

# Module 3: Climate Change Impacts on Livelihoods

## Introduction

**Agriculture** is a key component of Afghan livelihoods and economic growth (28% of gross national income in 2010/11, 37% in 2005/06). About 85% of the Afghan population is either directly or indirectly dependent on agriculture for their **livelihoods**. The vulnerability of the agricultural sector to increased temperatures, changes in rainfall patterns and snow melt is considered to be high. Indeed, the adverse impacts of climate change and extreme weather events are a severe threat to livelihoods, and hold back growth and sustainable development (cf. [Module 1 and 2](#)).

According to the latest estimate, 36% of Afghanistan’s population lives below the poverty line and is highly vulnerable<sup>1</sup>. The main goal of the Government of Islamic Republic of Afghanistan is to eradicate extreme hunger and poverty by 2030 ([Sustainable Development Goals](#)) and this could be severely hampered by climate change. A significant percentage of women and men (almost 20%) depend on agriculture and are extremely **vulnerable** to climate shocks, as they are the most **exposed** and have the least means to adapt. The distributional effects are more likely to fall upon women and children, and upon those involved in subsistence agriculture (cf. [Agriculture and land](#)) or pastoralism but the impacts will be felt across the whole economy. Given the lack of economic diversification and the dependence on highly climatic sensitive agriculture sector, climate shocks can push populations into poverty, thus making the goal of eradication of hunger and poverty more challenging.

## Climate change and food security

Global climate change projections have a solid scientific basis, and there is growing certainty that extreme weather events are going to increase in frequency and intensity (cf. [Module 1 and 2](#)).

This makes it *highly likely* that asset losses attributable to weather-related disasters will increase. Whether these losses involve productive assets, personal possessions or even loss of life, the livelihoods and food security status of millions of people in disaster-prone areas will be adversely affected. All four dimensions of food security in the framework represented in Figure 1, namely food availability (i.e. production and trade), access to food, food utilization and enabling socio-political environment will be affected by climate change. Food availability may decrease due to climate induced agriculture failure, leading to malnutrition, high dependence on food aid, and reduced dietary diversity and consumption of general population<sup>2</sup>. Changes in the patterns of extreme events, such as increased frequency and intensity of

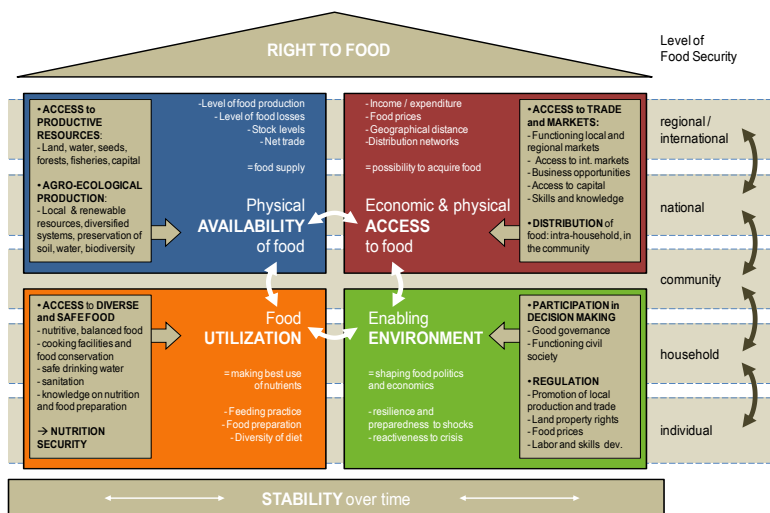


Figure 1 : [Different dimensions of Food Security; HELVETAS Swiss Intercooperation](#)

droughts and floods, will affect the stability of and the access to, food supplies. Climate change may also affect food utilisation, notably through additional health consequences.

<sup>1</sup> [National Environmental Protection Agency, Afghanistan, 2013: Afghanistan. Afghanistan initial national communication to the United Nations Framework Convention on Climate Change](#)

<sup>2</sup> [National Environmental Protection Agency, Afghanistan, 2013: Afghanistan. Afghanistan initial national communication to the United Nations Framework Convention on Climate Change](#)

## Impacts on rural livelihoods

**Livelihoods** are understood as the ensemble of opportunities, capabilities or assets and activities that are required to make a living, a prerequisite for poverty alleviation. They depend on access to natural, human, physical, financial, social, and cultural capital assets<sup>3</sup>. Livelihoods are universal and widely known through the widespread **Sustainable Livelihoods Approach** (Department for International Development, UK) (cf. [Systems and Context](#)). However, the adverse impacts of extreme events and climate trends (as presented in Figure 2) increasingly threaten and erode people’s assets and capabilities, particularly the poor and vulnerable.

Several livelihoods in Afghanistan are strongly climate sensitive, such as rain-fed smallholder agriculture, seasonal employment in agriculture, and pastoralism. Climate change also affects households dependent on informal livelihoods or wage labour in poor urban settlements, directly through unsafe settlement structures or indirectly through rises in food prices or migration.

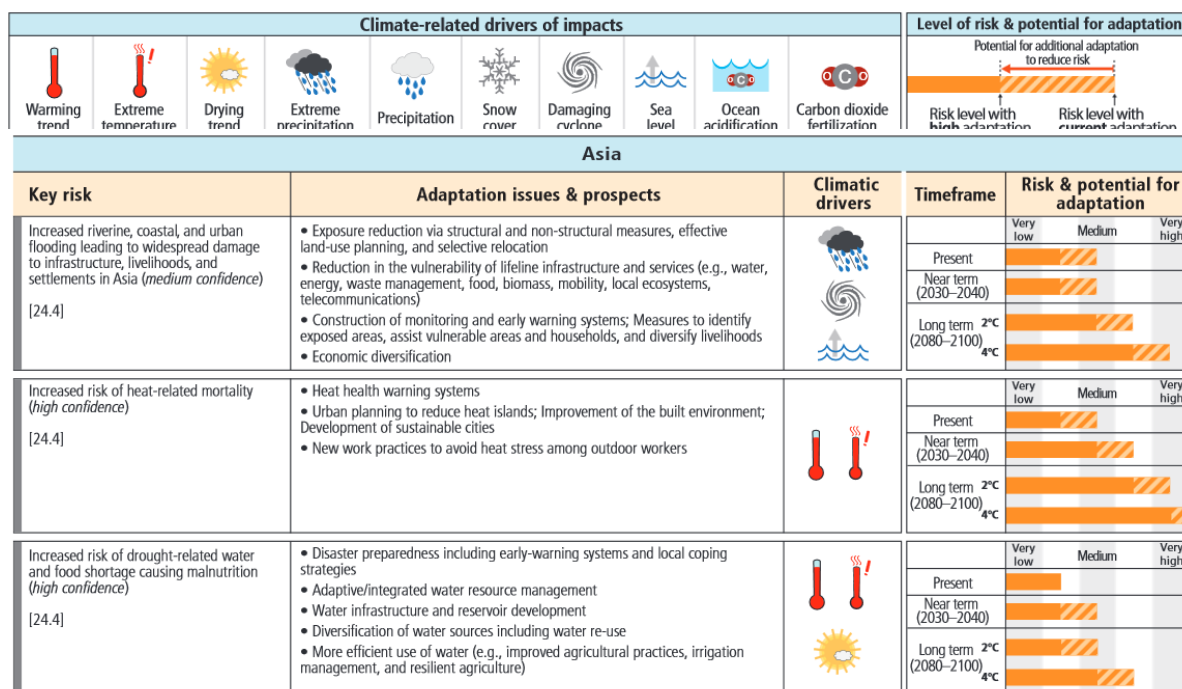


Figure 2: Key climate risks in Asia and the potential for reducing risks through adaptation measures. Each key risk is characterized as very low to very high for three timeframes: the present, near term (here, assessed over 2030–2040), and longer term (here, assessed over 2080–2100). In the near term, projected levels of global mean temperature increase do not diverge substantially for different emission scenarios. For the longer term, risk levels are presented for two scenarios of global mean temperature increase (2 °C and 4 °C above preindustrial levels). These scenarios illustrate the potential for mitigation and adaptation to reduce the risks related to climate change. Climate-related drivers of impacts are indicated by icons ([IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change](#)).

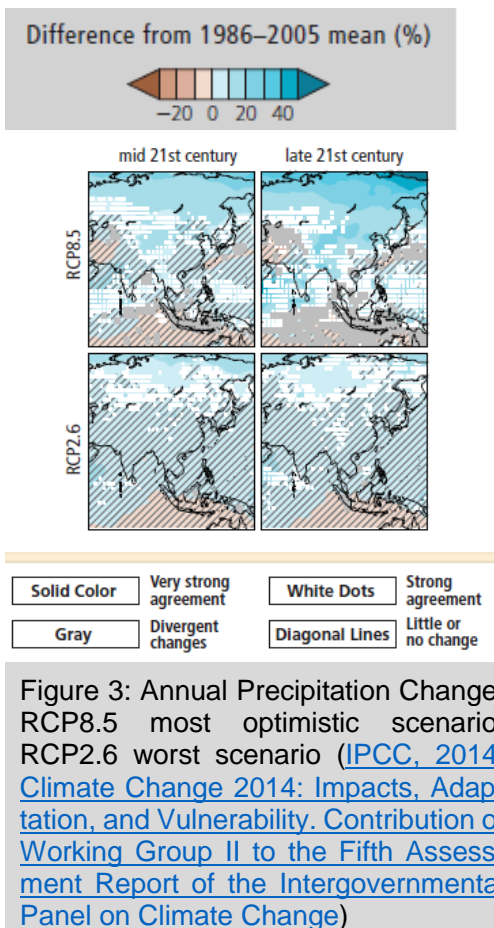
For each risk, there is a potential for adaptation based on the present situation (cf. Modules 4 and 5). This potential is the crosshatched part in the projected scenarios. Most of the time, there is some space for adaptation in the short and the medium term. The adaptation potential reduces in the long term.

An overview of the key climatic hazards in Afghanistan, including their trend, scope and **impacts** on livelihoods, food security and agriculture, is provided in Table 1 (as analysed by the National Adaptation Programme of

<sup>3</sup> Olsson, L. et al., 2014: Livelihoods and poverty. In: [Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change](#)

Action for climate change, NAPA, process<sup>4</sup>). Climate projections indicate a range of new and increased climatic hazards for Afghanistan. These climatic hazards have impacts across a range of sectors. This has been well documented in the NAPA. Climate change will compound existing climatic stresses that Afghanistan has experienced over the last decade. Nearly all of Afghanistan's 34 provinces have been hit by one or more natural disasters, including floods, landslides, droughts and extremely hot or freezing weather. The most likely adverse impacts of climate change in Afghanistan are drought related, including the associated dynamics of desertification and land degradation. Floods due to untimely rainfall and a general increase in temperature are of secondary importance, but both are exacerbated by the adverse impacts of drought. Cumulative effects of more frequent and intense droughts on reservoirs and groundwater could threaten the water supply of entire communities in the most arid regions of Afghanistan, leading to a range of humanitarian crises, including disease, population displacement and conflict.

The impact of climate change on freshwater resources will vary greatly depending on location. Adequate water resources are particularly important in Afghanistan because of the increasing population and high dependence of the agricultural sector on precipitation, river runoff, and groundwater. However, Afghanistan is already extremely vulnerable to drought and floods. Figure 3 shows a likely reduction in precipitation in the 21<sup>st</sup> century in comparison to the average precipitation of the last 20 years. For climate projection, please refer to [Module 2](#).



Climate change is causing mass losses from glaciers and reductions in snow cover, which will impact water resources. There will be an increased risk of drought-related water and food shortage causing malnutrition, however, better water management strategies could help ease water scarcity.

Disaster preparedness and early-warning systems that build local coping strategies are important adaptation measures. Development of water saving technologies in irrigation, diversification of water sources (including water reuse), and increasing water productivity by more efficient use of water (as from improved agricultural practices and irrigation management) are important adaptation measures (cf. [Water Systems](#)). Farmers are already practicing many of these measures (autonomous adaptation), which provide an important basis for selection of measures that work in the local context.

Given the low rural energy consumption (roughly 3%) and grid connectivity in the country<sup>5</sup>, small hydro powers and run-of-river types of power plants are a potentially significant source of energy. The small hydropower potential in Afghanistan is estimated to be 1,200 MW, which represents roughly 8% of the energy capacity in Afghanistan<sup>6</sup>. New capacity for small hydropower is expected to increase, and approximately 400 MW of new operational capacities will be needed by 2020<sup>7</sup>. Operational capacities are sensitive to variations in water flows and to extreme climatic events, such as flash floods or storms that may damage power plants. With a growing urban population an understanding of urban poverty and its interactions with rural livelihoods, poverty and climate change is a necessity.

<sup>4</sup> [National Environmental Protection Agency, Afghanistan, 2009: Afghanistan. National capacity needs self-assessment for global environmental management \(NCSA\) and national adaptation programme of action for climate change \(NAPA\). Final joint report](#)

<sup>5</sup> [https://energypedia.info/wiki/Afghanistan\\_Energy\\_Situation](https://energypedia.info/wiki/Afghanistan_Energy_Situation)

<sup>6</sup> Islamic Republic of Afghanistan Office of Senior Adviser for Mining and Energy: Importance of renewable energy in Afghanistan (2009) [http://carnegiendowment.org/files/Presentation\\_%20Ashraf.pdf](http://carnegiendowment.org/files/Presentation_%20Ashraf.pdf)

<sup>7</sup> [http://www.smallhydroworld.org/fileadmin/user\\_upload/pdf/Asia\\_Southern/WSHPDR\\_2013\\_Afghanistan.pdf](http://www.smallhydroworld.org/fileadmin/user_upload/pdf/Asia_Southern/WSHPDR_2013_Afghanistan.pdf)

**Table 1: Assessment of climatic hazards (Savage M. et al., 2009: Socio-Economic Impacts of Climate Change in Afghanistan. A Report to the Department for International Development)**

Climatic hazards	Description	Loss of life and livelihoods	Food security and Agriculture	Trends
Periodic drought	Decrease in productivity of crops; forced migration; changes in livelihoods; decrease in amount of exports; financial losses.	Group of livestock herders including Kuchi, irrigated agriculturalists and dryland farmers are affected. Around 10,000 casualties per year of severe drought	Drought has generated an estimated loss of production of 75% wheat, 85% rice, 85% maize, 50% potato and 60% of overall farm production between 1998 and 2005	Increasing frequency and intensity
Floods due to untimely and heavy rain	Collapse and sedimentation of irrigation canals; destruction of agricultural lands; loss of crops and livestock; collapse of dwellings; spread of epidemic diseases; destruction of infrastructure such as roads and bridges; damage to the national economy.	Approximately 750 casualties per year.	Loss of 10% of agricultural production and gardens that are located along side rivers and in high-risk areas.	Increasing frequency and intensity
Flooding due to thawing of snow and ice	River levels rise; destruction of riverside agricultural and non-agricultural (forest, range, etc.) lands; landslides; soil erosion; destruction of infrastructure such as bridges and gabions.	Around 100 casualties per year	Loss of 10% of agricultural production and gardens that are located along-side rivers and in high-risk areas.	Increasing frequency
Rise in temperature	Increase in levels of incidence of diseases that affect humans, agriculture and livestock; habitat changes affect wildlife; changes in vegetative cover and associated grazing patterns	Around 100 casualties per year	Decreased agricultural, livestock and horticultural production.	Increasing frequency and intensity
Frost and cold spells	Degradation of fruits, crops, vegetable and health. Diseases that lead to economic loss and poverty.	Loss of fruits and potatoes; approximately 300 indirect casualties per year.	20% of gardeners in the country are affected, particularly those with horticultural crops	Increasing frequency and intensity
Hail, thunder and lightning	Destruction of crops (particularly horticultural crops); human and livestock losses; outflow/gush from floods.	Approximately 150 casualties per year.	Up to 20% loss in horticultural and crop production	Increasing frequency and intensity
Monsoon and 120 day winds	Desertification; degradation of agricultural lands and crops; destruction of infrastructure; air pollution; spread and transmis-	Around 10 casualties per year	Decrease in horticultural and crop production, degradation of rangeland and reduced livestock production	Increasing frequency and intensity

Climatic hazards	Description	Loss of life and livelihoods	Food security and Agriculture	Trends
	sion of diseases and respiratory problems, sedimentation of irrigation systems and springs; local and national economy negatively affected			

## On-going programmes and policies related to climate change in Afghanistan

Table 2 presents plans, strategies and projects that seek to mainstream climate change adaptation into development projects. Afghanistan has completed the Strategic Environmental and Social Impact Assessment – used as a tool to address climate change issues at policy, plan and programme level. In addition, the National Environmental Protection Agency (NEPA) is planning to develop a guidance manual for integration of climate change and biodiversity into the environmental assessment procedures (project level mainstreaming).

## Resilience

Resilience is a concept that enables addressing livelihoods, sustainability and both immediate and long term risks. It is generally understood in terms of three capacities – to **absorb** shocks and trends (through savings, assets, skills etc.), to **adapt** (modify practices to a changing context) and to **transform** which is a change in the fundamental attributes of a system (such as moving out of certain locations or livelihood activities)<sup>8</sup>. The Sustainable Development Goals lay a particular emphasis on resilience and this is likely to be an overarching frame that brings together the objectives of sustainable development with risk reduction, adaptation and mitigation, as necessary.

**Table 2: Projects Related to Climate Change Adaptation in Afghanistan** (Climate Change Adaptation in Afghanistan, Climate Change Division, National Environmental Protection Agency of Afghanistan)

Name	Budget	state
Building adaptive capacity and resilience to climate change in Afghanistan	US\$ 4.9 million LDCF	under implementation
Building Resilience of Communities Living Around the Northern Pistachio Belt (NPB) and Eastern Forest complex (EFC) of Afghanistan (demonstration of Ecosystem Based Approach)	US\$ 6.9 million	approved
Reducing GHG Emissions through Community Forests and Sustainable Biomass Energy	US\$ 1.73 million	approved
Strengthening the Resilience of Rural Livelihood Options for Afghan communities in Panjshir, Balkh, Uruzgan and Herat provinces to Manage Climate Change induced Disaster Risks	US\$ 9.0 million	approved
Other sectoral projects supporting adaptation are:		
National Solidarity Program (NSP) (currently NSP III is implemented by MRRD)		initiated in 2003 and ongoing
Irrigation Restoration and Development Project (IRDP)		initiated in 2011 and ongoing
Northern Flood-Damaged Infrastructure Emergency Rehabilitation Project	US\$ 56.6 million, ADB grant	recently agreed project (Nov. 03, 2014)

<sup>8</sup> <http://drrplatform.org/images/CommunityResilienceReport.pdf>

Author(s): Patricia Gorin, April 2016



2014. This document is made available under a Creative Commons Attribution-Non-Commercial-ShareAlike 4.0 International license

This publication has been made possible through financial support of Swiss Agency for Development and Cooperation SDC. The content, however, is the sole responsibility of HELNETAS Swiss Intercooperation.



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Federal Department of Foreign Affairs FDFA  
Swiss Agency for Development and Cooperation SDC

## Further reading

- Savage M., Dougherty B., Hamza M., Butterfield R. & Bharwan S., 2009: Executive Summary. Socio-Economic Impacts of Climate Change in Afghanistan. A Report to the Department for International Development. Available at: [http://www.necsi.edu/afghanistan/pdf\\_data/2007447\\_AfghanCC\\_ExS\\_09MAR09.pdf](http://www.necsi.edu/afghanistan/pdf_data/2007447_AfghanCC_ExS_09MAR09.pdf)
- Savage M., Dougherty B., Hamza M., Butterfield R., Bharwan S., 2009: Socio-Economic Impacts of Climate Change in Afghanistan. A Report to the Department for International Development. Available at: <https://www.weadapt.org/sites/weadapt.org/files/legacy-new/place-marks/files/5345354491559sei-dfid-afghanistan-report-1-.pdf>
- National Environmental Protection Agency, Afghanistan, 2013: Afghanistan. Afghanistan initial national communication to the United Nations Framework Convention on Climate Change. Available at: <http://unfccc.int/resource/docs/natc/afgnc1.pdf>
- Olsson, L., Opondo M., Tschakert P., Agrawal A., Eriksen S.H., Ma S., Perch L.N. & Zakieldeen S.A., 2014: Livelihoods and poverty. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Available at: [https://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap13\\_FINAL.pdf](https://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap13_FINAL.pdf)
- HELNETAS Swiss Intercooperation, 2013: Food Security, Food Sovereignty position paper. Available at: [https://assets.helvetas.org/downloads/hsi\\_position\\_on\\_food\\_security\\_short\\_version\\_final.pdf](https://assets.helvetas.org/downloads/hsi_position_on_food_security_short_version_final.pdf)
- FAO, 2008: Climate change and food security: a framework document. Available at: <http://www.fao.org/forestry/15538-079b31d45081fe9c3dbc6ff34de4807e4.pdf>