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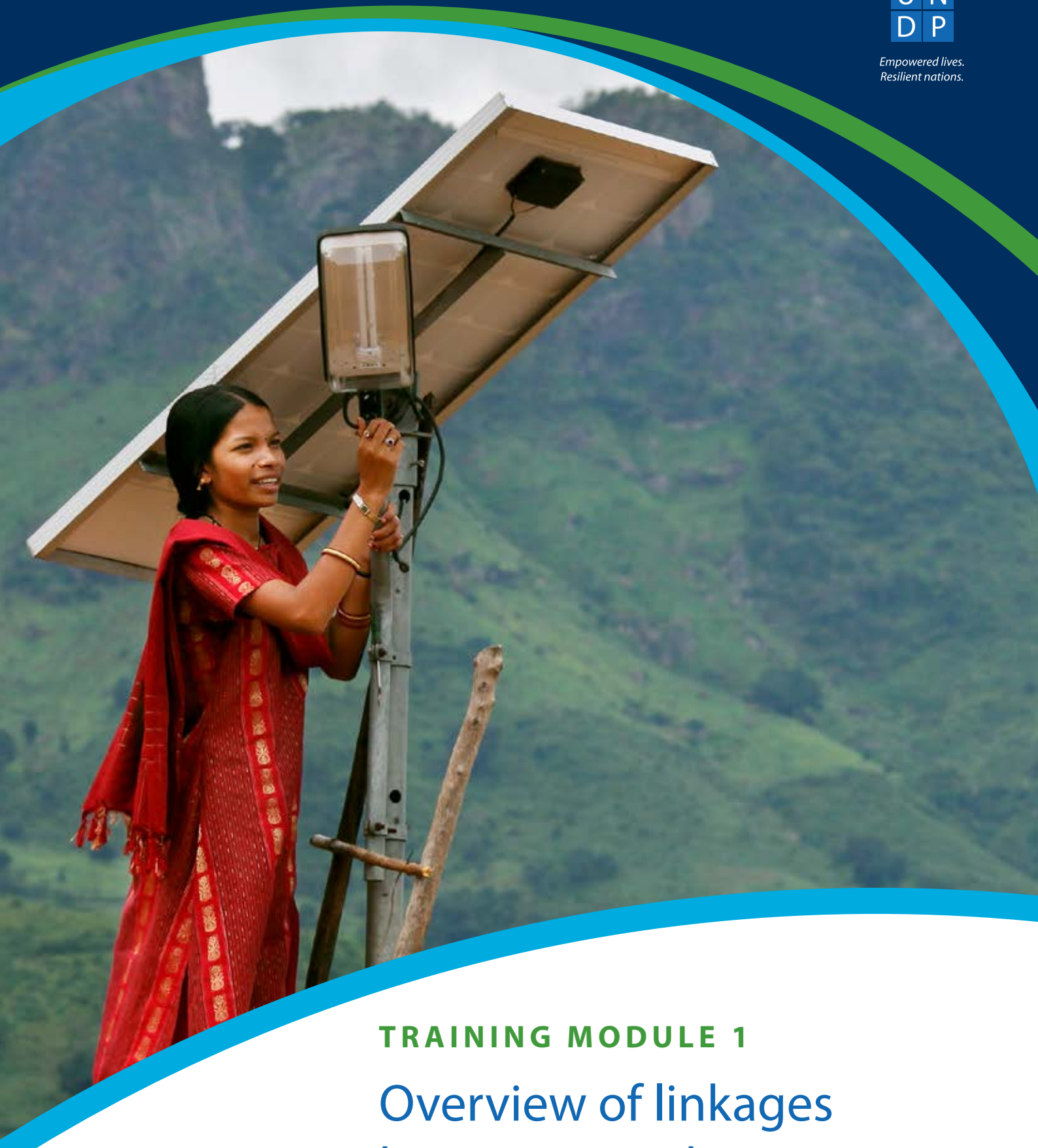

TRAINING MODULE 1

Overview of linkages between gender and climate change

Outline

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1 Purpose of the training module

1A Rationale

As the United Nations lead development agency with extensive field experience, the United Nations Development Programme (UNDP) has implemented numerous innovative initiatives that support national-level work on gender equality and women empowerment. UNDP's work on gender is guided by the Beijing Platform for Action (BPFA), Convention on the Elimination of All Forms Discrimination against Women (CEDAW) and frameworks provided by the Sustainable Development Goals (SDGs).

UNDP Gender Team presents updated versions of 10 training modules and policy briefs on gender dimensions of climate change covering a range of themes and sectors. An additional set of knowledge products has also been added covering the gender and REDD+ interface. These knowledge products are designed to build capacity in member countries with respect to gender and climate change within the context of sustainable development. Their preparation has been made possible by contributions from the Government of Finland.

This first module in the series deals with gender dimensions of climate change.

Icon Key

Activity or Exercise

Link to other Modules

PowerPoint/video presentation

Readings

Important information

Timing indication

Internet link

1B Module structure and method

This module provides the basic information and learning tools needed to understand and advocate for the integration of a gender perspective into regional, national and community-level climate change initiatives. It covers the following topics:

- Climate change and sustainable human development
- Gender dimensions of climate change
- The need and available options for gender-responsive actions to climate change

Part II of this module outlines learning objectives and presents what users can expect to know when the training concludes. Part III spells out the key take-away messages, followed by Part IV, which presents the climate change – sustainable development interlinkages – and Parts V and VI, which address gendered vulnerabilities to climate change impacts and options for making climate change actions gender-responsive. At the end of the training, users will have an understanding of the intersections among climate change and sustainable development, gender inequities and climate risks, gender-related vulnerabilities to climate change and the positive and important roles that women play in climate change mitigation and adaptation efforts.

The module also presents case studies and other learning tools (e.g., hand-outs and group activities) to think through issues when designing gender-responsive actions to climate change and to help facilitate use of the module. In addition, the module employs six pictures and icons to help make it user-friendly (see Box 1). The module includes several cross-references in order to encourage facilitators and participants to consult the other modules in this series.

Training based on this module can be delivered in three sessions:

- Session 1: Parts II and IV (1 hour)
- Session 2: Part V (1.5 hours)
- Session 3: Part VI (1.5 hours)

Total estimated session time: 4 hours

See Appendix B, Learning Tools, for a breakdown of time suggested for each activity.

2 Learning Objectives

- *Understand the basics of climate change science, the imperatives of mitigation and adaptation as well as climate change linkages with sustainable development.*

- *Identify gender dynamics associated with climate change, including specific gender-based inequities that contribute to women's disproportionate exposure and vulnerability to the adverse effects of climate change as well as women's positive contribution to the climate effort.*

- *Identify policy and programming responses that support the complementary goals of gender equality, women's empowerment and climate change adaptation and mitigation.*

3 Key messages

The Earth's climate is changing already and failure to limit warming to below 2°C could make the changes in the climate system irreversible often with cataclysmic consequences. Climate change impacts have the potential to increase the vulnerability, and threaten the livelihoods of, millions of poor people across the world, many of whom already face exposure to a diversity of challenges, including disasters, hunger, susceptibility to disease outbreaks and loss of livelihoods.

Key climate change impacts include increases in the intensity and/or frequency of natural-hazard induced disasters such as prolonged dry spells and associated droughts, intense rainfall, snow avalanches and severe dust storms. However, there is a significant variance across geographies and demographics with regard to vulnerability to these impacts.

The adverse impacts of climate change overly burden the poorest and the most marginalized segments of society (e.g., women, children and indigenous peoples). Gender-based inequalities in law and in practice, gender-defined roles in society and sociocultural constraints render women disproportionately vulnerable to climate change.

Despite growing recognition of the differential vulnerabilities as well as the unique experiences and skills women and men bring to development and environmental sustainability efforts, women still have less economic, political and legal clout and are hence less able to cope with—and are more exposed to—the adverse effects of the changing climate. Climate change impacts can exacerbate existing gender inequalities.

Women are powerful agents of change and continue to make increasing and significant contributions to sustainable development, despite existing structural and sociocultural barriers. They make considerable contributions to livelihoods, family well-being, natural resource management, biodiversity conservation, health and food security, which are all important assets that policy makers should draw upon to inform climate change responses.

Whereas climate change poses risks to gains made to achieve sustainable development goals and objectives, the efforts at tackling the challenges create opportunities for advancing sound social policy that gives due recognition to the unique contributions and skills of all members of society.

Because poverty and the social, legal and socio-economic marginalization of women are at the heart of gender-based vulnerabilities, efforts must be made towards enhancing women's asset base. These efforts should include pro-poor and gender-responsive legal and policy reform with the view towards strengthening the resilience of poor and marginalized groups (including women) and empowering them to develop sustainable and resilient livelihoods.

Decision makers and development partners at all levels and sectors need to integrate gender perspectives into the planning, financing and implementation of adaptation and mitigation efforts. A growing body of evidence establishes that gender equality and women's empowerment lead to productivity gains and environmental sustainability across scales and sectors. Involving women and men and drawing on their distinct experiences in communities and households will increase the effectiveness and sustainability of climate responses. In contrast, when policy makers overlook women's roles, capacities and potential, climate responses deprive nations of half of the available expertise and resources that would otherwise have made critical contributions to adaptation and mitigation action.

As the global community transitions into the implementation phase of the 2030 Agenda for Sustainable Development and the Paris Agreement, it is imperative that gender equality and women's empowerment continue to influence, shape and drive the collective climate and human development effort.

Mainstreaming gender in climate change policies and programmes helps ensure the integration of women's issues, needs and contributions across the planning and execution cycle of climate change policies and projects. To this end, there is a range of analytical and advocacy tools, guidelines and case studies, as well as a growing pool of national experts on gender and climate policy that could be drawn on for insights and guidance.

4 Climate change linkages with sustainable human development

Learning objective:
Understand climate change, the challenges it poses and the opportunities it presents for human development.

1. Climate change is perhaps the greatest threat to sustainable development. Earth temperatures have exceeded global annual averages for 39 consecutive years – Earth's 2015 temperature was the hottest year in recorded history. Based on recent analyses of ground-based observations and satellite data from the US National Aeronautics and Space Administration (NASA), the year 2016 is also on track to beat the heat record. In fact, the first six months of 2016 were the warmest six-month period since 1880, when records of temperatures began (NASA 2016; See Figure 1).

2. According to the Intergovernmental Panel on Climate Change (IPCC), many observed impacts of the changing climate such as sea level rise are happening more quickly than previously predicted, threatening coastal communities and critical infrastructure by increasing the frequency of disaster events, including flooding and storms. Similarly, the world's two major ice sheets are melting much faster relative to past decades (IPCC 2014a).


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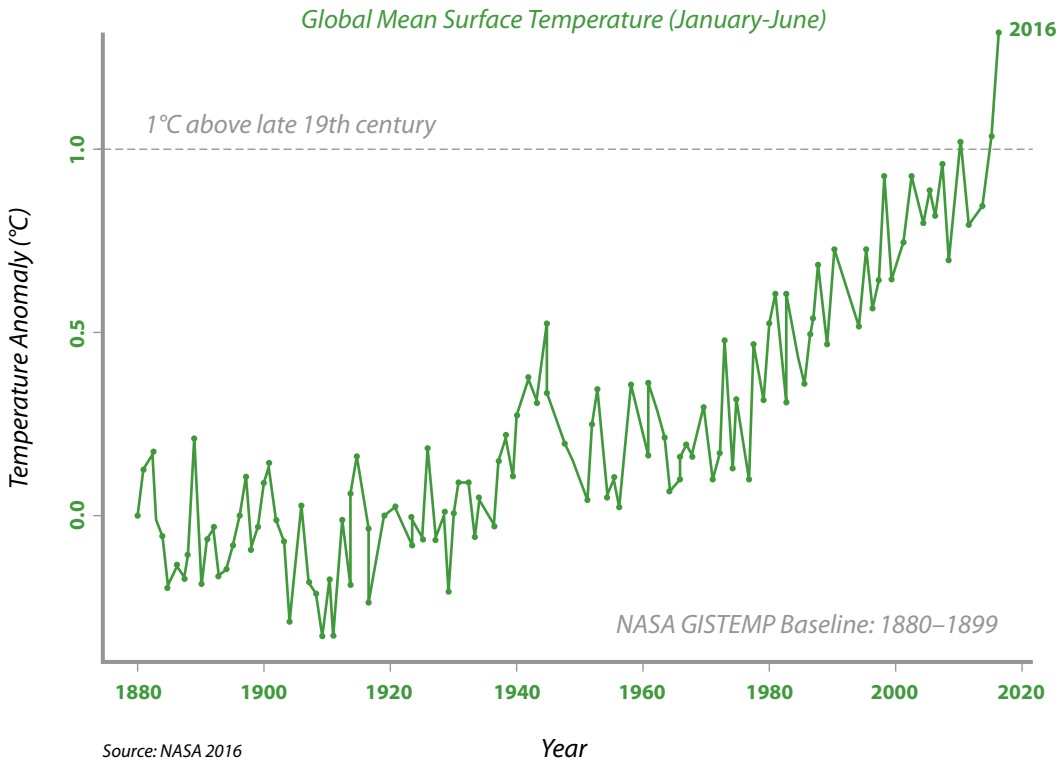
FIGURE 1 *Global Mean Temperature (January - June 2016)*



Source: NASA 2016

Box 1 *Climate Risk and Reasons for Concern (RFCs)*

Key risks inform what is described in Art 2 of the UNFCCC Convention as "dangerous anthropogenic interference with the climate system." They enunciate the potentially severe adverse impacts for humans and ecological systems of climate change hazards. The IPCC organizes many of the risks of climate change into the following five reasons for concern (RFCs).

RFC 1. Risks to unique and threatened systems
RFC 2. Risks of extreme weather events
RFC 3. Distribution of impacts and vulnerabilities
RFC 4. Aggregate impacts
RFC 5. Risks of large-scale singularities

RFCs show probabilities of impacts and happenings at various degrees of warming and are expressed as reasons for concern associated the particular RFC. They vary substantially depending on the development pathways chosen (e.g., business as usual vs. switch to renewable energy). The following are risks reported in the 5th IPCC Assessment Report associated with the relevant RFC described above:

↓

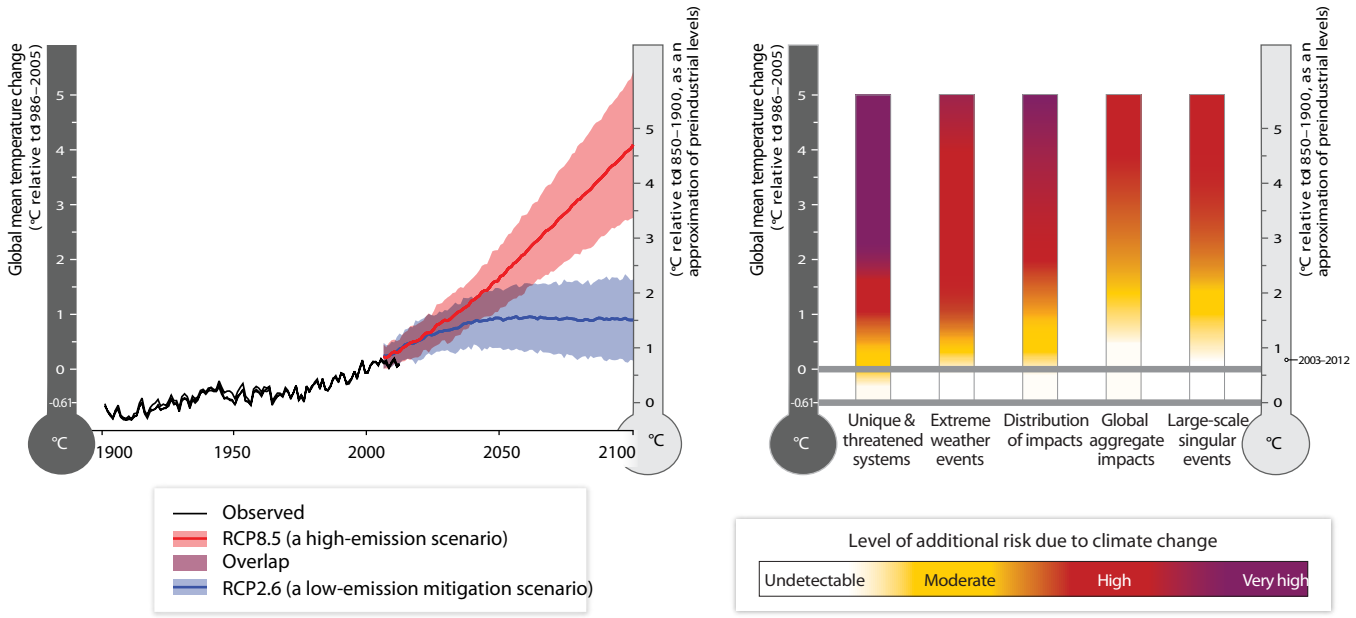
Box 1 *Climate Risk and Reasons for Concern (RFCs)*

- *Risk of death, injury, ill-health or disrupted livelihoods in low-lying coastal zones and small island developing states and other small islands, due to storm surges, coastal flooding, and sea level rise. [RFCs 1-5]*
- *Risk of severe ill-health and disrupted livelihoods for large urban populations due to inland flooding in some regions. [RFCs 2 and 3]*
- *Systemic risks due to extreme weather events leading to breakdown of infrastructure networks and critical services such as electricity, water supply, and health and emergency services. [RFCs 2-4]*
- *Risk of mortality and morbidity during periods of extreme heat, particularly for vulnerable urban populations and those working outdoors in urban or rural areas. [RFCs 2 and 3]*
- *Risk of food insecurity and the breakdown of food systems linked to warming, drought, flooding and precipitation variability and extremes, particularly for poorer populations in urban and rural settings. [RFCs 2-4]*
- *Risk of loss of rural livelihoods and income due to insufficient access to drinking and irrigation water and reduced agricultural productivity, particularly for farmers and pastoralists with minimal capital in semi-arid regions. [RFCs 2 and 3]*
- *Risk of loss of marine and coastal ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for coastal livelihoods, especially for fishing communities in the tropics and the Arctic. [RFCs 1, 2 and 4]*
- *Risk of loss of terrestrial and inland water ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for livelihoods. [RFCs 1, 3 and 4]*

Sources: Oppenheimer et al. 2014

3. Other impacts are being felt in all corners of the world - extreme weather events, heat waves and droughts have increased in frequency and intensity, often with damaging effect to agriculture, fishing and other livelihoods. Climate change can jeopardize gains made by the global community in important domains such as food security, access to health and education (UNDP 2015a; UNDP 2010; Bierbaum et al. 2009; World Bank 2010; see Box 1 and Figure 2 for a list of critical risks – Reasons for Concern – that could be exacerbated by climate change). See below (Para 4-9) for examples of current and projected impacts, by sector, along with links to corresponding Modules in this series.

FIGURE 2 *A global perspective on climate-related risks.*



Note: "Risks associated with reasons for concern are shown at right for increasing levels of climate change. The color shading indicates the additional risk due to climate change when a temperature level is reached and then sustained or exceeded. Undetectable risk (white) indicates no associated impacts are detectable and attributable to climate change. Moderate risk (yellow) indicates that associated impacts are both detectable and attributable to climate change with at least medium confidence, also accounting for the other specific criteria for key risks. High risk (red) indicates severe and widespread impacts, also accounting for the other specific criteria for key risks. Purple, introduced in this assessment, shows that very high risk is indicated by all specific criteria for key risks. For reference, past and projected global annual average surface temperature is shown at left."

Source: IPCC 2014b

4. **Food Security (Agriculture)**: Climate change impacts on agriculture vary by crop, region and season, but the overall impact on the sector is net negative. Climate change is already hampering agriculture production by ruining crops through increased drought and flooding – it has already led to reduction yields by 1-2 percent in the last century and the prediction is that this will get worse (Weibe et al. 2015; IPCC 2014; Gourdji et al. 2013). To illustrate, maize and wheat yields have already decreased by 3.8 percent and 5.5 percent, respectively, as a result of climate change (see Lobell et al. 2014). Unmitigated climate change could cause even more damage in the future (IPCC 2014; Portel et al. 2014; Olsson et al. 2014). This stress from climate change-induced increases in temperature, variability in rainfall and extreme weather events could manifest itself in crop failures, pest and disease outbreaks, and the degradation of land and water resources (FAO 2011a).

Changes in precipitation could lead to erratic weather patterns, which, in turn, could lead to crop failures. As an example, in Viet Nam, there has been a notable decrease in rice production because of salt-water intrusion linked to sea level rise. Similarly, stagnation in yields for maize and bean production in Nicaragua is linked to unseasonably high rains

For more information on the linkages among gender, climate change and food security, see TM 3.

that triggered crop losses (IPCC 2014).

5. **Disasters**: During 1995-2015, 90 percent of disasters were caused by floods, storms, heatwaves and other weather-related events. This has left 606,000 people dead and 4.1 billion people injured, homeless or in need of emergency assistance (CRED/UNSDR 2015). According to the UN Secretary-General's recent report, the cost of disasters, mainly climate-related, has reached an average of US$250 billion to US$300 billion a year (UN 2015). During 2003-2013, disasters cost nearly US$1.5 trillion in global economic damage (FAO 2015).

6. There is a growing body of evidence linking disaster events in the last few years to climate change. According to a recent report, involving 32 groups of scientists from around the world, climate is said to have played a role in 14 of 28 storms, droughts and other extreme weather events in 2014, including tropical cyclones in the central Pacific, heavy rainfall in Europe, drought in East Africa and stifling heat waves in Australia, Asia and South

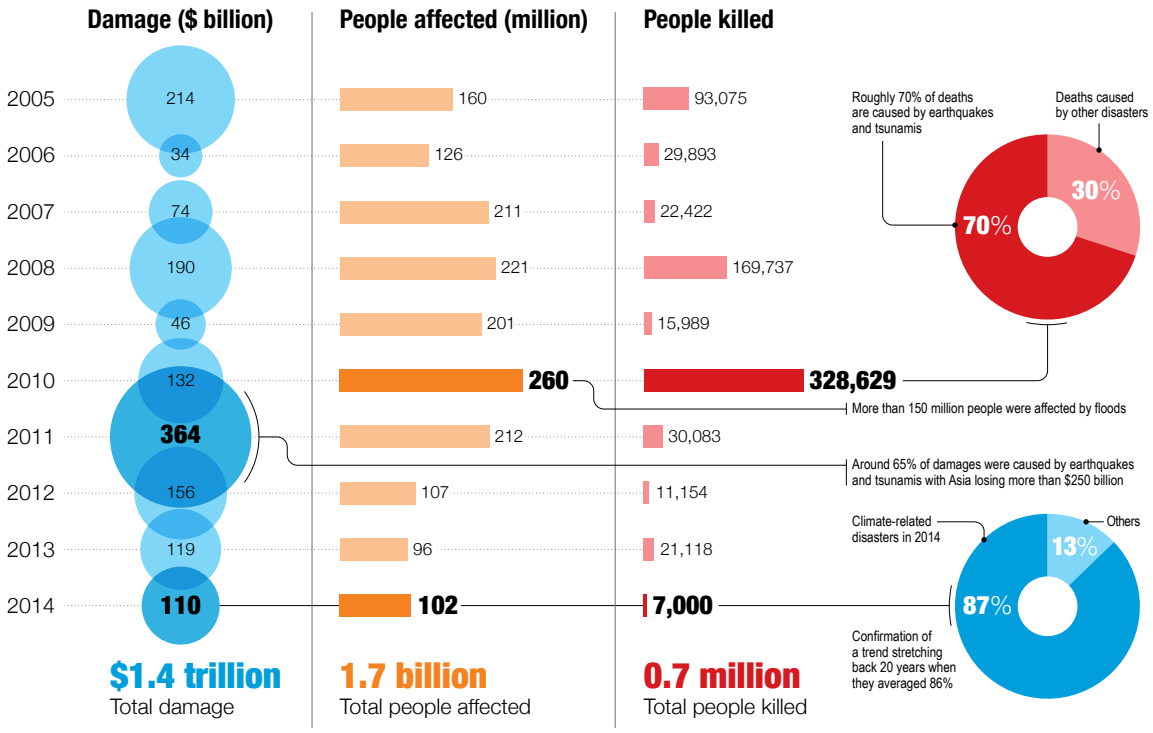
For more information on the linkages among gender, climate change adaptation and disaster risk reduction, see TM 2.

America (see Herring et al. 2015; Figure 3)

7. **Forest Cover and Land Use**: Whereas the effects of climate change on ecosystems and livelihoods vary by region and season, they are harsher on those living in already marginal conditions (IPCC 2014). Moreover, these changes could exacerbate chronic environmental threats (such as deforestation, water scarcity and land degradation) that hit the poorest the hardest (UNDP 2015b). For example, around 350 million people, mostly poor, live in or near forests on which they rely for their livelihoods; climatic stress on forests could hurt the poor (Toumin 2009). Similarly, around 1.3 billion people who live in fragile ecological areas (e.g., arid zones, on slopes, in areas with poor soils and in forest ecosystems) continue to see their livelihoods endangered from biodiversity loss exasperated by climate change (UNDP 2014). The forest sector is also relevant to the climate change debate in that it is

For more information on the relationship between gender and REDD+, see TM 6.

FIGURE 3 *Economic and Human Impacts of Disasters, 2005-2014*



Source: UNISDR 2015

(along with land use and agriculture) also a major contributor of carbon emissions.

8. **Energy**: In many parts of the world, millions of people still rely on biomass for energy. Climate change impacts accelerate loss of vegetation, and thus desertification, through decreasing rainfall and by increasing the incidence of disasters (e.g., droughts). Other anthropogenic factors such as land use and deforestation worsen the situation. Similarly, other major sources of energy are sensitive to the effects of climate change. Some studies, for instance, state that recurrent droughts are creating a power crisis in East Africa, a region that derives close to 80 percent of its electric supply from hydropower (Karekezi et al. 2009). Climate change can also have an indirect impact on energy systems – hydrometeorological hazards (e.g., tropical cyclones) could trigger power failures by crippling energy infrastructure sited in costal areas. To illustrate, in the Gulf Coast, home to U.S. oil and gas industries, hurricanes Katrina and Rita destroyed more than 100 oil platforms and damaged 558 pipelines in 2005 (USGCRP 2009).

9. The energy sector – responsible for almost two thirds of global greenhouse gas emissions (GHGs) – is also relevant for the enormous challenges it poses. More importantly, seemingly insignificant energy uses may have potentially harmful effects on climate change. To illustrate, in South Asia, more than half of black carbon particles that emanate from inefficient cooking are possibly contributing to the melting of the Himalayan ice as well as other adverse environmental effects on water quality and crop damage (V. Ramanathan

For more information on Gender and sustainable energy, see TM 4.

& G. Carmichael 2008).

10. The poor and other marginalized segments of society are especially vulnerable to climate change and climate-induced hazards largely because:

    - Their livelihoods are often highly dependent on natural resources that are sensitive to climate variability
    - They lack the resources needed to weather harsh climatic impacts (e.g., better houses, drought resistant crops)
    - They tend to live around marginal lands

    This diminished adaptive capacity makes them even more vulnerable, forcing them to engagein unsustainable environmental practices such as deforestation in order to sustain their well-being (Dankelman 2010; FAO 2011b).

11. There have been steady efforts in addressing the challenges of social inequality associated with climate change. The year 2015 particularly marked a number of pivotal achievements for gender and sustainable development. An ambitious sustainable development agenda was launched to guide development action for the next 15 years through the 17 Sustainable Development Goals (SDGs) putting a much-needed spotlight on poverty, inequality and violence against women as key challenges of the 21st century (UN 2015). The 17 SDGs aim, among others, to end poverty, fight inequality and injustice and tackle climate change by 2030. The predecessor UN Millennium Declaration (UN September 2000) had committed its signatories to strive to reduce poverty, improve health, promote peace, improve human rights and improve the environment. Similarly, the Sendai Framework for Disaster Risk Reduction 2015-2030, a successor instrument to the Hyogo Framework for Action 2005-2015, incorporated key recommendations on gender-sensitive Disaster Risk Reduction (DRR) and promoted a stronger role of women in building resilience. Similarly, the 2015 Paris Agreement calls for gender equality and women's empowerment and its provisions on adaptation and capacity-building efforts urge member states to adopt gender-responsive approaches. Further, many Intended Nationally Determined Contributions (INDCs) submitted to the United Nations Framework Convention on Climate Change (UNFCCC), as part of the implementation regime of the Paris Agreement, reflect gender priorities in their pledges for climate action (USAID 2016; UNDP 2016).

12. Looking forward, the key question is how to translate the ambitious goals and aspirations set forth in the global (and national) post-2015 sustainable development and climate platforms into concrete actions that stabilize the Earth's systems and promote human development. Gender equality and the empowerment of women must shape and drive future development and climate actions and investments. Part V looks into the interlinkages between gender and climate change broadly, including gender-defined vulnerabilities to climate change impacts.

Box 2 *Sustainable Development Goals – SDG 13: "Taking Urgent Action to Combat Climate Change—SDGs and the Paris Agreement"*

The following suggested targets and indicators are associated with the 13th SDG:

- *Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries*
- *Integrate climate change measures into national policies, strategies and planning*
- *Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning*
- *Implement the commitment undertaken by developed country parties to the UNFCCC to a goal of mobilizing jointly US$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible*
- *Promote mechanisms for raising capacities for effective climate change-related planning and management, in LDCs, including focusing on women, youth, local and marginalized communities*

Sources: UN 2015a

Summary questions

- *How does climate change impact human development? Give some examples of RFCs (reasons for concern) associated with climate variability and change.*

- *Explain how climate change impacts affect different segments of society differently.*

- *What key developments and achievements have taken place since 2015 that affect climate change? How might they be relevant for the betterment of livelihoods of the poor, especially women?*

5 Gender dimensions of climate change

Learning objective:
Understand the overall gender dimensions of climate change

Setting the stage quiz – exercise (see Appendix B)

13. From farmers in Ethiopia to fishermen in Bangladesh to indigenous forest communities in Bolivia, climate change is threatening critical livelihoods and the socio-economic and ecological fabric of the planet. Observed changes in Earth systems attributable to climate change, discussed in section III above, affect all nations. However, countries with a low Human Development Index[1] are already experiencing increased difficulties in coping with recently added environmental stresses stemming from reductions in rainfall and increases in its variability, with implications for agricultural production and livelihoods (UNDP 2011).

14. Within countries, vulnerability to climate change impacts is intimately linked to poverty and economic marginalization. Certain groups of society, especially the poor and other marginalized segments in many societies (women, the elderly, immigrants, indigenous groups, etc.), are structurally vulnerable (UNDP 2014).

15. Climate change is not gender-neutral—it affects women and men differently (see Box 4 and 5). There are complex and dynamic links between gender and climate change in terms of vulnerability to the adverse impacts of climate change as well as in terms of response to climate change, both in terms of mitigating the levels of greenhouse gases (GHGs) and adapting to those impacts of climate change that cannot be avoided. These three aspects are discussed below.

1. The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions. http://hdr.undp.org/en/content/human-development-index-hdi

Box 3 *Definitions of vulnerability and its components*

Vulnerability

The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Exposure

The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social or cultural assets in places and settings that could be adversely affected.

Sensitivity

The degree to which a system is affected, either adversely or beneficially, by climate-related stimuli. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to a rise in the sea level).

Adaptive capacity

Adaptive capacity: The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities or to respond to consequences.

Sources: IPCC 2014c; IPCC 2001

16. **Vulnerability** is key to understanding the gender differential in climate change. Literally, it denotes susceptibility to the ill-effects of climate change. In scientific terms, vulnerability carries with it the concepts of exposure, sensitivity and adaptive capacity (see Box 3 for definitions). The IPCC defines vulnerability as "the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity" (Boko et al. 2007). Women tend to be more vulnerable and face greater challenges than men in adapting to climate change. The reasons for this differential vulnerability may be categorized as follows:

    - **Structural inequality**: Because people need resources to respond to the effects of climate change, poverty contributes directly to vulnerability. For instance, the poor are often unable to access the technology needed (e.g., drought resistant crops, access to electricity and electrical appliances, etc.) to adjust their livelihoods to a severe change in climatic conditions (see Box 4 for details). Disparities in economic opportunities

and access to productive resources also render women more vulnerable to climate change because they are often poorer, receive less education and are not involved in political, community and household decision-making processes that affect their lives. Women tend to possess fewer assets and depend more on natural resources for their livelihoods (Mearns et al. 2010; IDS 2008; see Table 1).

- **De *facto* and *de jure* discrimination**: The economic marginalization of women means that they have fewer assets and a more inadequate resource base than men to effectively respond to the effects of climate change. Women still face gender-based discrimination on ownership of land and access to natural resources, credit and so on (FAO 2011). The law backs the disparity in most cases—a recent study by the World Bank indicates that 155 of the 173 economies it covered have at least one law impeding women's economic opportunities (World Bank 2015). The lack of such critical assets renders them disproportionately vulnerable to the ill effects of climate change. For example, women do not always enjoy the same rights as men to land, a crucial resource for poverty reduction, food security and rural development. Although women make up more than 40 percent of the overall agricultural labour force in the developing world (ranging from 20 percent in Latin America to 50 percent or more in parts of Africa and Asia), they own between 10 percent and 20 percent of the land (FAO 2011; World Bank 2011). Poverty, along with socio-economic and political marginalization, therefore cumulatively put women in a disadvantaged position in coping with the adverse impacts of the changing climate.

- **Sociocultural barriers**: Gender differentiated impacts of climate change are also largely attributable to gender-differentiated relative powers, roles and responsibilities of men and women at the household and community levels. Socially constraining norms and values often lead to increased vulnerability to climate change for women and girls. Cultural and religious norms on respective gender roles sometimes limit women's abilities to make quick decisions in disaster situations and, in some cases, the clothes they wear and/or their responsibilities in caring for children can hamper their mobility in times of emergency (Wong 2016; IDS 2008). Also, skills that can be essential to survival in a disaster, such as tree climbing and swimming, are often taught only to boys. It is believed that women and children are 14 times more likely to die than men during disasters (Brody et al. 2008). Similarly, gender-defined roles and responsibilities of women, as stated before, such as collecting water and fuel, frequently lead them to be more directly dependent on natural resources that tend to be highly sensitive to climate change. These activities also expose women and girls to health risks, such as indoor pollution, anaemia and perinatal mortality (WHO 2016; WHO 2014).

TABLE 1 *Gender Inequality Index*

	Rank (2014)	Maternal mortality ratio* (2013)	Adolescent birth rate (births per 1,000 women ages 15-19) (2010-15)	Share of seats in parliament (% held by women) (2014)	Population with at least secondary education (%) ≤25 years (2005-14)		Labour force participation rate (%) ≥15 years (2013)	
					Women	Men	Women	Men
Country examples								
Sudan	135	360	84	23.8	12.1	18.2	31.3	76
El Salvador	91	69	76	27.4	36.8	43.6	47.8	79
Cambodia	104	170	44.3	19	9.9	22.9	78.8	86.5
Viet Nam	60	49	29	24	59.4	71.2	73	82.2
India	130	190	32.8	12.2	27	56.6	27	79.9
Nepal	108	190	73.7	29.5	17.7	38.2	79.9	87.1
Togo	134	450	91.5	17.6	16.1	40.3	80.6	81.3
Botswana	106	170	44.2	9.5	73.6	77.9	71.9	81.6
Tajikistan	69	44	42.8	15.2	95.1	91.2	58.9	77.1
Myanmar	85	200	12.1	4.7	22.9	15.3	75.2	82.3
Bolivia	94	200	71.9	51.8	47.5	59.1	64.2	80.9
Regional stats								
East Asia and the Pacific		72	21.2	18.7	54.7	66.3	62.6	79.4
South Asia		183	38.7	17.5	29.1	54.6	29.8	80.3
Arab States		155	45.4	14	34.7	47.6	23.2	75.3
Europe and Central Asia		28	30.8	19	70.8	80.6	45.6	70
Sub-Saharan Africa		506	109.7	22.5	22.1	31.5	65.4	76.6
Latin America and the Caribbean		85	68.3	27	54.3	55.2	53.7	79.8
Global stats								
World		**210**	**47.4**	**21.8**	**54.5**	**65.4**	**50.3**	**76.7**

Adapted from UNDP 2015

Box 4 *Climate change and the gender gap*

- *Eighty percent of people displaced by climate change are women.*
- *Globally, women earn 24 percent less than men and hold only 25 percent of administrative and managerial positions in the business world; 32 percent of businesses have no women in senior management positions. Women still hold only 22 percent of seats in single or lower houses of national parliament.*
- *Nine in 10 countries have laws impeding women's economic opportunities, such as those which bar women from factory jobs, working at night or getting a job without permission from their husbands.*
- *A study using data from 219 countries from 1970 to 2009 found that, for every one additional year of education for women of reproductive age, child mortality decreased by 9.5 percent.*
- *Over four million people a year die prematurely due to illness caused by indoor air pollution, primarily from smoke produced while cooking with solid fuels.*
- *More than 70 percent of people who died in the 2004 Asian tsunami were women. Similarly, Hurricane Katrina, which hit New Orleans (USA) in 2005, predominantly affected poor African-Americans, especially women.*
- *Women do not have easy and adequate access to funds to cover weather-related losses or adaptation technologies. They also face discrimination in accessing land, financial services, social capital and technology.*
- *If all countries were to match the progress toward gender parity of the country in their region with the most rapid improvement on gender inequality, as much as US$12 trillion could be added to annual global GDP growth in 2025.*

Sources: UNDP (2015); FAO (2011); UNFPA and WEDO (2009); World Bank Group (2015); Gakidou et al. (2010); MGI (2015); UNDP (2015a); WHO (2016)

17. Besides the above explored concepts of structural inequality, de facto/de jure discrimination and socio-cultural barriers, gender inequality within the context of climate change can also be looked at from the vantage points of the twin significant components of climate change, namely, adaptation and mitigation (see Para 18-22).

18. **Adaptation** is a a process by which individuals, families, communities and countries deal with the impacts of climate change and variability; it refers to coping with those impacts of climate change that cannot be avoided (Burton, Diringer and Smith 2006; see Box 3) and can be manifested in differing ways (e.g., anticipatory/reactive, private/public and autonomous/planned). Examples of adaptation activities include raising river or coastal dikes and the substitution of weather sensitive crops with more temperature-shock resist-

ant varieties (Boko et al. 2007). Thus adaptation it entails a range of possible policy, technological and behavioural change but the degree to which such change may be needed is determined by the level of vulnerability, exposure and sensitivity of a unit and its adaptive capacity. The drivers, stressors and impacts of climate change and variability are complex; adaptation (coping) strategies therefore need to provide long-term solutions that not only address the adverse effect at hand but also simultaneously improve human security and welfare.

19. Adaptation necessitates a change in behaviour, attitudes and relationships (between people as well as between people and environmental resources). Adaptation planning can have unintended gender consequences. Although a growing number of women are living in urban areas and men's livelihoods in rural areas also depend on natural resources, women tend to rely more heavily on livelihoods that are put at risk by climate change. This reliance contributes to weaker adaptive capacities. They also often lack legal rights and access to resources and information.

20. Adaptation actions that do not take gender perspectives into account may result in maladaptation by unintentionally amplifying gender inequalities. This, in turn, can lead to detrimental effects on women as well as threats to the effectiveness of the adaptation strategy itself. For example, diverting fresh water to areas where there is a water shortage may have the unintended consequence of lengthening and intensifying the productive and reproductive working day of women who will need to go further to access water sources.

21. **Mitigation** refers to the actions taken to reduce the greenhouse gas (GHG) emissions in order to minimize their effects on global climate change (Burton, Diringer and Smith 2006). The gender-mitigation intersection could be looked at in the same manner as adaptation. For example, women as primary users and managers of the forests, women's dependency on non-timber forest products for livelihoods and their roles in forest protection are important subjects in mitigation. Thus, forest governance mechanisms, capacity-building and benefit-sharing systems should recognize women's leadership roles, responsibilities, rights and voices in forest management and governance. More broadly, one can also look at mitigation intersection with gender in non-forest sectors as well. For example, women could play a key role as energy managers (e.g., biofuels, solar, etc.) and as users of the transport sector.

22. Similar to adaptation, mitigation planning and finance can trigger general and specific policy, technological and behavioural changes at all levels, including via measures aimed at curbing deforestation, converting to renewable energy sources and promoting energy efficiency programmes. All of these changes involve actions that can impact women as well as mitigate the adverse effects of climate change.

23. Adaptation and mitigation efforts, including planning and financing schemes, should consider men's and women's differing access to resources, sources of livelihood as well as other gendered needs, interests and contributions. This helps ensure their sustainability and effectiveness (see Part V).

Box 5 *Gender-differentiated impacts of climate change*

Climate change effects	Potential Risks	Examples	Potential effect on women
Direct	***Increased ocean temperature***	*Rising incidence of coral bleaching due to thermal stress*	*Loss of coral reefs can damage the tourism industry, a sector in which women comprise 46 percent of the workforce.*
	Increased drought and water shortage	*South-East Asia could witness climate change-induced water shortages due to extreme events such as droughts orsevere rainfall. Sea level rise can also trigger salt-water intrusion into freshwater resources.*	*Women and girls in developing countries are often the primary collectors, users and managers of water. Decreases in water availability will jeopardize their families' livelihoods, increase their workload and have secondary effects such as lower school enrolment or diminished opportunity to engage in income-generating activities.*
	Increased extreme weather events	*Greater intensity and number of cyclones, hurricanes, floods and heat waves*	*A sample of 141 countries from 1981 to 2002 found that natural disasters (and their subsequent impacts) kill more women than men on average or kill women at an earlier age than men.*
Indirect	***Increased epidemics***	*Climate variability played a critical role in malaria epidemics inthe East African highlands and accounted for an estimated 70 percent of variation in recent cholera series in Bangladesh.*	*Women have less access to medical services than men and their workloads increase when they have to spend more time caring for the sick. Poorer households affected by HIV have fewer resources to adapt to the effects of climate change. Adopting new strategies for crop production or mobilizing livestock is harder for female-headed households and those in which a member is HIV-positive.*

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Box 5 *Gender-differentiated impacts of climate change*

Climate change effects	Potential Risks	Examples	Potential effect on women
	Loss of species	*By 2050, climate change could result in a species extinction rate of 18 percent to 35 percent.*	*Women may often rely on crop diversity to accommodate climate variations, but permanent temperature change will reduce agro-biodiversity and traditional medicine options, potentially affecting food security and health.*
Indirect	***Decreased crop production***	*While increasing rainfall is generally expected in South-East Asia, temperature increases may threaten agricultural productivity, stressing crops and reducing yields.*	*Agricultural impacts particularly affect low-income rural populations that depend on traditional agricultural systems or on marginal lands. Women farmers tend to be poorer and highly dependent on agriculture. Hence, climate-related crop changes are likely to have devastating impacts on their livelihoods.*

Sources: UNDP 2010b

24. Gender equality is a fundamental human right, but there are economic imperatives for promoting equality in climate-development policy. Women play a pivotal role in natural resources management as well as in other productive and reproductive activities at the household and community levels. This puts them in a position to contribute to livelihood strategies adapted to changing environmental conditions. Such knowledge and capabilities can and should be deployed for/in climate change mitigation, disaster reduction and adaptation strategies.

25. Studies demonstrate that gender equality and women's empowerment are central to economic development as well as environmental sustainability. For example, recent research from the McKinsey Global Institute (MGI) finds that if women were to participate in the economy "identically to men", they could add as much as US$28 trillion, or 26 percent, to annual global GDP (roughly the combined size of the current US and Chinese economies) by 2025 (MGI 2015). Studies show that countries with higher representation of women in congress/parliament are more likely to set aside protected land areas and to

ratify multilateral environmental agreements (UNDP 2011). Similarly, increased participation of women is crucial to the climate effort—for example, there is evidence that women play a vital role in dealing with disasters by effectively mobilizing communities in the different phases of the risk-management cycle; thus, their greater involvement would contribute substantively to disaster risk management and reduction (Carvajal-Escobar 2008).

26. 26. Although today there is a greater understanding of the need to incorporate gender perspectives into climate change policy, there are still considerable gender-based barriers across the major pillars of international and national policy processes on climate change (see Box 4: Climate change and the gender gap). Meaningful participation by women will enhance the effectiveness and sustainability of climate change projects and programmes and help address existing inequities while working towards fulfilling the respective international agreements calling for the equality and empowerment of women. Part V looks into ways and means of incorporating gender perspectives within the climate effort.

Video presentation - Sisters of the Planet - Sahena (Bangladesh)

Appendix B: Learning tools

Summary questions

- *What is gender-based vulnerability to climate change?*
- *How do climate change impacts (such as droughts and floods) affect men and women differently?*
- *What negative consequences result when adaptation and mitigation planning and financing do not take into account gender differences and women's specific needs and capacities? What positive consequences result when adaptation and mitigation planning and financing do take into account gender differences and women's specific needs and capacities?*

6 Making the climate effort gender-responsive

Learning objective:
Identify policy and programming responses that support the complementary goals of gender equality, women's empowerment and climate change adaptation and mitigation.

27. Climate change actions need to be based on consultation with women, build and incorporate their skills and knowledge and provide opportunities for improving health, education and livelihoods. Increasing women's participation would result in more environmental and productivity gains and would create mutual benefits and greater returns across the SDGs, including SDG 5 and SDG 13. Climate change can thwart progress towards gender equality by exacerbating poverty, reinforcing traditional patterns of discrimination and directly affecting gender-defined livelihoods. Equally, gender inequality can hamper the effectiveness and sustainability of climate change responses (UNDP 2007; 2011b; see Parts IV and V of this module). These outcomes would be a double loss, because there is growing evidence that women's greater participation would not only be good social policy, but would also enhance the sustainability and effectiveness of climate change responses (also see Parts III and IV of this module). Mainstreaming gender in climate change policies and programmes can minimize these outcomes. Women's issues, needs and contributions should be integrated across the planning and execution cycle of climate change policies and projects.

Box 6 *Gender terms*

Gender

Gender is about women and men, boys and girls and their relationship to each other in different groupings. Gender refers to the roles, behaviours, activities and attributes that a given society, at a given time, considers appropriate for men and women. Gender also refers to relations between groups of women and between groups of men. These roles and attributes are socially constructed and learned through socialization processes. As such, gender roles and relations are different between societies and at different points in history.

Gender and sex

Gender and sex are different but interlinked. Gender is a social attribute and sex is a biological attribute where individuals are almost always clearly male or female. Society shapes and normalizes different roles and behaviours based on people's male or female sex and these socially determined roles and relationships are referred to as gender attributes. Sexual orientation also influences the roles and behaviours of individuals and different societies treat lesbian, gay, bisexual and transsexual people with differing degrees of expectations and discrimination.

Gender equality

Equality between men and women, or gender equality, refers to the equal rights, responsibilities and opportunities of women and men, boys and girls. Equality does not mean that women and men will become the same, but that their rights and opportunities will not depend on whether they were born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. Gender equality is not a women's issue as it provides benefits for both men and women and is a key human right. Gender equality is also a precondition for, and indicator of, sustainable development.

Gender equity

Gender equity refers to specific measures that are designed to redress historical inequalities between men and women. There are many examples of gender equity and they apply across all sectors. Examples include taking steps to ensure girls and boys and women and men have equal access to health and education opportunities, designating temporary special measures to bring women into decision-making arenas and employment and/or designing processes to ensure women can safely participate in economic life.

Gender inclusive

Gender inclusiveness is a process and refers to how well women and men are included as equally valued players in initiatives. Gender-inclusive projects, programmes, political processes and government services are those which have protocols in place to ensure women and men (and boys and girls, where appropriate) are included and have their voices heard and opinions equally valued.

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Box 6 *Gender terms*

Gender analysis

This refers to careful and critical examination of how differences in gender roles, activities, needs, opportunities and rights/entitlements affect men, women, girls and boys in certain situations or contexts. A key element of gender analysis is the examination of women's and men's access to and control of resources—especially economic, political and knowledge resources and access to and control of time. Other important analysis factors that should be considered along with gender include age, poverty levels, ethnicity, race and culture.

Gender mainstreaming

This is the process of assessing the implications for men and women of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a way to ensure that women's and men's concerns and experiences are an integral dimension of all development efforts. The goal of gender mainstreaming is gender equality. Gender mainstreaming is a 'whole-of-government' responsibility.

Gender responsiveness

This refers to outcomes that reflect an understanding of gender roles and inequalities and which make an effort to encourage equal participation and equal and fair distribution of benefits. Gender responsiveness is accomplished through gender analysis and gender inclusiveness.

Gender roles

Gender determines what is expected, allowed and valued in a woman or a man in a given context. In most societies, there are differences and inequalities between women and men in the responsibilities they are expected to take up, the activities that are considered normal or acceptable, their access to and control over resources, and their participation in decision-making.

Sources: UNDP 2015c

28. Gender mainstreaming is one avenue in which women's unique knowledge and skills related to natural resources management, energy and food production—necessary for effective mitigation and adaptation efforts—could be put to use. Mainstreaming gender in climate change projects, policies and planning can help achieve the twin goals of advancing social policy (including gender equality) and ensuring greater returns on mitigation and adaptation investments. Box 7 provides a checklist of activities questions and distinctions to keep in mind while mainstreaming gender perspectives into climate change responses.

29. Existing tools and methodologies for mainstreaming gender into development initiatives are being honed and applied to climate change, including disaster risk reduction and management, adaptation and energy. These 'soft technologies' range from those focusing on vulnerability and impact assessment and stakeholder analysis and management to decision-making on adaptation and climate risk communication. Some of these tools and methods have been tested and found to be successful in countries such as Indonesia, Kenya, Mali, Nepal and Tajikistan. They include: CRiSTAL; Gender Impact Assessment; the Climate Vulnerability and Capacity Analysis methodology; Participatory Vulnerability Analysis; sex-disaggregated data; gender equality audits; and gender budgeting. The usefulness and feasibility of these tools and methods will depend on the specific policies, programmes or projects they are being considered for and on the local contexts.

Box 7 *Gender Mainstreaming Checklist for Climate Change*

- *Assess the different implications of policy and programme interventions for women and men from the outset.*
- *Assess women and men's technology choices, uses and needs.*
- *Assess women and men's knowledge concerning the climate change risks, changes in local environment, weather, strategies and coping mechanisms in response.*
- *Ensure that these assessments are informed by a gender expert to support in developing a gender analysis and by consultations with women and men on priorities, strategic needs and options for action.*
- *Based on this analysis, build targeted objectives for incorporating gender equality and women's empowerment into policies' and programmes' plans and budgets.*
- *Use female project implementers, extension agents and trainers to ensure that women participate equally in knowledge access and training.*
- *Set targets for female participation in activities.*
- *Make women's equality, access to information, economic resources and education a priority.*
- *Monitor and evaluate changes in gender relations using gender-sensitive indicators.*
- *Monitor beneficiaries and results of projects using sex-disaggregated data.*
- *Proactively seek out and engage with appropriate women's rights organizations and female community leaders when selecting partners.*

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Box 7 *Gender Mainstreaming Checklist for Climate Change*

- *Ensure that women participate equally and actively alongside men and are enabled to take up leadership positions throughout the programme management cycle.*

Questions to ask in a gender analysis

- *Which men and which women hold the power in this community?*
- *What activities are performed by women and men? How will climate change affect the abilities of women and men to fulfil their differing responsibilities?*
- *Who owns and controls resources? What are the levels of access to and control over resources of women and men?*
- *Who makes the decisions? Who sets the agenda?*
- *Who gains and who loses from processes of development?*

Gender-related differences to be understood

- *Differences in the lives of poor women and men in the target community*
- *Different roles, skills, capacities and aspirations of women and men*
- *Different levels of access to and control over key productive, information and technology resources*
- *Different levels of vulnerability, resilience and autonomy of men and women when confronted with different threats*
- *Different local knowledge possessed by women and men concerning natural resources and agricultural production. This may include climate change-relevant information on risk, adaptation and mitigation.*
- *Division of labour among women and men*
- *Different levels of participation and leadership enjoyed by women and men*
- *Barriers that unequal gender relations present to women's development in this particular community*

Note: For more information on how to conduct gender analysis, see UNDP 2016b.

30. Box 8 provides some analytical tools that could be used for gender mainstreaming. The usefulness of the tools and methods is mostly a function of context. These tools and methods generally call for methodically integrating women and their concerns, specific needs and contributions into decision-making processes. This could be during the screening, review, implementation, monitoring and evaluation of adaptation, disaster risk reduction and mitigation projects, or, broadly, a meticulous review, improvement and implementation of existing regulatory and policy tools on environment, natural resources, adaptation to climate change, disaster risk mitigation and management.

Box 8 *Analytical tools for gender mainstreaming*

Analytical framework	Focus of analysis	Key analytical questions	Tools for data collection
Moser Framework	*Gender identification Practical needs and strategic interests*	*What are the practical needs and strategic interests?*	*Needs assessment*
Gender Analysis Matrix Framework	*Impact of interventions Identification and analysis of differences Gender roles*	*What is the differential impact?*	*Impact assessment*
Social Relations Approach Framework	*Analyse existing inequalities in the distribution of resources, responsibilities and power*	*Who has what and what are the relationships between the people?*	*Institutional analysis Socio-political profile*
Capacities and Vulnerabilities Analysis Framework	*Existing capacities (strengths) and vulnerabilities (weaknesses)*	*What will help and what will hinder?*	*Capacities and vulnerabilities assessment*
Harvard Analytical Framework and People-Oriented Planning	*Roles and activities Allocation of resources Productive and socially reproductive work*	*Who does what, how, where and what influences it?*	*Activity profile Access and control profile Influencing factors*

Source: For further reference please, see UNDP 2010b. (http://www.undp.org/content/undp/en/home/librarypage/environment-energy/climate_change/gender/gender-climate-change-and-community-based-adaptation-guidebook-.html)

31. There is a need to ensure that adaptive actions aim to build up the asset base of women. As assets largely determine the extent to which people are affected by climate change and can respond to it, building adaptive capacities of women needs to incorporate interventions that shore up women's productive and reproductive resources, including land, access to credit and education.

32. Mitigation and adaptation efforts need to also systematically address sources of gender-based vulnerability, gender inequality and poverty. Climate change responses need to address women's historic and current disadvantages. As such, policy and programming should recognize that, because of their central role in environmental, social and economic development, women's empowerment and gender equality are beneficial for family and community well-being and livelihoods and are key factors in promoting the resiliency of economies and communities. Actions, technologies and strategies need to be pro-poor and gender-responsive in their design, implementation, monitoring and evaluation. Looking forward, Nationally Determined Contributions (NDCs) as well as other existing climate-related global and national endeavours such as the Nationally Appropriate Mitigation Actions (NAMAs) and National Adaptation Plans (NAPs) provide opportunities to operationalize effective national climate change policy and programming that provide co-benefits to women and other marginalized segments of society (see Box 9).

Box 9 *NDCs – An opportunity to revisit national priorities on gender*

There has been significant progress recently in elevating gender in climate change planning at the national and global levels. Global examples include the Green Climate Fund (GCF), which has mandated a gender-sensitive approach in its charter and put in place a gender policy and a gender action plan to guide its operations. At the national level, countries such as Honduras and Peru have prioritized and made explicit high levels of gender integration in their climate change policy and planning documents. The latest examples of progress come from Intended Nationally Determined Contributions (INDCs), under the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in 2015 (COP 21) (UNDP 2016; Aguilar et al. 2015; Guminichio and Rueda 2015).

INDCs are principally pledges for climate action, which represent each member country's assessment of how much they will reduce their greenhouse gas emissions. However, many countries seized the opportunity to embed climate policies within their broader development programmes and priorities. Accordingly, about 40 percent of INDCs explicitly mentioned 'gender' and/or 'women' in the their national ambitions on climate change mitigation - most of these countries "identify gender as a cross-cutting policy priority, or commit to either integrate or mainstream gender in all climate change actions and strategies" (USAID 2016). Liberia, Peru and Jordan went a step further and actually reference their gender and climate change action plans in their INDCs. As countries move into the implementation phase of the Paris Agreement, NDCs as well as other related national adaptation and mitigation instruments, there is a huge potential for embedding gender-responsive and gender-transformative approaches that promote women empowerment while also delivering results for zero-carbon and climate-resilient futures. Like NDCs, other similar tools such as the national low emission development strategies (LEDS) and, in the case of adaptation, the National Adaptation Plans (NAPs) provide more scope and opportunity for mainstreaming gender considerations in adaptation and development planning.

33. Improved understanding of women's and men's knowledge, roles and abilities will provide a solid basis for policy and programmes developed to address and combat the differentiated impacts of climate change on different gender groups. There is a need, therefore, to conduct an in-depth and evidence-based analysis of women's and men's roles in sectors impacted by, and their strategies for coping with, climate change.

34. As discussed in Parts III and VI, gender inequalities intersect with climate risks and vulnerabilities. Women's limited access to resources, restricted rights and low decision-making power make them highly vulnerable to climate change. Policies that help boost women's asset bases and access to resources, therefore, go a long way towards reducing their vulnerability. Equal rights to property and earnings need to be ensured through laws, policies and political empowerment. Significant investments need to be made in women's (particularly rural and poor women's) education and health. Climate change responses for mitigation and adaptation need to consider not only women's gender-based vulnerabilities, but also the fact that returns on any effort to address climate change impacts will benefit immeasurably by using women's unique skills and knowledge. Efforts also need to recognize the differing roles of women and men in the household, food production, livelihoods and natural resource management areas.

Summary questions

- *What is gender mainstreaming? How does it apply to climate change? Provide some examples of tools one might use in mainstreaming gender in climate change.*
- *State some entry points for mainstreaming gender in adaption and mitigation efforts.*
- *How might the NDCs improve poor women's livelihoods and benefit from their leadership?*

7 Conclusion

35. The Earth's climate is changing already and failure to limit warming to below 2°C could make the changes in the climate system irreversible, often with cataclysmic consequences. A number of efforts are underway to reign in climate change impacts on people and socio-ecological systems; one of the latest ambitious global efforts is the 2030 Agenda for Sustainable Development, where the international community in 2015 agreed upon 17 aspirational global goals (SDGs), with 169 targets. As the global community transitions to the implementation phase of the post-2015 development agenda, it is imperative that gender equality and women's empowerment continue to influence, shape and drive the collective climate and human development effort.

36. Adaptation, vulnerability and people's and communities' resilience to climate change impacts are a function of an array of factors. The most salient factors are the degree of exposure and dependency on livelihoods that are susceptible to climatic changes and adaptive capacity. The latter is influenced by, among other things, gender, social status, poverty, power, access, control and ownership over resources.

37. Women are disproportionately vulnerable to climate impacts. Low economic status, the lack of meaningful access to resources and information and the absence of effective influence in decision-making from the household through community, national, regional and international levels contribute to their disproportionate vulnerability. Furthermore, women tend to rely upon livelihoods that are more likely to be influenced by climate variability and change. Socio-cultural and legal restrictions also disproportionately increase women's and girls' exposure and vulnerability to climatic hazards.

38. Although women face particular socio-economic issues that shape their vulnerability to climate change and although unabated climate change impacts can worsen traditional gender disparities, mitigation and adaptation efforts offer opportunities to advance gender equality and women's empowerment. Gender-responsive climate change responses will contribute to the reduction of gender inequality and will increase people's resilience to climate change.

39. Women are not only victims of climate change, but also active agents of change. They possess unique knowledge and skills regarding food production, climate patterns, natural resources management and health care and possess coping strategies based on local environment and conditions. They are central to socio-economic development in their productive, reproductive and community management roles. For these reasons, investing in women will have enormously positive benefits for communities as a whole. It will also result in environmental gains and lead to greater returns across the SDGs and broader development objectives.

40. Gender-responsive approaches will help reduce the effects of climate change shocks, disasters and shifts. The approaches would also enhance the efficiency and sustainability of adaptation and mitigation efforts at all levels. Mainstreaming women's knowledge and gender perspectives into the planning, financing, implementing and monitoring of all climate change related undertakings will increase benefits for all.

A Appendix A: Case studies

CASE 1 Closing the gender gap in farming under climate change - Peru

Maca is a medicinal plant cultivated in the Peruvian Andes, highly appreciated for its energetic benefits and mostly sold on the Asian markets. As buyers from Asia are paying very high prices for the plant, the production has expanded rapidly in the area.
Historically, maca was only produced for consumption on small plots, but now cultivation has expanded to privately owned land and communal land, previously reserved for grazing livestock.

While looking at the social and economic effects, the team explored development opportunities for women and men brought about by the maca cultivation and reduction in livestock grazing, a main income source for women.

An adapted version of the Women's Empowerment in Agriculture Index (WEAI) survey was used to interview 323 farmers, including 189 women, in six rural communities with different land tenure regimes.

"At a first glance, the maca cultivation might seem like a profitable activity," says Maria Montenegro, master student of the University of Alberta part of the research project, and smallholders are indeed benefiting from the expansion. However, limited access to land and investment capital limits participation for most farmers, male as well as female.

"However we did find that the maca production boom in particular do not favour women," adds Cecilia Turin, gender researcher at the International Potato Center (CIP).

In fact, many farmers, and especially women-headed households, face severe barriers to participation in livelihoods other than grazing livestock. Thus, although there are new job opportunities due to maca expansion for post-harvest processing, women do not usually participate.

Women and men did not directly link changes in livelihoods to maca, according to the survey. However, women shared that they had lost decision-making power around land management and few stated any benefits from the maca boom. The maca boom appears to have negative socio-economic and gender-based consequences and high environmental costs in terms of lost soil productivity.

Peru is also experiencing competing goals, as the national mitigation targets do not align with economic development goals to expand maca production. At the moment, the governmental programme Sierra Exportadora is encouraging maca conversions to increase diversification options and further enable development and economic growth. However, the economic gains are limited and maca production is causing significant soil carbon losses. In addition, neither the

national mitigation work nor the development programme has incorporated gender into any policies.

"The policies should be re-formulated to better address gender inequities created by the maca production. This would ensure that gender-based negative impacts are prevented by the programme," says Cecilia Turin.

Given their leading roles in livestock management, women could help conserve soil carbon in the Andean Highlands. Climate change mitigation policies should thus consider gender impact.

Regardless of whether maca continues to expand, mitigation actions for the Andes must find incentives to avoid further loss of grazing land and soil carbon as well as incorporate fertility restoration in areas used for maca.

To ensure that gender and better land management practices are better taken into consideration, the International Potato Center and CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) are working directly with policymakers within the Peruvian High Directorate of Agricultural Policies of the Ministry of Agriculture and Irrigation (MINAGRI).

This will require the cooperation of all and strong gender, social justice and climate-sensitive lenses to formulate equitable and appropriate actions for mitigation work in the Andean agriculture national action mitigation (NAMA) plan.

→ Source: CCAFS 2016 https://ccafs.cgiar.org/blog/why-perus-highland-needs-gender-responsive-mitigation-policies#.WDXqZaIrL1w

CASE 2 Climate change, disasters and gender-based violence in the Pacific

"Global research demonstrates the link between disasters and violence, in particular the exacerbating effects disasters have on pre-existing rates of SGBV. The Pacific region, where SGBV rates are already high by global standards, is no exception to this trend. For example, increased rates of SGBV, including rape, were reported in Solomon Islands after the Gizo tsunami in 2007, a disaster that resulted in the displacement of approximately 10,000 people. Women and girls in temporary campsites also reported that the distance to water was too great, that men had begun to wait around water sites, and that they did not feel safe when bathing.

"Disasters create conditions that intensify pre-existing SGBV risk factors such as stress and trauma (both of which are drastically heightened following disasters and both of which reduce normal coping capacities and heighten the risk of violent response to pressure or strain). Additionally, disaster-affected people often spend lengthy periods of time in collective or evacuation centres, where living conditions are routinely lower that those people are use to, specifically in terms of private space for couples and families. After two tropical cyclones hit the Western division of Fiji in 2012, for example, women living in relief centres were reportedly being violently

forced into sex by their husbands, in spite of their reluctance due to concerns about over-crowding and lack of privacy.

"SGBV response is also impeded by cultural factors that discourage reporting, including shame, stigma and a culture of silence. This reluctance to speak out is consistent with results of the Pacific Family Health and Safety Studies, which demonstrate the stigma associated with reporting this type of violence. Additionally, the protection assessment for the 2014 tropical cyclone in Tonga found that stigma around SGBV extended beyond the family to the village level, resulting in a strong collective disincentive to reporting or referral SGBV issues (this is despite the fact that, in this particular circumstance, there was a lack of stigma attached to the survivor of violence).

"Even where survivors are willing to report violence, the appropriate systems and services are often not in place. Formal SGBV services are largely absent in the Pacific, and where they do exist, resources are overstretched and inadequate to respond to the scale of the problem during disasters. Additionally, referral networks – systems to ensure that essential services for SGBV survivors (including inter alia health care, counselling, legal/justice and transitional shelter services) communicate with each other, minimising the burden on survivors of violence to contact individual services separately and to retell their story to access each service – are either non-existent or function with limited capacity across the region.

"Lack of awareness on the part of humanitarian actors of specific SGBV risk factors can also create conditions, which exacerbate hazards for women and girls. For example, practitioners can drastically reduce risks to women and girls by ensuring that toilets and bathrooms in evacuation centres are gender-separated, lockable and supplied with functional lights. Where these standards are not met, as was the case in many of the collective centres in the 2014 Solomon Islands floods, women and children face heightened risks of unwanted sexual contact.

"Children also face increased vulnerability to specific forms of sexual violence and abuse during and after disasters. Following the Fiji floods, due to the economic burden placed on families as a result of displacement and loss of assets, assessments established that children were being kept home from school either to care for other young children in the family, or to earn money at night through sex work."

→ Source: UNWomen 2014

CASE 3 SDG 5 and climate change in Bhutan

Bhutan has one of the highest per capita consumptions of fuel wood in the world, at almost 1.3 tonnes per person. The Sustainable Rural Biomass Energy (SBRE) Project (2013–2016) was initiated to reduce the fuel wood consumption and greenhouse gas emissions help improve the health, income and productive time for rural households. Nearly 70 percent of Bhutanese who live in rural areas use fuel wood as a main source of energy. A baseline study estimated that 17.2

percent of the surveyed communities suffered from breathing problems, 26.4 percent from nasal problems and 56.4 percent from eye irritation from indoor pollution caused by the stoves. Of those, children, women and the elderly were most affected. Women in developing countries like Bhutan have high incidence of cardiovascular diseases due to traditional cooking methods. The SRBE Project, therefore, promotes use of biomass energy for cooking, heating and lighting in rural areas. One of the main objectives of the Project is to introduce cook stoves to rural communities to decrease fuel wood consumption and consequently to reduce diseases resulting from traditional methods and, ultimately, to reduce greenhouse gas emissions. The project has been extremely successful on several fronts.

Community members have been trained to install and operate the fuel-efficient cook stoves. Women have been a special focus of the trainings, given that they are the primary users of the stoves. The project has trained more than 400 technicians, with around 55 percent being female, to construct improved cook stoves. The Project conducted a gender mainstreaming exercise and successfully formulated the Gender Analysis Matrix and Gender Action Plan for implementation. It was successful in engaging the Bhutan Association of Women Entrepreneur (BAOWE) and Tarayana Foundation, NGOs working for the empowerment of women and improving lives of rural women and improving the lives of disadvantaged people living in abject poverty in rural Bhutan. Through this partnership, the Project mainstreamed gender, effectively mobilized and engaged women particularly in the project sites and provided equal opportunities to men and women. The following first-hand account from one of the trainees Pema Choki is a testimony of the Project's accomplishment:

"It was a challenging job in the beginning, as I lacked technical background. I picked it up so easily because I took keen interest in it. I persevered, drawing moral support from the organizations that trained me. I have now constructed more than 100 cook stoves in my community and people are impressed with my work. They even come from distant villages for a stove. I am happy that people are becoming aware and that traditional concepts are gradually changing. I am hopeful that a day will come when the government will provide good facilities to and space for women like me. I believe that we have equal rights to live, and share the same roof of the world with other living beings. We are strong and independent, so we can work and act for ourselves. It is not by birth that the fate of women gets sealed but by lack of opportunity."

Pema revealed that she travels around her village, walking up to two days to reach households and convince them their welfare needed a cook stove. In the evening hours, she continues her previous teaching work before returning home to her chores. Her monthly income has increased by 3,000–4,000 ngultrum (US$45-US$60).

→ Source: from a case study submitted by RBAP focal point

B Appendix B: Learning tools

TASK 1 Group exercise (plenary)

Learning objective:
Have a general understanding of women's and girls' situation in general as well as gender-based constraints within the context of climate change.

Setting the stage

35 minutes (group exercise and discussion)

Notes to the facilitator

- Facilitate a Q&A on all 11 questions.
- Where necessary, encourage the participants to develop their answers based on the state of affairs in terms of gender equality in their own contexts.

Setting the stage – Quiz

1. What percentage of the world's 1.3 billion people living in extreme poverty are women and girls?

   a. 50%
   b. 60%
   c. 70%
   d. 80%

   Answer – C

2. In the Asian tsunami of 2004, what percentage of the fatalities were women?

   a. 50%
   b. 55%
   c. 60%
   d. 80%

   Answer – D

3. What percentage of government cabinet members worldwide are women?

   a. 10%
   b. 17%
   c. 25%
   d. 50%

   Answer – B

4. What percent of illiterate adults in the world are women?

   a. 50%
   b. 30%
   c. 75%
   d. 67%

   Answer – C

5. In a sample of 141 countries from 1981 to 2002, it was found that natural disasters (and their subsequent impact) on average:

   a. Kill more men than women
   b. Kill the same amount of women and men
   c. Kill more women than men

   Answer – C

(natural disasters on average kill more women than men or kill women at an earlier age than men. To note, in societies where women experience higher levels of socio-economic status, deaths in disasters are more evenly distributed.)

6. Gender equality can promote:

   a. Poverty eradication
   b. Sustainable development
   c. Reduced risk of disaster loss
   d. Increased family income
   e. All of the above

   Answer – E

7. Women tend to have less access to development resources than men because:

   a. Their husband takes good care of all members of the family so they don't need those resources
   b. They are illiterate, so they can't manage resources properly
   c. Power relations keep them away from decision-making processes

Answer – C

8. Equity means:

   a. Men and women receive exactly the same amount of resources and the same treatment
   b. Sometimes women receive a different treatment in order to reduce gender gaps
   c. Sometimes women receive a different treatment because they are weaker than men

Answer – B

9. Equality means:

   a. People may have different lifestyles, but they have the same rights
   b. No differences are made based on people's gender
   c. Everyone is the same

Answer – A

10. To support women's empowerment, we must:

   a. Increase women's participation in decision-making processes
   b. Encourage women's leadership in the community
   c. Improve women's skills
   d. All of the above

Answer – D

11. To reduce gender inequality, we must (select as many as apply):

   a. Give power to women only
   b. Encourage men to challenge power relations and gender roles
   c. Raise awareness of men and women about their human rights

Answer – B and C

TASK 2 *Gender perspective of climate change impacts breakout groups and plenary*

Learning objective:
Understand the different impacts that climate change will have on women and men and the root causes and possible solutions to the problem.

Group exercise

30 minutes (exercise)

15 minutes (sharing and discussion)

Notes to the facilitator

- Step 1: Choose one dimension of human well-being that is susceptible to climate change impacts (e.g., food production, water, natural disaster, health, population displacement).
- Step 2: Taking into account gender roles and status, analyse how the issue affects men and how it affects women.

Impacts on women	Impacts on men

- Step 3: Answer the following questions:
  1. Are women and men affected in the same manner by the issue?
  2. Why?

TASK 3 *Group discussion (plenary)*

Learning objective:
Understand women's unique contributions in fighting climate-induced disasters.

Video presentation - Sisters of the Planet - Sahena (Bangladesh)

7 minutes (video presentation)

20 minutes (group discussion and reflection)

Group exercise

Notes to the facilitator

- Facilitate a discussion on the central theme of the video presentation.
- Encourage a discussion on the following question: "How do women help adaptation/ mitigation efforts at the national/local level?"

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