shocks and disasters. However, to date there has been limited use of gender analysis to inform these programs despite the potential.³¹⁷ According to Holmes, features of gender-sensitive and shock-responsive social protection might include access to programs through accessible application and registration processes; gender-, age- and ability-appropriate work and equal wages; flexible working hours and work opportunities close to home; and child care options. Well-designed cash transfer schemes include targeting payments to women to increase their bargaining power and control over resources, providing bank accounts and banking payments for beneficiaries for financial inclusion, ensuring that time taken to adhere to transfer conditions does not add to women's time burdens; ensuring safe collecting of transfers, providing women with opportunities for leadership roles, and providing regular long-term cash transfers of sufficient value. Other in-kind programs may include nutrition-sensitive interventions for pregnant or nursing women, HIV prevention care to reduce risk-taking behavior, and information and training on disaster risk reduction to reduce vulnerability to recurrent flooding and to provide alternative economic opportunities for women in lean seasons.³¹⁸

7.5 Conclusion

Progress has been made in the area of finance and investment, particularly in terms of gender conditionalities in multilateral climate funds. However, much more needs to be done to ensure that quality and rigorous gender analysis informs the design of sustainability projects, which will require monitoring for results and lessons and establishing appropriate accountability mechanisms. Systematic tracking of adaptation financing across systems is needed to ensure relevant gender requirements are met. Financial inclusion and services are an important part of building women's and men's adaptive capacities over the long term. To deliver their optimal potential, these services ought to be designed based on an understanding of the context and of the actors, of their vulnerabilities, and of the position and status of different beneficiary groups such as indigenous groups and ethnic minorities. As well, designs should discourage conditions that perpetuate existing gender inequalities and structural barriers, including women's time poverty and unequal access to information, education, resources and services. Finally, leveraging mitigation benefits of adaptation for women, for example through access to jobs in the energy sector, and aligning adaptation to national development plans should be strengthened. For this to happen, local capacity needs to be strengthened at both the policy and implementation levels, including through better engagement in the design and practice of public programs and projects of civil society organizations with experience in gender-responsive financial inclusion.

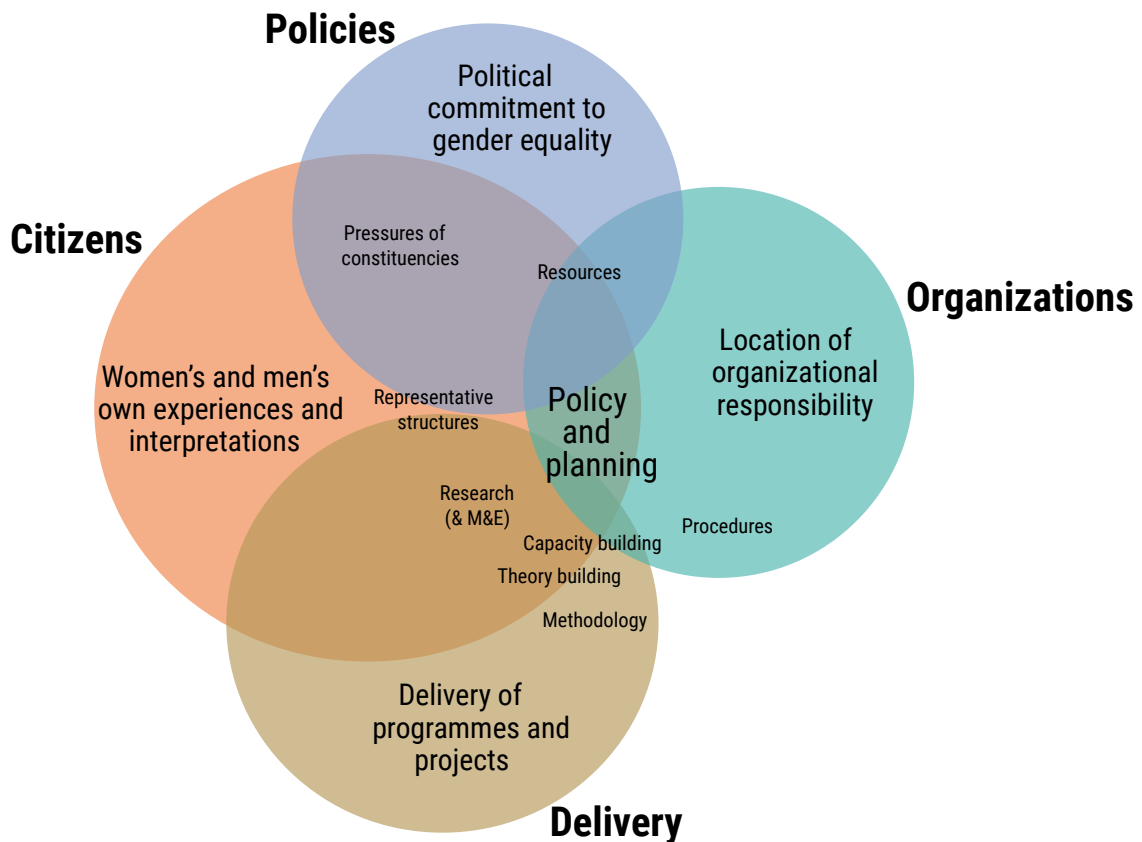
8. Enablers of change: Four spheres for institutional change

Processes and initiatives that enable transformative change in the areas of climate change adaptation and gender equality should be multi-dimensional, multi-sectoral and strive for a holistic approach.³¹⁹ To move from purely technocratic and instrumental adaptation strategies toward gender-transformative adaptation, structural changes are needed. To enable the gender-transformative process, the Web of Institutionalisation for gender mainstreaming, developed by Caren Levy in 1996, offers a helpful framework. The web distinguishes four spheres where institutional changes can potentially enable gender-transformative change in adaptation: the citizen sphere, the policy sphere, the organizational sphere, and the delivery sphere.³²⁰ Building, recognizing, and enhancing women’s leadership, through their own agency, is essential. It should be achieved with the encouragement of institutional,

governmental, donor, and NGO partners as well as with the full support of male counterparts. Gender analyses, data collection, assessments, and gender-specific monitoring and evaluation should forestall maladaptation while promoting gender equality and women’s empowerment. Giving specific attention to diverse groups of women – girls, elderly, indigenous communities, and those living in poverty – should be part of those efforts.

The starting point in this web centers in the concrete and real effects of climate change on women and men’s lives. Their experiences inform policies that are governed by constituency-driven political commitment to gender equality. This will ideally translate into concrete plans and programmes enabling gender-transformative adaptation. Specific organizations will be tasked to develop, conceptualize and deliver these programmes as well as build capacities of target groups and to manage monitoring and evaluation of effectiveness that will generate greater understanding.

FIGURE 1 Institutional spheres



Source: adapted from Levy, C. 1996. The Process of Institutionalising Gender in Policy and Planning: the 'Web' of Institutionalisation. Working Paper. London, UK: Development Planning Unit, University College Publishing.

8.1 Citizen Sphere: Women's participation, empowerment and leadership

Under-representation and sub-ordination of women in social and political life subvert adaptation policies and programs. Women's participation plays a crucial role in enhancing gender concerns in adaptation activities, especially through their active participation in the implementation of community-based and ecosystem-based adaptation initiatives. A cross-country analysis of women's participation in forest management in four countries and of aggregated datasets from forest associations in ten countries concludes that women are more likely to participate when forest institutions are less exclusionary, when households have more education, and when economic inequality in general, and particularly across genders, is smaller.³²¹ This comprehensive analysis demonstrated that a history of women's participation in forest management correlates highly with less disruptive conflicts – conflicts that erode community resilience in the face of climate change. Women's organizations play key roles in advocating for and participating in climate action and for building further leadership in climate adaptation.³²²

Women's active participation and equal gender representation are also necessary at global negotiation levels, including in national delegations and negotiating blocks. In that context the Women's Delegate Fund plays an important role promoting investment in women's leadership, in gender balance on government delegations, and in advocacy on gender and climate change.³²³ Networks of women's and gender-focused NGOs are playing crucial roles in promoting gender-responsive climate change agendas and in keeping governments, climate funds, corporations, and other stakeholders accountable.

8.2 Policy Sphere: Frameworks for planning and implementation

The importance of gender transformation has been recognized gradually over past decades and is reflected in international decisions and legal frameworks (Annex 2). The policy basis is formed by the bill of women's rights, 1979's Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).^{324, 325} Since UNFCCC's COP7 in 2001, several decisions have been made on climate adaptation and the goals of gender equality and women's empowerment. These resulted, for example, in the 2014 Lima Work Programme on Gender and



Photo: Pin Pravalprukskul

the 2017 UNFCCC Gender Action Plan. Also, 2018's Paris Implementation Guidelines help advance gender responsiveness and gender balance in the Nationally Determined Contributions (NDCs), Adaptation Communication, Finance, Technology, Transparency, and Compliance.^{326, 327}

Although capacities and commitments to gender equality in adaptation planning are uneven, some Least Developed Countries placed strong focus on gender and social issues in their National Adaptation Plans of Action (NAPA). For example, Uganda's 2007 NAPA prioritized gender issues and enhancing the position of disadvantaged groups in the context of climate adaptation.^{328, 329} Others have developed practical guidelines for the NAP process (Annex 3).³³⁰ The Gender and Climate Tracker developed by the Women's Environment and Development Organization offers an overview of gender mandates in climate policy and of gender NDCs.

Despite the many commitments on gender responsiveness in climate policies, there are significant gaps between policy and implementation. For example, one of the pioneering countries when it comes to mainstreaming gender considerations, Mexico, has designed an advanced gender-specific legal climate framework. According to Castañeda and colleagues, this is poorly institutionalized, public awareness is lacking, and intentions are not translated into public policy and action.³³¹ As well, existing power gaps between women and men and the challenges associated with implementation of policy were inadequately addressed.³³² And although the European Parliament adopted a Resolution on Women and Climate Change in 2012 – and the European Commission mentioned that it wanted to give special attention to social groups and regions most exposed and already disadvantaged – the 2013 European Union Strategy on Adaptation to Climate Change does not make any reference to gender issues or the role of women in European adaptation.^{333, 334}

Although legal commitments at international level on gender-responsive adaptation are in place, they are only partly translated into national policies and actions for adaptation, and implementation of such commitments is lacking behind. The silos in which many organizations work, and the absence of both mandate and expertise, form major hindrances to a more holistic approach. Policy leadership and strong civil society pressure can push for compliance. Of course, to achieve these aspirations, budgets should reflect these policy priorities.

8.3 Organizational Sphere: Multi-level actions and output

Progress in policy and implementation is bolstered through high-level political will, support and mandate on gender-transformative climate change adaptation.^{335, 336} ³³⁷For example, the government of Costa Rica prioritizes gender-responsive action in environmental conservation and specifically assigns this to the Vice Minister of Foreign Affairs.³³⁸ An analysis of the governmental vision and values for the forest sector in Sweden underlines that gender-responsive and transformative changes need fundamental modifications in sectors and organizations. The government identified climate change as a business opportunity and a means to secure economic growth and employment; gender equality is not seen as a value in itself, but as instrumental to the forest industry with women as potential workforce. Such a vision is strongly rooted in the sector's history, and shows that institutional values, changes in power dynamics, and collective purposes such as climate adaptation and mitigation are still underrepresented.³³⁹

A wide range of guidelines and tools is available that can help organizations and institutions to promote gender equality and women's empowerment in their adaptation work. In 2012, the Least Developed Countries Expert Group drafted Technical Guidelines for the NAP process with the goal of strengthening gender considerations and those regarding vulnerable communities.^{340, 341} The UNFCCC Secretariat has developed Technical Guidelines for gender mainstreaming in NAPs and other climate-related activities, that refer to gender, mobilization, participation and empowerment of women.^{342, 343} Gender mainstreaming guidance notes for the integration of agriculture in NAPs (NAP-Ag) have been developed by FAO and UNDP.³⁴⁴ To demonstrate the transformative potential of gender equality, the International Union for Conservation of Nature (IUCN) Global Gender Office supported more than 20 governments and other stakeholders in developing Climate Change Gender Action Plans (ccGAPs).

Apart from mandate, tools and instruments, within organizations dealing with adaptation, a thorough gender lens needs enough gender expertise. In that context, close cooperation on adaptation with gender institutes, academia, and departments is vital. For example, the Ministry of Environment and Forestry in Indonesia cooperates

with the Ministry of Women's Empowerment and Child Protection, and it revitalized its Gender Working Group in 2012, initiated gender-responsive budgeting, and increased its gender capacity through trainings.³⁴⁵

8.4 Delivery Sphere: Data and knowledge, monitoring, access, and control

Access to gender-differentiated data and the application of gender and power analyses are essential to enable gender and socially responsive planning and implementation, especially for adaptation (Annex 4 and 5).^{346, 347} 2019's Sixth Global Environment Outlook (GEO6) underlines that to understand environmental change, data and other variables should be disaggregated by age, gender, race, and other socio-economic factors.³⁴⁸ This should reveal important dynamics relating to gender and other marginalizing characteristics with respect to labor, equity, responsibility, and environmental use and management.³⁴⁹ However, many data gaps still persist, due to limited collection, dissemination and application of gender-relevant statistics.³⁵⁰ This is also the situation in the Global North: extensive review of forestry research across North America and western Europe found almost no research addressing differential social capabilities within forest-based communities that affect climate change adaptation.³⁵¹ As a recent study of UN Environment and IUCN underlines, there is an urgent need to strengthen gender statistics – “statistics that adequately reflect differences and inequalities in the situation of women and men in all areas of life” – for climate adaptation.³⁵² Also gender indicators have been produced for practitioners to track and monitor gender dimensions in environmental and climate change projects. For example, the Women2030 project of Women Engaged for a Common Future has developed a gender impact assessment and monitoring tool to explore different thematic areas that are also relevant in the context of adaptation projects.³⁵³

Labeling and certification is another instrument that can enable gender justice in adaptation. In Indonesia the National REDD+ Agency has developed Principles, Criteria, Indicators of REDD+ Safeguards Indonesia (PRISAI) that seek to integrate gender perspectives in its principles.³⁵⁴



Photo: Rajesh Daniel / SEI

8.5 Conclusion

There is a growing critical mass of organizations that are enabling climate change adaptation from a gender-equality perspective through planned programmes and policies in countries and in international bodies. The task now is not to disrupt this momentum but to build on it and carry it forward. Challenges remain, but the institutional enablers of change have ensured that gender equality, and related social justice perspectives, will persist as empowering discourses and practices in climate change adaptation.

9. Summary of findings and recommendations

Power and gender inequality can constrain and limit climate change adaptation. Ignoring gender inequality while adapting to climate change can lead to maladaptation, further increasing vulnerabilities of those already burdened disproportionately and/or by creating new types of exclusions. Unfettering the agency of individuals and collective groups, through policies and actions that promote gender-transformative adaptation, can help achieve the necessary system change.

Gender-transformative adaptation is highly context-specific and often emergent. The complexities of its nature, which include requirements and operating contexts as well as geographic, organizational and sectoral conditions, weigh against prescribing specific fixed steps or indicators in this paper. Doing this could foster simplistic approaches that are counterproductive to addressing power dynamics and gender inequality in any meaningful way. The following are recommendations to serve as guidelines for advancing

gender-transformative adaptation in agriculture, environment, finance, cities, infrastructure, and industry:

Findings: Broader structural realities that obstruct transformative adaptation

- The broader political ecology and economy compromise local livelihoods through exploitation, appropriation, and extraction of resources by a few powerful players in the name of economic growth. These predatory dynamics disregard the interests of significant populations of small producers and poor households, including women from diverse groups who depend on these resources for their daily livelihoods and survival.
- Intersecting inequalities – such as low income, migrant status, sexuality, ethnic background, age, (dis)ability, and/or gender – undermine people’s benefits, assets, opportunities, and adaptive capacities.

Recommendations for analysis and planning:

- Conduct rigorous, multi-scalar, participatory and holistic gender analyses that identify ways to redress context-specific constraints as an intrinsic



Photo: Rajesh Daniel / SEI

sic part of the modus operandi of custom-designing adaptation measures.

- Use gender analyses to explore ways of breaking procedural habits that marginalize persons, peoples, and communities, with the objective of transforming the broader political and economic trends to enable adaptation practices at the macro level, as well as across local realities and conditions.
- Utilize these comprehensive analyses as a basis for critical reflection and dialog with scientists, policymakers, planners, and stakeholders to identify strategies for change and to then formulate, and follow through on, appropriate measures and indicators in pursuit of transformative adaptation.
- Ensure that specialists in gender and social justice lead and conduct the analyses, so they are not passed on to non-specialists as token compliance with project, donor, or international requirements.
- Recognize that gender-transformative adaptation is an iterative process shaped by multiple feedbacks and loopholes in addressing power relations. Thus, gender-transformative adaptation is an inherently political and dynamic set of measures and strategies; it is not a technical process made up of fixed and one-size-fits-all prescriptions.

Findings: Practices that create gender inequalities in society

- Inequitable access to and control of resources and a lack of democratic rights limit the benefits and opportunities for groups of women.
- Patriarchal gender practices, by definition, control and constrict women's autonomy, voices, and bodies, perpetuating vulnerabilities that are compounded by intensifying climate change hazards.
- Unequal gender relations lead to women's time poverty and to disproportionate burdens of care that intensify during crises.

Recommendations for supporting the agency of women and other groups:

- Promote policy and legislative reforms and programs to enable equal and fair access to and control of resources for traditionally excluded women and men.
- Invest in basic social services and infrastructure – particularly health care, water, sanitation, childcare, and labor-saving technologies – that reduce women's workloads and build resilience without further curtailing their time and self-determination.
- Create opportunities for women's self-organization, critical reflection, and partnerships with civic organizations to strengthen women's claims to their own bodies, to social and natural resources, and to authorities' accountability. Create spaces where women's voices and rights are duly recognized and exercised. Promote women's equal participation and voice in existing civic organizations to share experiences and solutions across groups and sectors, including transnationally.
- Support and create gender-awareness and skills-training opportunities for men and women in different systems and institutions, with the intention to redistribute care work and to cultivate alternative views of care for people and environment.
- Identify and closely liaise with gender-equality champions in well-known organizations to support efforts encouraging less visible groups to adapt positively in transformative ways.
- Invoke and utilize various national and international gender agreements and other change enablers to legitimize attention to promote women's empowerment holistically through the citizen sphere, the policy sphere, the organizational sphere, and the delivery sphere.

Findings: Positioning gender equality in climate change programs

- The (re) masculinization and elite capture of new opportunities – under the aegis of the green economy through climate change programs such as carbon markets and industrial agriculture – will sanction old and new gender, class, and ethnic exclusions; therefore, it is maladaptive.
- Climate-proofing supply chains often avoids or ignores highly unequal power relations within supply chains and their implications for exploitative labor practices and social injustice.
- Some gender-transformative adaptation initiatives and programs already exist in all systems that do not burden women further and do ensure equitable benefits to all.

Recommendations for gender mainstreaming in existing sectoral programs:

- Improve the gender balance of planning and decision-making bodies at different administrative scales – even in traditionally technical systems like infrastructure, natural environment, finance and agriculture – not only by incorporating women but by recognizing which women and which men participate and who it is that they do or do not represent.

- Place labor issues at the forefront of climate risk analyses of industry supply chains to ensure social protection for employees facing climate change threats.
- Ensure that high-quality and rigorous gender analyses inform the design of sustainability and finance projects that require monitoring for results and lessons to avoid new exclusions or harm.
- Systematically track, monitor and evaluate adaptation financing across systems. This is necessary to ensure relevant gender requirements are met and to identify gaps and opportunities that accelerate transformative change.
- Learn from existing gender-transformative adaptation programs by applying and contextualizing lessons and good principles in other places. Good principles include avoiding assignment of further burdens on women, exercising democratic rights to express needs and interests, demanding accountability when necessary, and ensuring benefits are equitable.



Photo: King Baudouin African Development Prize / Flickr

Annexes

Annex 1: Examples of gender-sensitive budgeting and climate finance

Country	Example
Azerbaijan	The performance report of the UNDP Global Environmental Finance Unit highlights efforts undertaken to address environmental challenges. In Azerbaijan, transformative change was achieved through multiple interventions, and women now make up 40 percent of participants working toward increased resilience to floods and improving water management. Their efforts have strengthened local water-resource and flood-management technology.
Bangladesh	The Green Climate Fund (GCF) recently approved \$25 million project in Bangladesh focusing on gender and climate change. UNDP is supporting the Ministry of Women's Affairs in implementing this 6-year project. The project supports women and adolescent girls in coastal communities to cope with climate change induced salinity. A key aspect focuses on enhancing women's access to markets and finance.
Grenada	Within the GCF and the <i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> (GIZ) project to addresses the main climate risks and vulnerabilities of Grenada to adapt to climate change through freshwater availability and disaster preparedness, provisions have been introduced to reduce women's water -related work burden. The project invests in activities to ensure that men and women will have equal access to funds to support water efficiency measures by water users.
India	In India, the GEF Small Grants Programme ensures sustainable livelihoods through uptake of energy-efficient stoves, training on eco-friendly work, and farming practices for more than 2400 women-led initiatives.
Malawi	The FAO-GEF project on Building Climate Change Resilience in the Fisheries Sector recognizes women as vital stakeholders in managing and using aquatic resources, addressing women's constraints and capacity gaps, and promoting gender-differentiated technologies and adaptive actions. The work includes training for women on alternative income-generating activities and opportunities through community mobilization, as well as a gender-sensitive monitoring and evaluation system.
Pakistan	The GCF transport projects support a gender-sensitive restructuring of the public transport network. Implemented jointly by the Asian Development Bank and Pakistan's Ministry of Climate Change, the project aims to provide safe sitting and standing spaces for women and to raise awareness geared toward changing people's perceptions, as well as improvements to policies, programs, and procedures.
Uganda	The GCF project on Building Resilient Communities, Wetlands Ecosystems and Associated Catchments in Uganda identifies women as key players in natural resource management and in the agricultural sector through their contributions to food security, livelihoods, and water management. The gender action plan includes resilience-building through training for alternative livelihoods, community participation in natural resource management, and restoration activities. The plan intends to engage women and men in defining needs for information on climate and early warning.

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Annex 2. Overview of international gender-specific environmental and climate commitments

- **1979 – Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)** is the first international bill of women's rights that looks into issues regarding rural development, and that addresses issues of resources, credit, education, the right to work and participation.
- **1992 – United Nations Conference on Environment and Development (UNCED)** resulted in the Rio Declaration and Agenda 21 (1992) that recognize women as a major group in sustainable development and underline the importance of taking into account gender and social dimensions in environment, and the relevance of environmental issues for gender equality and women's empowerment, respectively.
- **1992 – United Nations Framework Convention on Climate Change (UNFCCC)** was adopted in 1992 in Rio de Janeiro. This international environmental agreement was, however, the only Rio Convention that did not make any reference to gender and social issues.
- **1992 – United Nations Convention on Biological Diversity:** recognized the importance of a gender-specific approach in the conservation and sustainable management of natural resources.
- **1995 – Fourth United Nations Women's Conference:** Beijing Declaration and Beijing Platform for Action: Section K discusses the interface between Women and the Environment, and accordingly proposes strategic objectives³⁵⁵ and action points.
- **1997 – the Kyoto Protocol** was an extension of the UNFCCC, specifically looking into climate change mitigation, but again no references to gender aspects.
- **2001 – COP7 in Marrakesh:** UNFCCC parties have recognized gender equality and women's participation, as important principles.
- **2011 – COP17 in Durban:** UNFCCC adopted Decision 5/CP.17 on Guidelines for National Adaptation Plans (NAPs) should be country-driven, participatory, with a gender-sensitive approach.
- **2012 – COP18 in Doha:** UNFCCC adopted decision 23/CP.18 on promoting gender balance and improving the participation of women in negotiations and in the

representation of Parties in bodies established pursuant to the Convention or the Kyoto Protocol.

- **2014 – COP20 in Lima:** UNFCCC adopted decision 18/CP.20 requested the secretariat to prepare an Action Plan for the development of the two-year work program on gender, also known as the Lima Work Programme on Gender. As part of this process, the secretariat maps decisions and implementation on gender and climate change, and compiles these for the COPs.
- **2015 – COP21 in Paris:** in the UNFCCC Paris Agreement, gender aspects included in Preamble, Adaptation, Capacity Building; but not in the sections on mitigation, technology development and transfer, or financing. In decision 1/CP.21, an Annex, Parties acknowledge:
...climate change is a common concern of humankind, Parties should...respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity.
- **2015 – Sendai Framework for Disaster Risk Reduction:** adopted at the World Conference on Disaster Risk Reduction, it calls for stronger gender, age, and disability perspectives in policies and practices; promotion of women's leadership; women's participation in DRR; resourcing and implementing gender-sensitive DRR; and adequate capacity building measures for women's empowerment and livelihoods.
- **2015 – The 2030 Agenda for Sustainable Development:** has a strong gender focus in SDG5 (achieve gender equality and empower all women and girls) – with nine specific targets and gender-sensitive targets for most other SDGs. Also, SDG 10 (reducing inequality) is relevant in this context. All SDGs, including SDG 13 (climate action), have important gender-equality implications and require a gender-sensitive approach to meet the 2030 targets.
- **2016 – COP22 in Marrakech:** UNFCCC Parties reviewed progress made toward the goals of gender balance and the implementation of gender-responsive climate policy and decided to continue and enhance the Lima work programme on gender for a period of 3 years. Decision 21/CP.22 was adopted by the COP: a call for submissions on

views on possible elements of the gender action plan to be developed under the Lima work programme on gender (UNFCCC, 2016a).

- **2017 – COP23 in Bonn:** UNFCCC Parties adopted a new roadmap to incorporate gender equality and women's empowerment in climate change discourse and actions. The creation of a Gender Action Plan was agreed upon by the Parties, to bolster the role of women in climate action.
- **2018 – COP24 in Katowice:** UNFCCC Parties adopted the Paris Implementation Guidelines with explicit reference to the importance of gender responsiveness, gender balance, taking into account social aspects, and including traditional/indigenous/local knowledge in several areas: the Nationally Agreed Contributions (NDCs), Adaptation Communication, Finance, Technology Framework, Transparency Framework, and Compliance. This context is also promoted in the work of the Subsidiary Body on Scientific and Technological Advice and the

Subsidiary Body on Implementation to use a gender-specific approach, including in the review of the Lima Work Programme on Gender in 2019.

- **2018-2023 – The UNFCCC Gender Action Plan (GAP):** sets out priority areas of adaptation; mitigation; and the means of implementation including finance, technology development and transfer, capacity building as the activities that will help achieve the gender mainstreaming objective in climate change. These range from increasing knowledge and capacities of women and men through workshops and information exchanges, to pursuing the full, equal and meaningful participation of diverse women in national delegations. Also prioritized was the need to increase integration of the gender considerations into the areas of work of all Parties to the Convention; and to increase climate-related financial resources that integrate gender priorities and reflect the needs of women and girls. Lastly, the GAP seeks to improve tracking of the implementation of the gender-related decisions.

Annex 3. Gender-responsive NAP processes: Key issues for NAP teams to consider

Planning	Implementation	M&E
Use sex-disaggregated data, gender-sensitive vulnerability assessments and inputs from gender experts.	Ensure that adaptation actions enhance equity in realization of rights and access to resources for women and men.	Involve gender experts in development of M&E frameworks.
Analyse relevant (inter)national policies to identify opportunities and gaps.	Build on and involve existing strategies, policies and programs that address gender and other social inequalities.	Incorporate sex-disaggregated data collection and gender analysis of data. Look also into other relevant social differentiation aspects.
Recognize women as distinct stakeholder group in NAP process.	Integrate gender equality in criteria for prioritizing adaptation actions.	Involve local women and men in data collection and analysis.
Ensure effective participation of women, and their organizations and gender institutes.	Ensure that adaptation actions address gender-related and other socially constructed vulnerabilities.	Include indicators of gender equality as women's empowerment in adaptation processes.
Build on existing good practices relating to gender in CCA process.	Support women and other vulnerable groups to access resources and opportunities for adaptation; target vulnerable groups.	Evaluate – with the support of local organizations – differentiated impacts of adaptation actions on women and men.
Ensure inclusive decision-making that takes the specific needs of women and men from different social groups into consideration.	Build on existing knowledge and capacities of women and men; empower women's organizations to take on leadership roles in climate action.	
	Practice gender-responsive budgeting; ensure allocation of (financial) resources for adaptation is gender-equitable.	

Source: adapted from Dazé and Dekens, 2017; p.5

Annex 4: Considerations for formulating gender indicators for environmentally sustainable development and climate change at the country and sector level

HUMAN CAPITAL
Number of community-based adaptation activities that strengthen women's access to resources for sustainable food production, renewable energy, and clean water sources
Number and percentage of poor women and men with increased resilience to deal with climate changes
Time saved in collecting and carrying water, fuel, and forest products due to environmentally sustainable and climate change adaptation activities
ECONOMIC EMPOWERMENT
Number and percentage of women and men who access employment or increase their incomes due to climate change adaptation or mitigation activities
VOICE AND RIGHTS
Evidence that climate change policies, strategies and plans require the participation and involvement of poor women and men in developing and managing local adaptation and mitigation plans
GENDER CAPACITY BUILDING
Evidence that policies, strategies, and plans are based on gender analysis of the different impacts of climate change on poor women and men and include gender equality.

Source: adapted from Asian Development Bank, 2013. Tool Kit on Gender Equality Results and Indicators. Mandaluyong City, Philippines: ADB; pp.29-34

Annex 5: Examples of gender-responsive indicators in climate change projects

OUTCOME / IMPACT LEVEL
Well-being and livelihoods:
Number and percentage of poor women and men with increased resilience to deal with climate change (e.g., use of climate-resilient crops and farming techniques, improved land management, clean technologies, increased knowledge and strengthened networks on climate change issues, number/percentage of women-headed households provided with resilient home)
Economic empowerment:
Number of female entrepreneurs with adequate access to financing for low-carbon and climate-resilient investment
Participation and decision-making:
Proportion of women in sectoral ministry in senior management positions
Capacity development:
Number and percentage of women and men trained in energy-saving and sustainable agricultural technologies (e.g., adaptations to land management practices in marginal and fragile lands, adaptations related to changed rainfall patterns)
OUTPUT LEVEL
Sectoral planning and policies:
Sex-disaggregated data routinely collected and applied to sectoral policy, planning, implementation, monitoring and evaluation
Business model and technology solutions:
Number and percentage of women adopting low-carbon and climate-resilient solutions
Access to finance:
Number / proportion of women with improved access to financial mechanisms (equity investment, affordable loans, etc.)

Source: UN Women, 2016. Leveraging Co-benefits between Gender Equality Results and Indicators: Mainstreaming gender considerations in climate change projects. Annex 1, pp. 58-61

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