October, 2023

Workshops

Climate Profiles

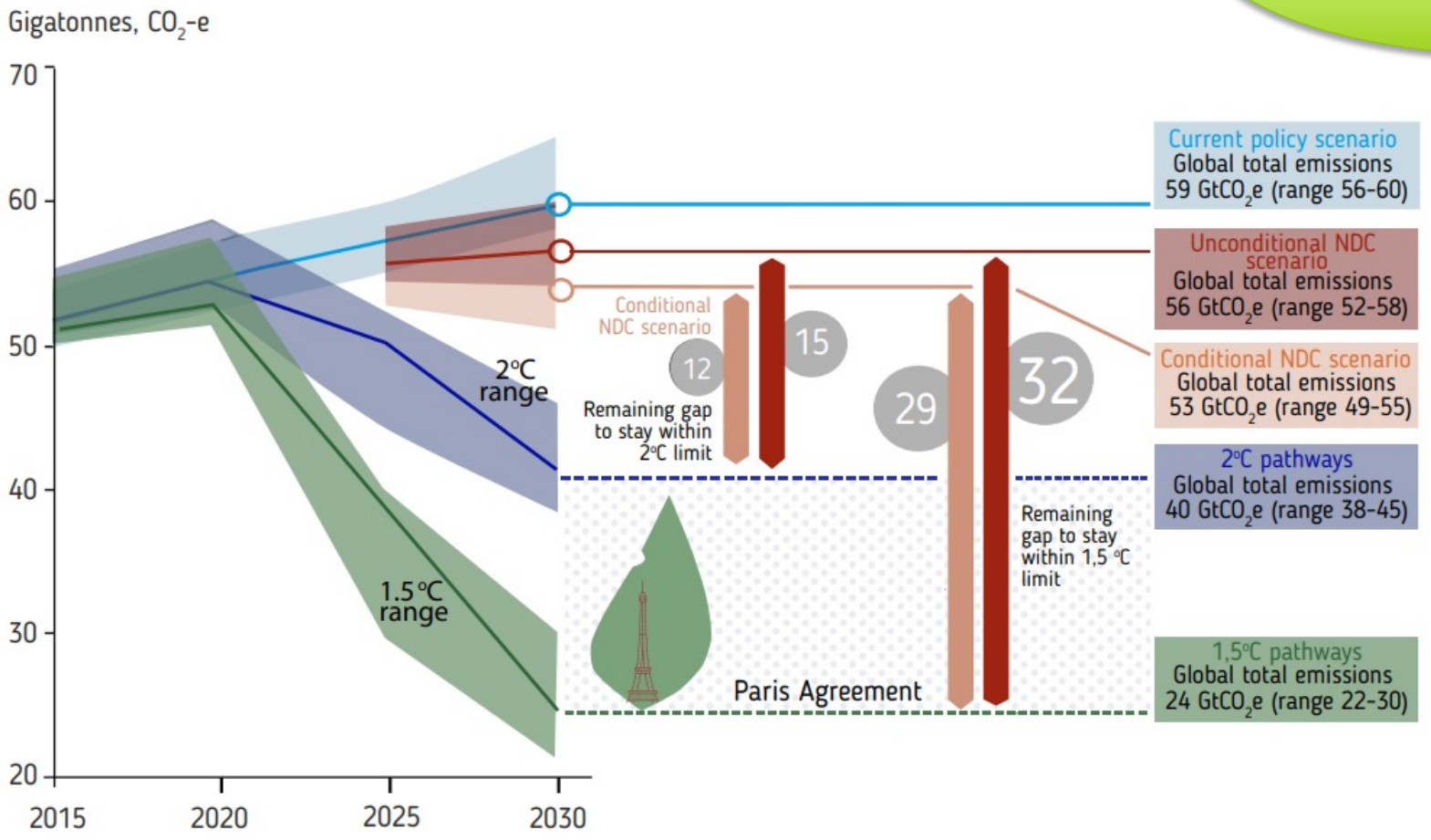
CENTRAL ASIA REGIONAL CENTRE FOR CLIMATE ACTION TRANSPARENCY (RECATH)

Climate Change in Central Asia Key challenges

Climate Scenario: key trends

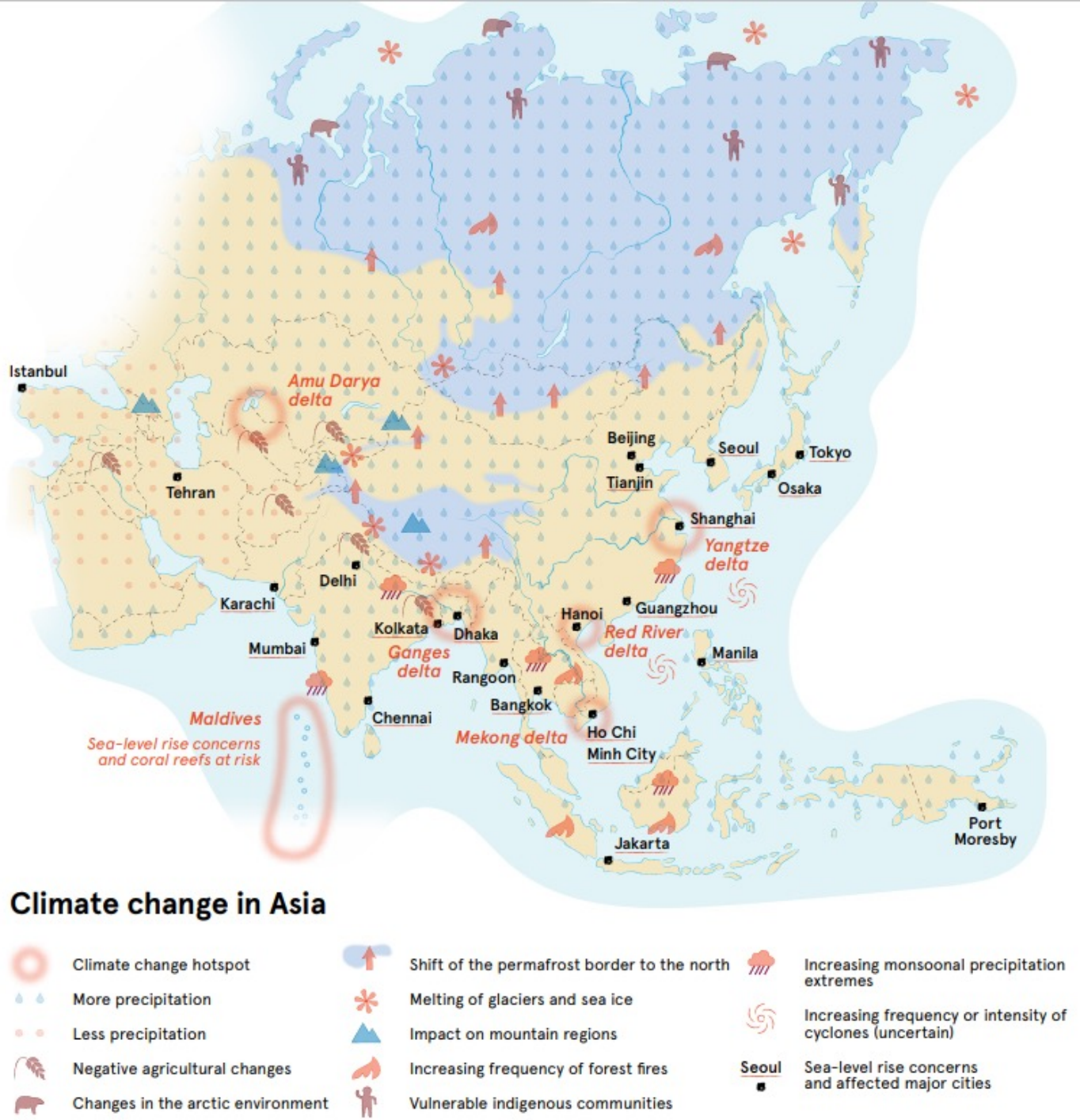
The big picture (world scale)

Global greenhouse gas emissions under different scenarios and the emissions gap in 2030



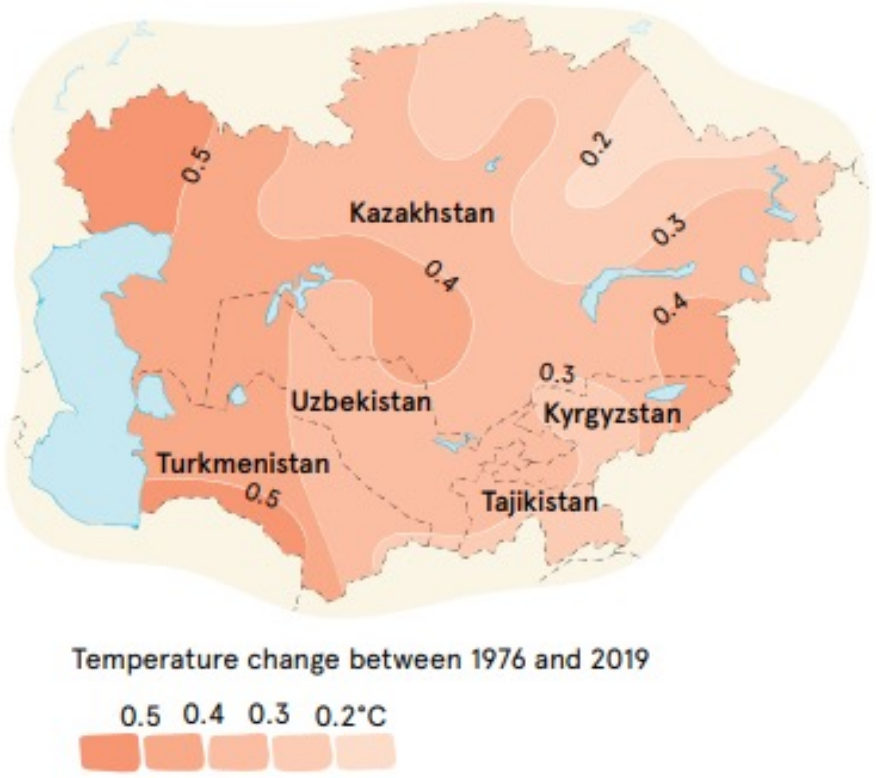
Source: World Bank, 2020

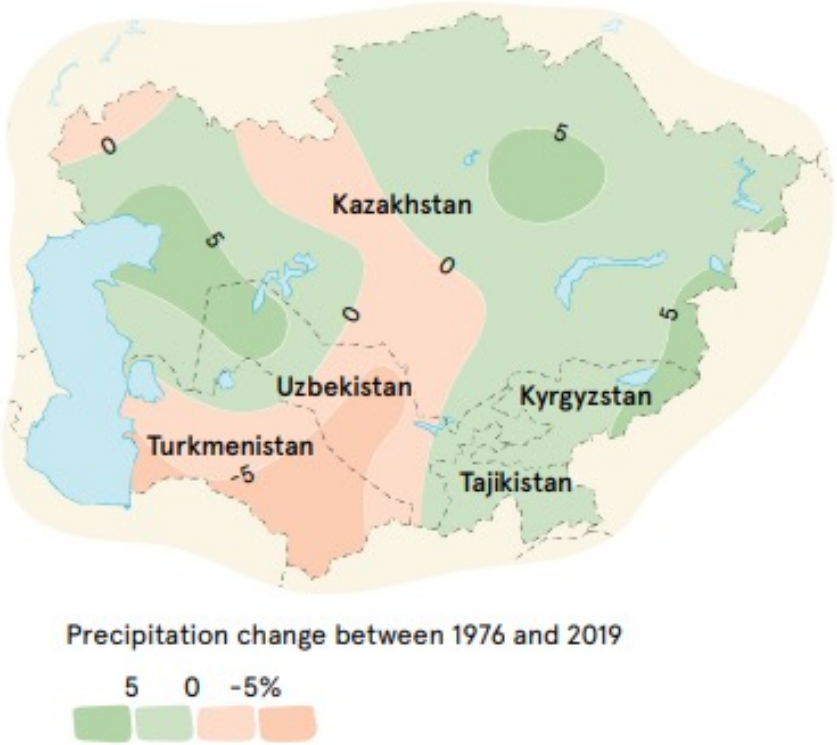
Climate risks in Asia: Overview



Source: World Bank, 2020

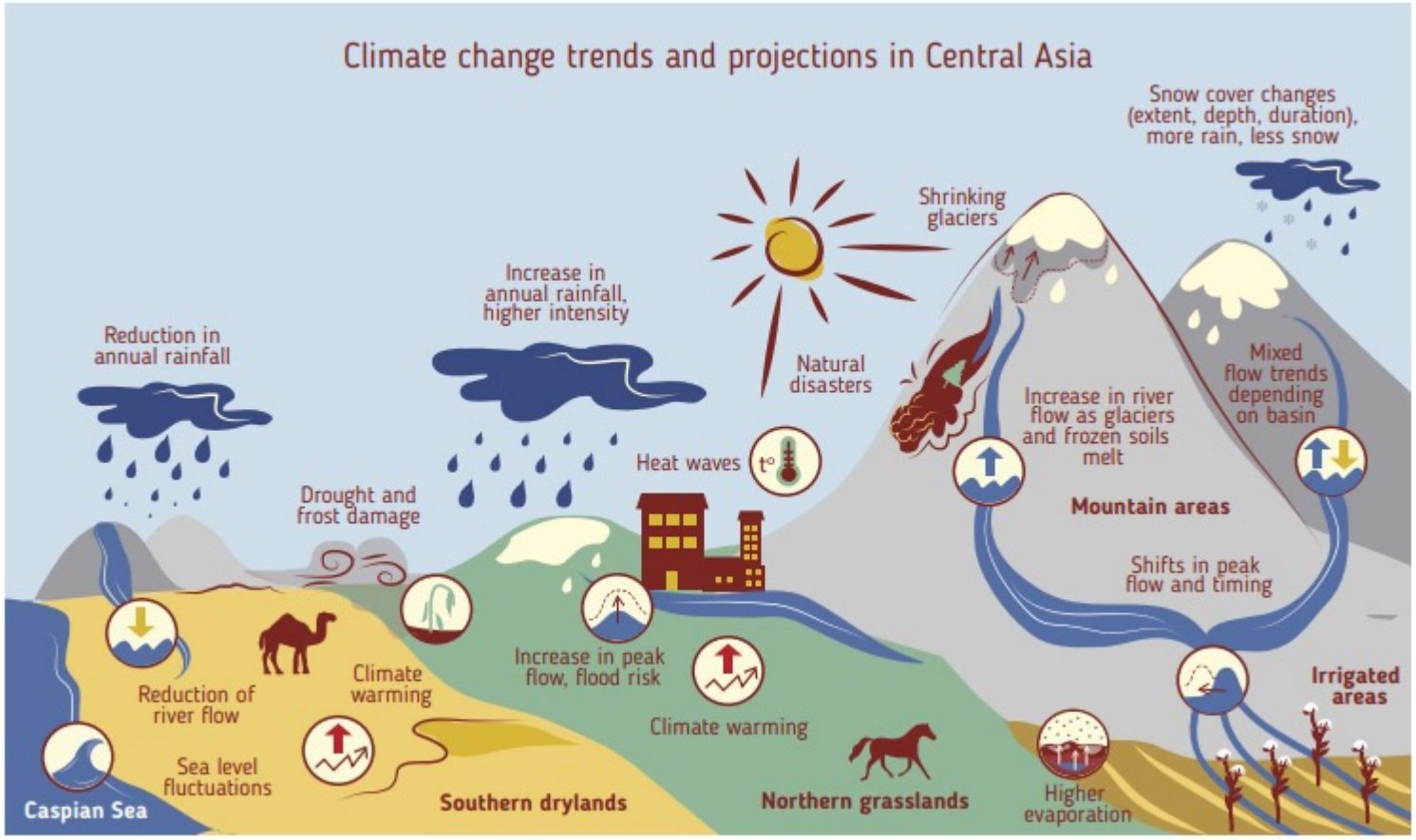
Climate in Central Asia: observed trends

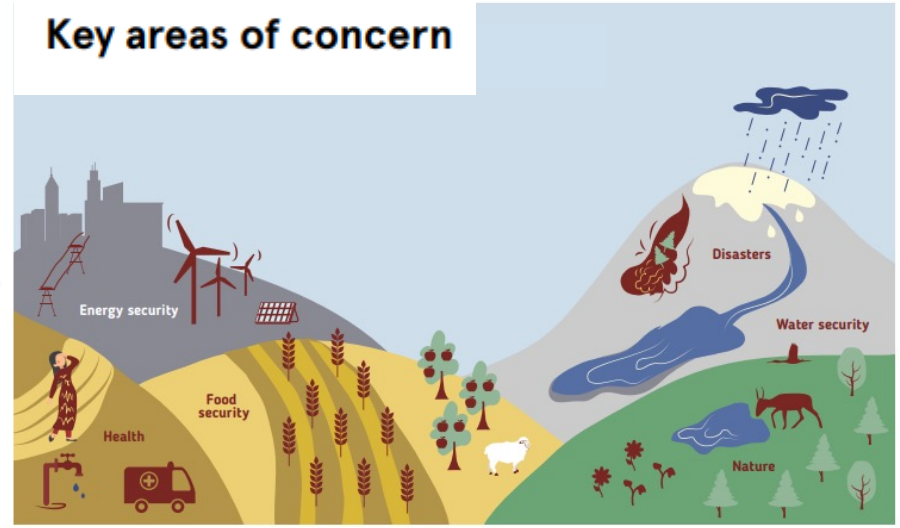




Source: World Bank, 2020

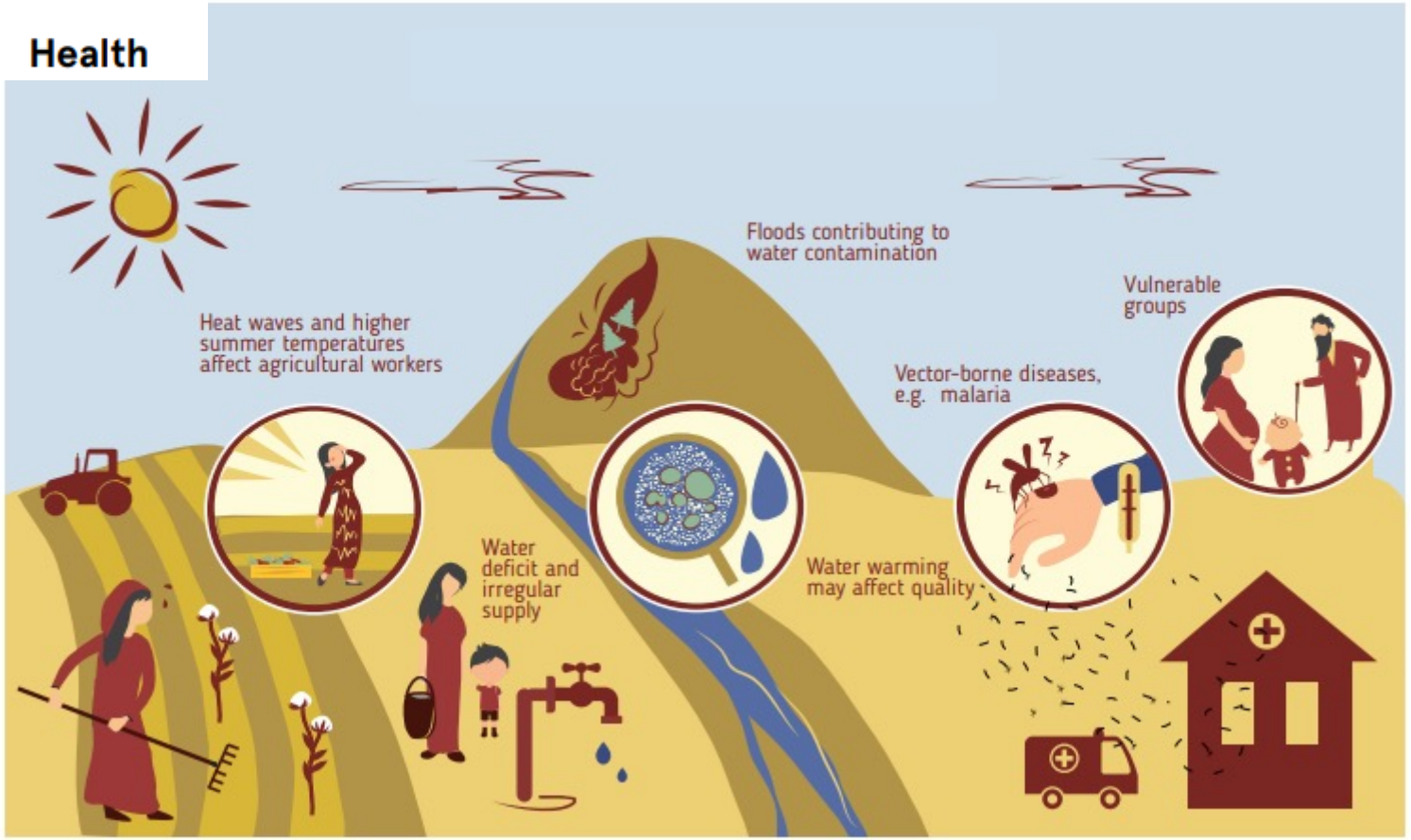
Climate in Central Asia: projected trends





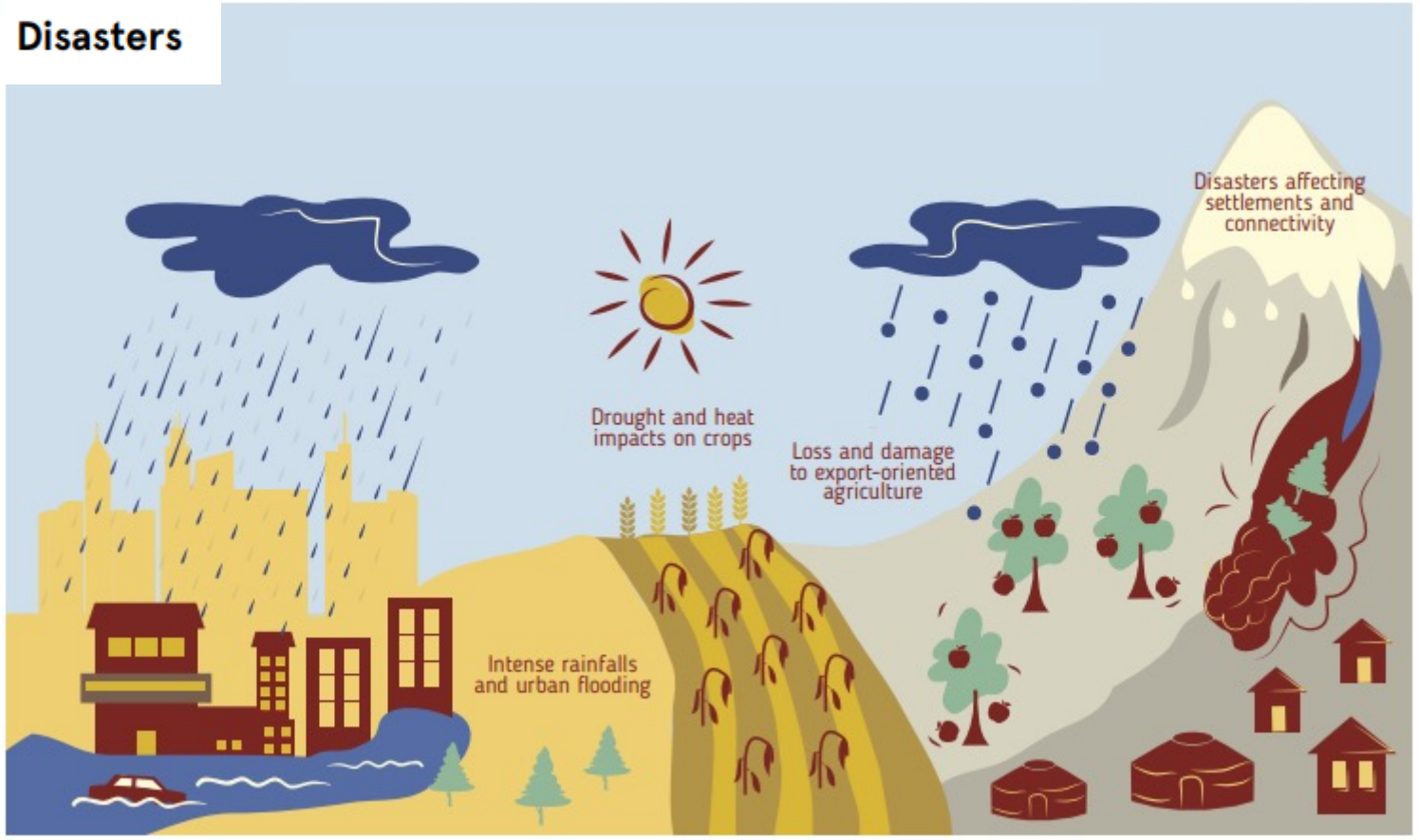
Source: World Bank, 2020

Climate in Central Asia: key areas of concern



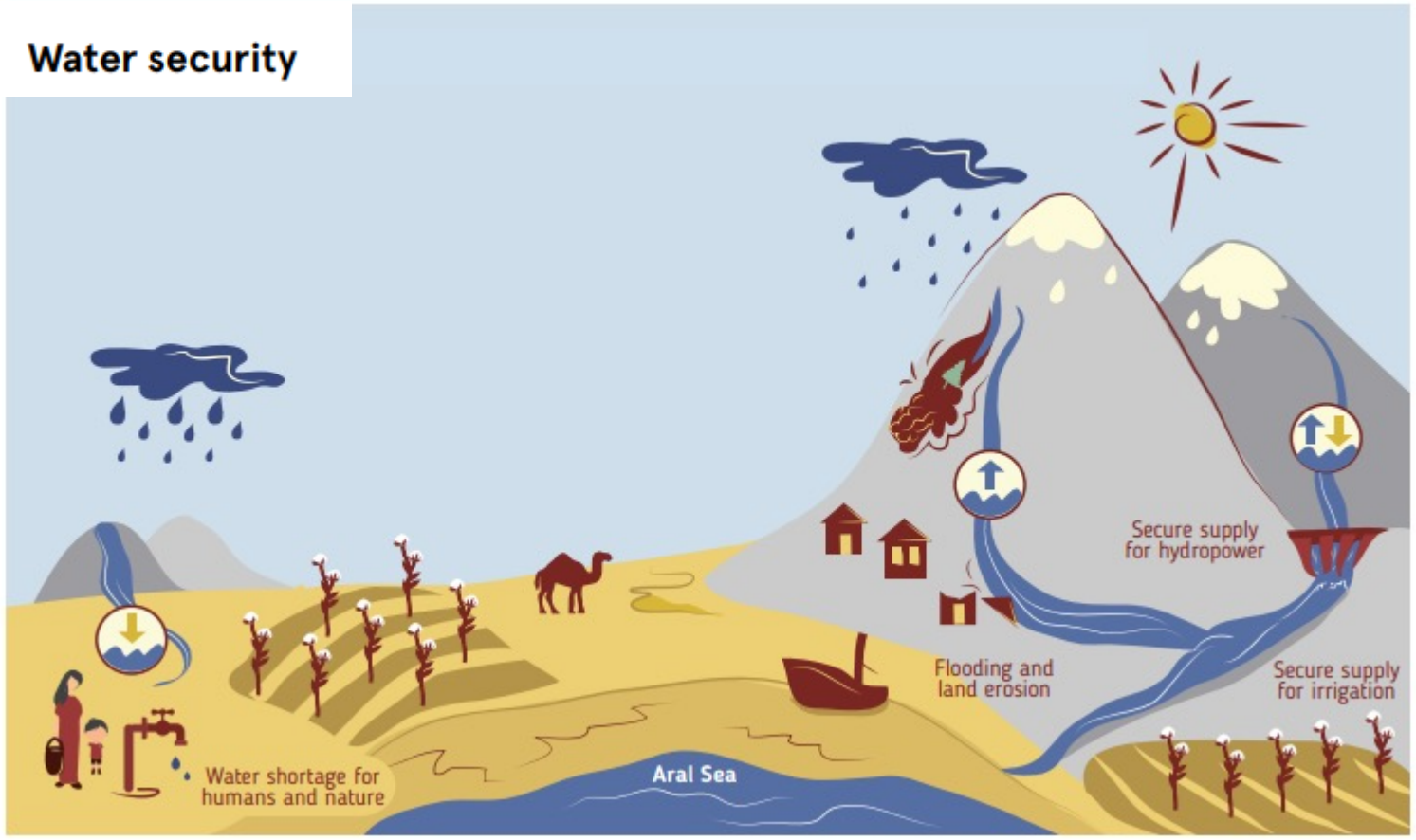
Source: World Bank, 2020

Climate in Central Asia: key areas of concern



Source: World Bank, 2020

Climate in Central Asia: key areas of concern

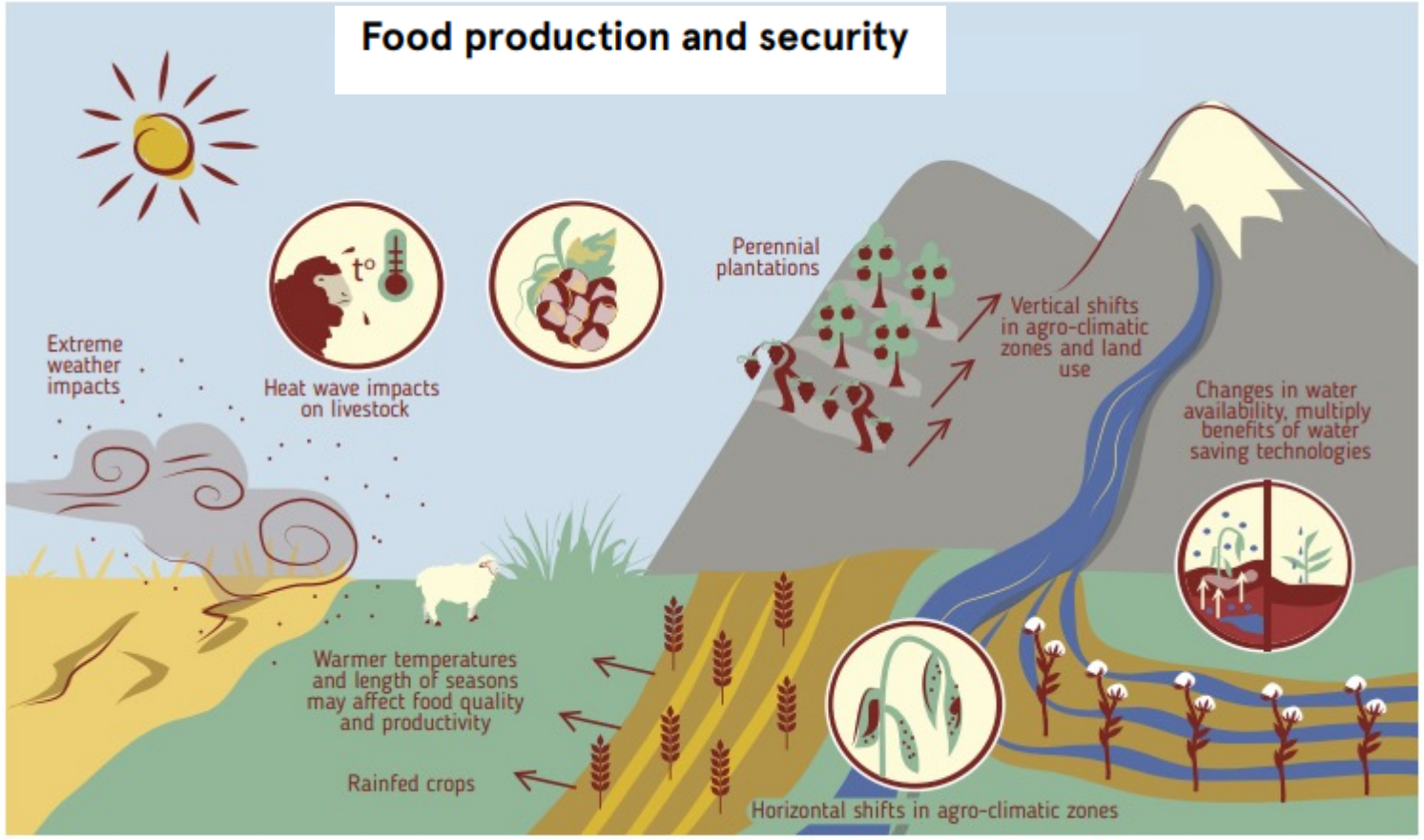


Source: World Bank, 2020

Climate in Central Asia: key areas of concern

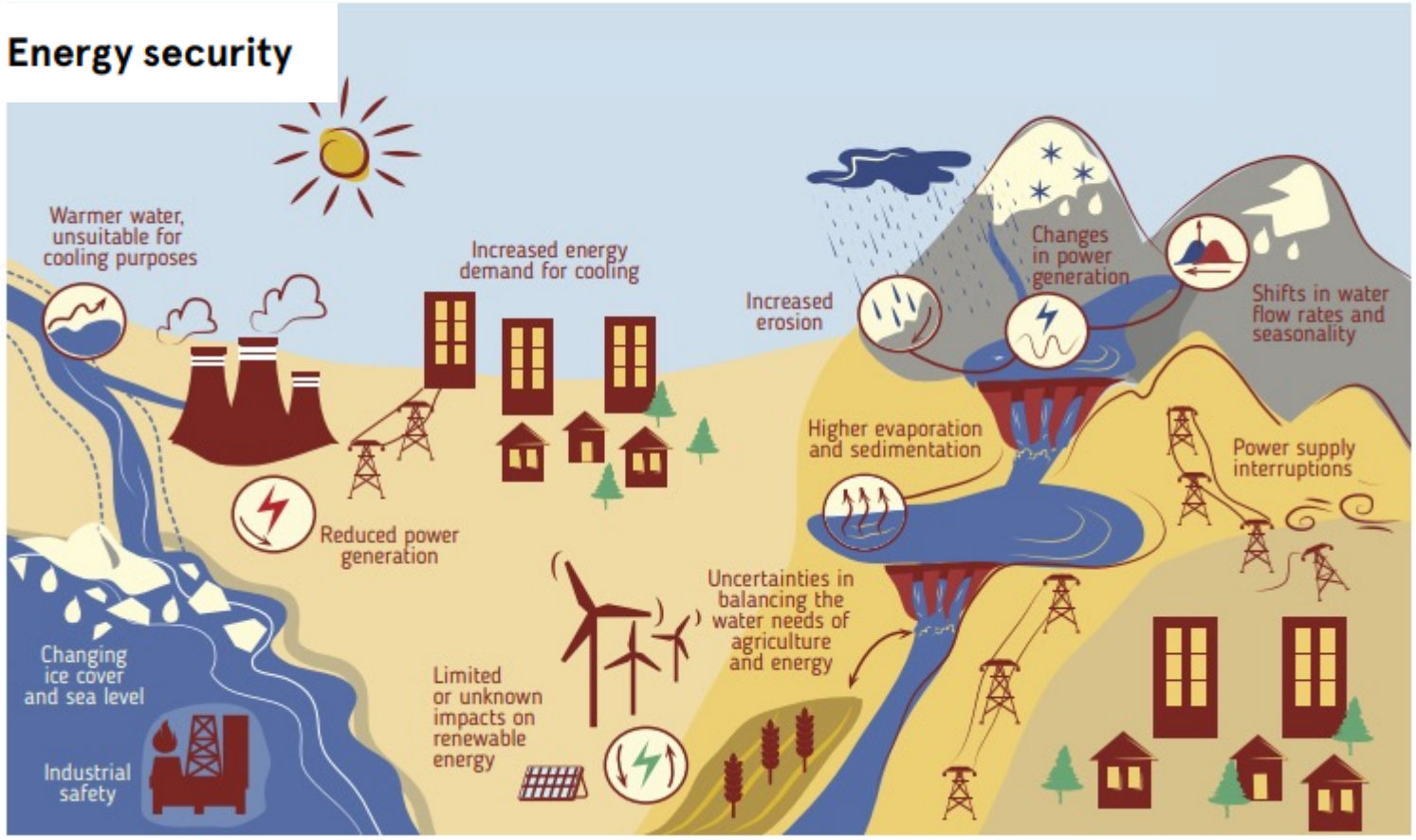
Source: World Bank, 2020

Climate in Central Asia: key areas of concern



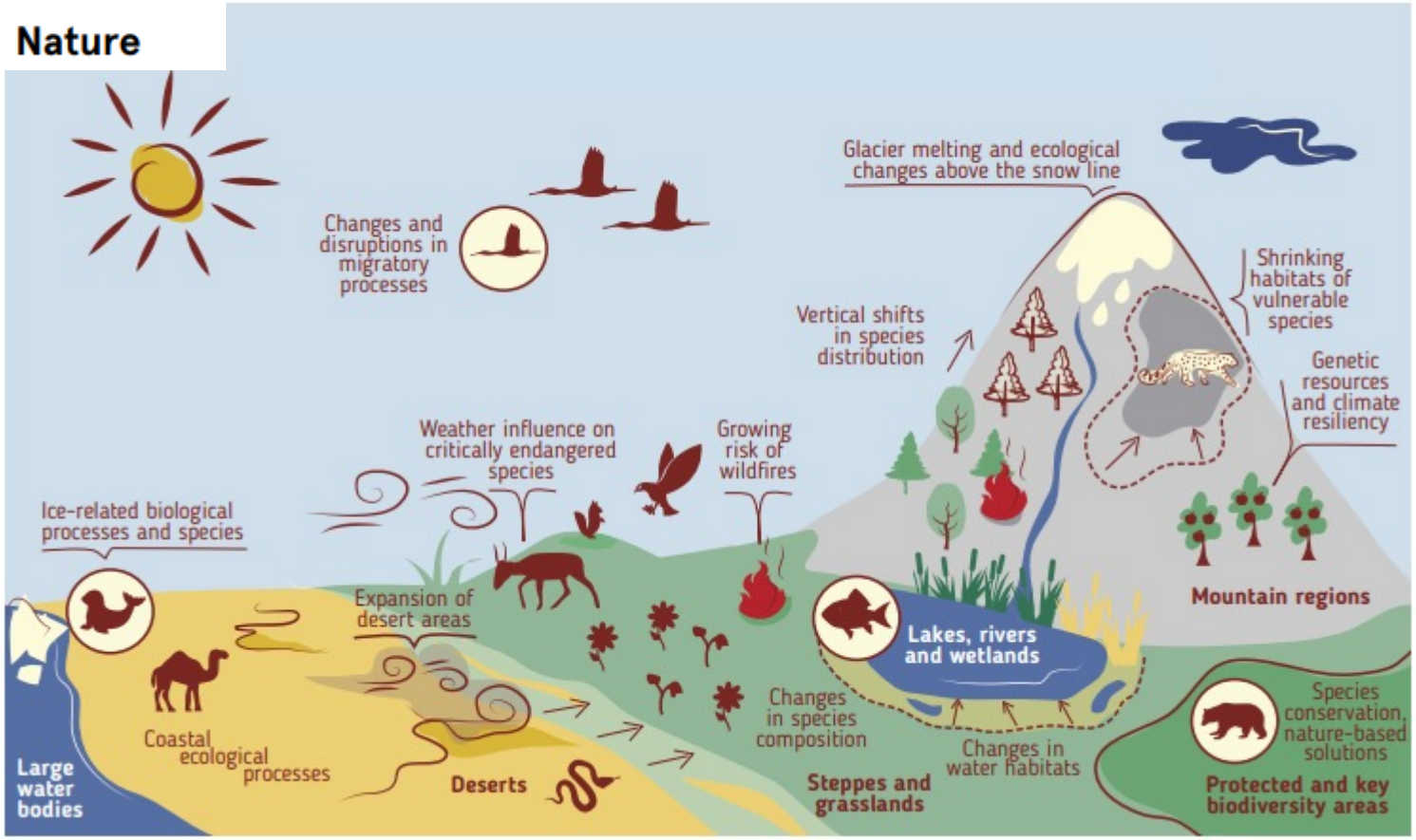
Source: World Bank, 2020

Climate in Central Asia: key areas of concern



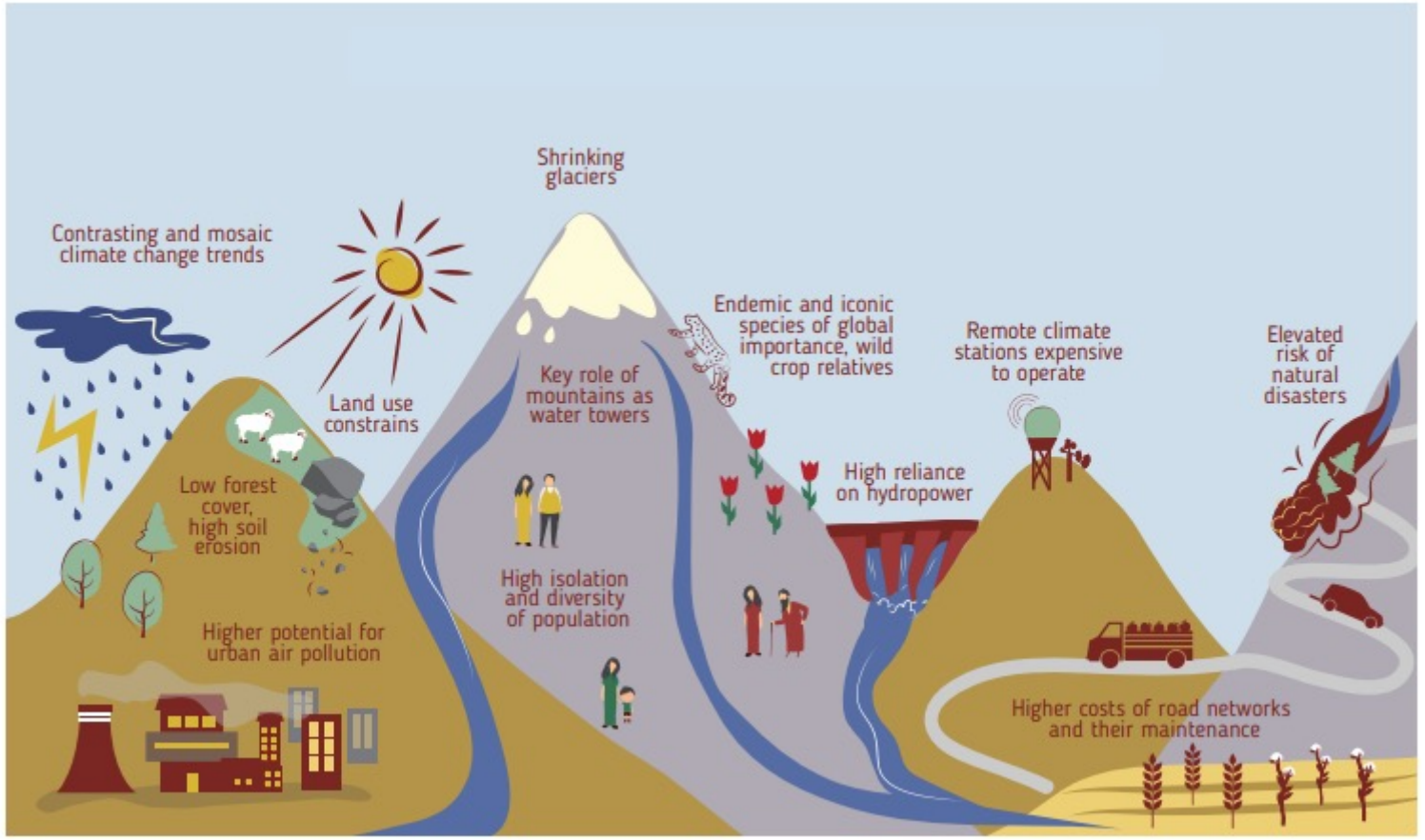
Source: World Bank, 2020

Climate in Central Asia: key areas of concern



Source: World Bank, 2020

Mountainous areas as priority areas for adaptation



Source: World Bank, 2020

National Climate profiles

Uzbekistan

Uzbekistan

National features

Location

Central part of Eurasian continent, within the Amudarya and Syrdarya river basins, far away from seas and oceans.

Borders

Kyrgyzstan, Kazakhstan, Tajikistan, Turkmenistan, and Afghanistan.

Relief

- 78.8% of the territory is plains
- 21.2% of the territory (south-eastern part) is presented by piedmont and mountaineous areas.

Climate

- Arid/subtropical and continental climate with large variations in temperature
- Extended summer season.
- In winter, cold air mass from Arctic and Siberia regions accompanied by winds and heavy precipitations penetrates freely to far south of the Central Asia.

Temperature

- 1950-2013: temperature increase of 0.27°C for every 10 years (2 times higher than the global rate).
- Steepest rises in temperature occurring north and in large cities (0.30°C–0.43°C per decade)

Precipitation

- Considerable spatial variation in precipitation levels.
- Not statistically significant changes in average annual precipitation in recent decades.
- Slight decrease in average annual precipitation between 1950 and 2013.

Uzbekistan

Climate Change Trends

Future climate

- Average annual temperature:
  - +1.3-2.1°C by 2030,
  - +1,8-3,3°C by 2050
  - +2.0-5.4°C by 2085.
- Extended period of extremely hot weather:
  - +3-9 days by 2030
  - +4-17 days by 2050
  - +6-43 days by 2085.
- The annual change in precipitation:
  - From 3% decrease to 12% increase by 2030
  - From 6% decrease to 18% increase by 2085

Climate impacts

- Rivers with intense water use and increased stress from climatic and hydrological changes
- Impact of regional climate change and dust storms due to shrinkage of the Aral Sea
- Increased risk of climate-related hazards in the mountains and impacts on populated areas and infrastructure
- Densely populated and agriculturally important areas with increased environmental stress and projected impacts of climate change
- Mountain hazards, reduction of ice cover and risk of glacial lakes outburst floods

Source: World Bank, 2020

Uzbekistan

Climate Change Impacts and Vulnerability and Risk Assessment – Key areas for concern

24th in the global natural disaster hotspots list compiled by the World Bank

- *9.3% of the total country area at risk*
- *65.6% of the population living in risky areas*
- *65.5% of the national GDP (USD 12 billion annually) generated from areas at risk.*

- Most damages occur in **economically strong and flooding-prone provinces in the east** (Andijan and Ferghana): on average they lose 3% and 2% respectively of annual GDP to flooding.
- **90% of the country's water resources** originate from eastern mountain catchments located in neighbouring countries and supplied by rainfall, melting snow and glacial ice.
- Two major river systems - the Amu Darya and the Syr Darya –constitute 95% of the surface water flow.
- **Ferghana valley** is subject to high climate-related disaster risks (combination of high concentration of people, economic activities, and several climate-related hazards).
- **Densely populated foothill zone**: 75% of the population expected to be affected by drought.
- 22% of the country's population lives in zones with high mudflow frequency

Uzbekistan

Climate Change Impacts and Vulnerability and Risk Assessment – Key Vulnerability factors

Population

- Droughts and dust-sand storm in the densely populated foothill zone
- Zones with high mudflow frequency densely populated.

Human health

- Respiratory disease: most common cause of death among children younger than 14.

Energy

- Hydropower accounted for 10% of the country's domestic power generation in Uzbekistan in 2020.

Water and irrigation

- 15% of the country's lakes are susceptible to outburst
- Less than 10% of water resources originates in the country.
- Water sources subject to glacial retreat
- Water demand rises to allow continued irrigation
- Irrigated cotton and grain production
- 85% of crop irrigated
- Half of all irrigated land affected by soil salinity, with considerable spatial variation

Poverty and inequality

- 47.3% of income spent on food in 2016: exposure of poorer groups to rises in food prices
- Heavy manual labor jobs: lowest paid whilst and most at risk of productivity losses due to heat stress.
- Poorer businesses: least able to afford air conditioning
- Poorer farmers and communities: least able to afford local water storage, irrigation infrastructure, and technologies for adaptation.

Uzbekistan

Climate Change Impacts and Vulnerability and Risk Assessment – Adaptation capacity / challenges

Water sector

Geographic specificities

- 2050: Temperature rises of between 2.2°C and 3.1°C in mountainous areas of Tajikistan could lead to a loss in glacial mass of 36%-45%
- 2050: inflow into downstream areas could drop by 22%-28% for the Syr Darya and by 26%-35% for the Amu Darya.
- The Zarafshan river is subject to similar issues of glacial retreat.
- Change in the seasonal patterns of river flow is expected

Institutional arrangements

- Need of international coordination for water resources: future hydropower potential depends on water management and adaptation plans of upstream nations + implementation of energy sector reforms.
- Vulnerable to increased upstream river regulation from other countries: new hydropower plants on the upper Zarafshan in Tajikistan ; increased withdrawal of water from the Amu Darya for irrigation in Turkmenistan.

Infrastructure

- High-priority need to optimize irrigation efficiency
- High-priority to address aging and poor quality infrastructure in the sector.

Heatwaves

The frequency of heat waves has already risen, with the sharpest increase being observed in the northwestern areas surrounding the Aral Sea and the lower Amu Darya

Health

Uzbekistan has made significant improvements in its nutrition and food security over the past decade, so that the country currently has a more secure and adequate supply of food at the national level.

Uzbekistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Health and disease

- The number of very hot days (>40°C) amplify the effects of ischemic heart disease in Uzbekistan.
- 2000-01 drought' health impacts: increased levels of water-related illness and malnutrition among children in western regions, iodine deficiencies, goiter, and diarrheal and respiratory diseases
- 24 climate-related deaths per million linked to lack of food availability in Uzbekistan by the 2050s under RCP8.5.
- Rise in prevalence of enteric diseases
- Increase of cases of food and water-borne disease
- Acute intestinal infections correlated with air temperature and incidence of bacterial dysentery is 3 times higher during summer
- Spread of mosquito-borne diseases, increasing the risk of a resurgence of malaria and parasitic diseases such as leishmaniasis.

Land and soil

- Acceleration of the desiccation of the Aral Sea.
- Hasten desertification across the wide area of land adjoining the Aral Sea, with winds carrying sand, dust, agricultural chemicals and salt up to 300 km from the former seabed.
- The area of salt-affected soils that feed the development of salt and dust storms expanded by 36% between 2000-2008
- Dust storms affect 5.5 million people: increasing frequency, pose a **risk to public health**
- Further desertification in the coming decades.

Water

- Reduction in river runoff in the long-term.
- 2050: severe water shortages in the Syr Darya and Amu Darya basins, with 35% and 50% of their respective levels of demand being unmet
- The Zarafshan river is currently used for extensive irrigation, which would be negatively affected if river flow were to weaken
- Irrigated cotton and grain production require more water in summer

Uzbekistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Economic consequences

Consequences of the severe drought of 2000 and 2001:

- Agricultural yields fell by 14%–17% for cereals and 45%–75% for other crops
- Losses in agricultural GDP were estimated between $38 million and $130 million.

Food production

- Direct effects on crop gowth processes: alterations to carbon dioxide availability, precipitation and temperatures.
- Indirect effects in crop growth processes: impacts on water resource availability and seasonality, soil organic matter transformation, soil erosion, changes in pest and disease profiles, arrival of invasive species, and decline in arable areas due to salinization and desertification.
- Water scarcity: key risk to food trade and security.
- Impact on national food consumption patterns both through direct impacts on internal agricultural operations, and through impacts on the global supply chain

Agricultural productivity

- Increasing number of tropical nights = reduction of soil moisture = reduction in agricultural productivity
- 85% of crop land in the country is irrigated: at risk of productivity reduction
- Increased agricultural sector's exposure to pests and diseases.
- High temperature days = productivity issues for the agricultural labor force

Animals

- Reduction of livestock productivity via **heat stress among the animals.**
- **Duration of warm spells** could increase significantly by the 2030s.
- There may be some benefits to pasture growth, as higher temperatures may allow the growing season to begin earlier
- Flow reduction projected for the major rivers = potential to limit Uzbekistan's capacity to generate energy

Uzbekistan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

What can you tell us about your monitoring system ?

Strategic document	Key content
The Strategy of actions for five priority areas of development of the Republic of Uzbekistan for 2017-2021	▪ 5 priority directions of the country's development: a) improvement of the system of state and public construction; b) ensuring the rule of law and reforming the judicial and legal system; c) development and liberalization of the economy; d) development of the social sphere; e) ensuring security, interethnic harmony and religious tolerance, implementation of the balanced, mutually beneficial and constructive foreign policy.
The New Uzbekistan's Development Strategy for 2022-2026	▪ 7 priority areas: (1) building a humane state by raising the honor and dignity of a person and further developing a free civil society; (2) transformation of the principles of justice and law supremacy into a fundamental and necessary condition for the development of the country; (3) accelerated development of the national economy and ensuring high growth rates; (4) implementation of a fair social policy, development of human capital; (5) ensuring spiritual development and raising this area to a new level; (6) approach to global problems based on national interests; (7) strengthening the security and defense potential of the country, maintaining an open, pragmatic and active foreign policy ▪ The new Strategy contains 100 targets/indicators, including issues of climate change adaptation and mitigation.
Concept and a roadmap for green growth (Draft)	▪ In order to accelerate implementation of the Strategy for the transition of the Republic of Uzbekistan to "green" economy, the Ministry of Economic Development and Poverty Reduction, with the support of the World Bank, UNDP, AFD, has begun preparing a Concept and a roadmap for green growth.
National Sustainable Development Goals until 2030	▪ Comprehensive mechanism for sustainable development and a basic reference document for all strategies and legislation.

Any insights on your indicators ?

Uzbekistan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Climate governance

Ministries/agencies	Rôle in fulfilling obligations under the UNFCCC
Hydrometeorological Service Center (Uzhydromet)	▪ Coordination of activities on CC issues, implementation of the UNFCCC and the Paris Agreement. ▪ Preparation of National Communications and Biennial Reports with updated data under the UNFCCC (Article 13 of the Paris Agreement). ▪ Estimation of emissions and preparation of inventory of greenhouse gases. ▪ Preparation and updating of NDC in accordance with the requirements of the Paris Agreement (Article 4 of the Paris Agreement). ▪ Preparation of the National Adaptation Plan. ▪ Development of sectoral guidelines for conducting an inventory of greenhouse gas emissions. ▪ Carrying out scientific research of CC processes, assessing the impact of their consequences on the natural environment, sectors of the economy and the population. ▪ Development of a climate monitoring system, including forecasts, data exchange, etc. ▪ Improvement of the environmental pollution monitoring system.
Ministry of Economic Development and Poverty Reduction	▪ Authorized body for the promotion and implementation of the "green" economy. ▪ Responsible for reducing the carbon intensity of GDP, modernizing the infrastructure of industrial enterprises using clean and environmentally friendly technologies and industrial processes. ▪ Ensuring that environmental aspects are taken into account in all sectors of the economy. ▪ Coordinate implementation of projects on reduction of greenhouse gas emissions in the industrial sector.

Uzbekistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Ministries/agencies	Rôle in fulfilling obligations under the UNFCCC
Ministry of Energy	▪ Carrying out state policy in the field of energy-saving ▪ Providing information on the "energy" sector for estimating greenhouse gas emissions, for assessing mitigation measures, updating NDC. ▪ Implementation of projects aimed at improving the energy efficiency of the economy, the development of renewable energy sources.
State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection	▪ Coordination of work on ecology and environmental protection, ensuring interagency cooperation in the development and implementation of a unified environmental and resource-saving policy. ▪ Prevention of offenses in the field of environmental protection, rational use of natural resources and waste management. ▪ Monitoring compliance with legislation in the field of waste management, implementation of measures included in the Roadmap of the Strategy for solid waste management. ▪ Reducing the negative impact on the environment of hazardous waste. ▪ Reducing the volume of emissions of pollutants into the air from stationary and mobile sources. ▪ Providing information on the relevant sector for estimating greenhouse gas emissions, updating NDC. ▪ Improvement of the system of ecological monitoring of the natural environment.
Interdepartmental Council on Green Economy	▪ Established under the leadership of the Minister of Economic Development and Poverty Reduction ▪ Supervise implementation of the Strategy for the transition of the Republic of Uzbekistan to “green” economy for the period 2019-2030

Uzbekistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

CITEPA

To be noted

- The climate governance of Uzbekistan is currently under development. However, the country already implemented institutional arrangements to develop climate change action.
- No special law on climate change in Uzbekistan, but the Environmental Code of the Republic of Uzbekistan is currently being prepared, in which a significant place is given to the issues of climate change, both adaptation and mitigation. Some climate change related issues are indirectly regulated by the sectoral laws and regulations.

Uzbekistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Strategic document	Key content
The Strategy for the transition of the Republic of Uzbekistan to "green" economy for the Period 2019-2030	▪ The Strategy is the main legislative document regulating policy and actions in the field of climate change. ▪ The strategy was adopted in order to ensure the fulfillment of obligations under the Paris Agreement ▪ Priorities: improving the energy efficiency of the main sectors of economy; diversification of energy consumption and development of the use of renewable energy sources; climate change mitigation and adaptation, increasing the efficiency of using natural resources and preserving natural ecosystems; development of financial and non-financial mechanisms to support the development of a green economy.
Strategy of the Republic of Uzbekistan on Climate Change until 2030 (Draft).	▪ The Strategy, roadmap and investment plan to the Strategy are under development. The documents went through several stages of discussion, it is expected that the Strategy will be adopted in the near future. ▪ Key priority areas: reducing intensity of greenhouse gas emissions in accordance with national capabilities, conditions, and circumstances; building resilience to climate change and disaster risk management; strengthening adaptation measures and actions in the Aral Sea region; development of systematic climate change monitoring, assessments and forecasts; introduction of innovative resource-saving technologies and capacity building in vulnerable sectors of the economy for climate change mitigation and adaptation.

Uzbekistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Strategic document	Key content
National Adaptation Plan (NAP) in Uzbekistan (under development)	▪ The development of the NAP is carried out within the framework of the UNDP / GCF project "Sector driven National Adaptation Plan to advance medium- and long-term adaptation planning in Uzbekistan". ▪ Expected results are as follows – to help inform the NAP: (1) Coordination mechanism for multi-sectoral adaptation planning and implementation at different levels is strengthened; (2) Evidence base for adaptation planning is strengthened and adaptation is prioritized into national and sectoral planning and budgeting; (3) adaptation financing and investment strategy for Uzbekistan is developed; (4) Five sectoral plans (water and agriculture, extreme hazards, health, housing) and two territorial plans are developed.
NDC	▪ In 2021, Uzbekistan has updated and strengthened its commitments (NDC) under the Paris Agreement for the period until 2030. ▪ The Adaptation section of the updated NDC document presents adaptation measures for agriculture and water management, social sector, ecosystems, strategic infrastructure and production systems, etc., as well as actions to mitigate the consequences of the Aral Sea disaster.The NDC presents a sectoral list of adaptation measures in Uzbekistan until 2030. ▪ Specific attention is drawn on transparency, to be ensured through: the implementation of an integrated MRV system to track the NDC implementation

Kazakhstan

Kazakhstan

National features

Population

- One of the lowest population densities in the world: population of 18.5 million (2019) spread over its 2.7 million square kilometer area
- 57% of this population lives in urban areas.

Borders

- Russian Federation, China, Turkmenistan, Uzbekistan, Kyrgyzstan.
- Natural boundary: Caspian Sea

Relief

- Flat or rolling terrain predominates: 1/3 = lowlands and 1/5 = low mountains
- Exceptions: very low-lying areas by the Caspian Sea, and Altay mountains that reach altitudes of 7,000 meters.

Climate

- Forest-steppe, steppe, semi-arid and desert climate zones.
- Extreme continental climate (long, hot summers and cold winters).

Temperature

- Highly continental climate and large intraday and annual fluctuations in temperature
- Temperatures throughout the year vary with latitude: northern areas experience much colder temperatures than southern areas

Precipitation

- Precipation is low throughout the year: average monthly levels of between 14 millimeters (mm) and 30 mm
- Flooding can occur during spring due to increased rain and the thawing of winter snow.
- Levels of precipitation vary significantly between climate zones: desert areas (central Betpak Dala desert, southern Kyzylkum desert…) = 100-200 mm/y, whereas steppe areas = 200-500 mm/y.

Kazakhstan

Climate Change Trends

Future climate - Temperatures

- Temperatures in Kazakhstan: rise at a faster rate than the global average and faster than most other Asian nations: potential warming of 5.3°C by the 2090s, under the highest emissions pathway (RCP8.5).
- Warming is projected to be even stronger for maximum and minimum temperatures
- Projected temperature rise in the 2090s under RCP8.5 is **3.7°C greater than the rise projected under the lowest emissions pathway (RCP2.6)**
  - Large difference in outcome that could be achieved for Kazakhstan by controlling global emissions.

Climate impacts

- Rivers with intense cross-border water use and increased stress from climatic and hydrological changes
- Major food producing and populated areas: risk of extreme weather impact on people and food security
- Caspian Sea: risk of flooding due to sea level fluctuation and changes in winter ice cover
- Mountain hazards, reduction of ice cover and risk of glacial lakes outburst floods

Source: World Bank, 2020

Kazakhstan

Exposition : Key Areas of concern

Territory

- Under RCP 6.0 and RCP8.5, **Kyzylorda and Mangystau regions will experience** annual severe drought probability of over 80% by 2100.
- Areas most economically vulnerable to flooding:
  - Region of Atyrau: damage due to flooding equivalent to 11% of GDP in an average year
  - Kyzylorda region: damage equivalent to 5% of GDP.
- **Almaty:** threatened by mudflows caused by glacial lake outburst floods.
- Reduction in the level of terrestrial freshwater storage (TWS) in eastern, southern, and central Kazakhstan.
- Impact of climate change on the level of the Caspian Sea.

Ecosystems

- Two hotspots at high risk of desertification:
  - Transitional zone between grassland and desert that spans the width of the southern half of Kazakhstan
  - Hotspot in the northwest.

Population

- Speeding the drying out of major lakes, such as Lake Balkhash in the southeast. The lake's basin = 1/5 of the population
- 53% of the population living in the urban areas: exposed to urban heat islands (UHI)
- Population living in zones that are prone to flooding: the number of people exposed to extreme river flooding expected to rise by 72% in the median forecast, even when assuming no change in population

Agriculture

Wheat crop and livelihoods of wheat farmers in the northern steppe areas are at risk.

Kazakhstan

Climate Change Impacts and Vulnerability and Risk Assessment – Key Vulnerability factors

Kazakhstan's Seventh National Communication (NC7) and Third Biennial Update Report (BR3) (2017) identifies the country's vulnerability to climate change in the areas of agriculture (both crops and livestock), water resources, human health and social and economic development.

Habitat

- 26% of population in areas prone to mudflows
- 53% of population living in the urban areas
- Glacial lake outburst phenomenon: 47 dangerous lakes identified in the Tian Shan mountain range, including several posing a direct threat of mudflows to Almaty.

Poor water security

- Expected long-term reduction in river flow = risk to agriculture (90% of current water use is for irrigation).
- Half of its water is from sources originating in other countries

Country prone to drought

Droughts currently affect 2/3 of Kazakhstan's land area

- Regular feature of Kazakhstan's climate: occurring in 11 between 1986 and 2006.
- Grain output in rain-fed farming areas of the north is affected by drought in two out of every five years.

Land degradation

- Reduced soil moisture
- Poor condition of parts of its land:
  - Pasture degradation has caused $963 million of damage (UN estimation)
  - Erosion of arable land and soil salinity responsible for $779 million and $375 million damage, respectively.
  - 23.5% of the population of Kazakhstan was living on degraded land (FAO, 2013).

Kazakhstan

Climate Change Impacts and Vulnerability and Risk Assessment – Vulnerability factors_ Zoom on agriculture

Dependence to wheat crop

- Wheat is mostly rain-fed and much of is grown in northern areas with little potential for irrigation = yields highly vulnerable to variations in precipitation. These areas currently experience drought in 2 out of every 5 years -> increases in drought threatens sustainability of livelihoods of wheat farmers
- Without adaptation, spring wheat yields are projected to decline in the range of 20%–50% by 2050 (higher temperatures and reduced soil moisture during the spring/ summer growing season)

Livestock farming

Livestock farming makes up a considerable proportion of Kazakhstan's agricultural output but the sector suffers from low productivity (feeding issues)

Poor conditions of agricultural work

- Heavy manual labor jobs are commonly among the lowest paid whilst also being most at risk of productivity losses due to heat stress
- The risk of flooding, landslides and mudslides is expected to be most severe in the foothills of the south and east of Kazakhstan. Farmers in these areas are generally relatively poor, own small farms and produce mostly for their own subsistence.

Kazakhstan

Climate Change Impacts and Vulnerability and Risk Assessment – Adaptation capacity/challenges

Water management

- The magnitude of future flood peaks will be influenced by future water storage infrastructure operations.
- Transboundary nature of much of Kazakhstan's water supply: a reduction in their water supply could create tension between Kazakhstan and neighbors.

Agricultural Management

- Without adaptation, spring wheat yields in Kazakhstan are projected to decline of 20%–50% by 2050 due to higher temperatures and reduced soil moisture during the crucial spring/summer growing season
- Magnitude of the change depends both on the extent of climate change and management choices such as the variety of grain grown
- Employment and living standards in small cities whose economies depend heavily on agricultural processing.

Access to technologies

Hidroelectricity is the only form of renewable energy that is operating at scale in Kazakhstan.

Access to financial resources

- Poorer households and businesses are least able to afford air conditioning
- In southern regions, hottest parts of the country, poverty is more prevalent, with 10% living on incomes below subsistence level as opposed to just 2% in Nur-Sultan and Almaty. The southern people of may struggle to afford the adaptation measures needed
- Poorer farmers and communities are least able to afford local water storage, irrigation infrastructure, and technologies for adaptation.

Kazakhstan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Zoom on critical impacts

Land degradation and dust storms

- Increased drought risk = land degradation, desertification, and associated issues such as dust storms.
- Drying out of major lakes such as Lake Balkhash in the southeast = exacerbation of desertification, soil salinization, dust storms.
- High soil salinity = reduced crop farming productivity

Flood risk

Temperature rises = acceleration of the melting of Kazakhstan's glaciers = increase in river flow and flood risk by 2050, followed by a longer-term decline in river flow.

Increase in frequency of mudflows by a factor of 10 = threat to 156 towns and cities, among them the country's largest city, Almaty.

Water

- **Reduction in the level of terrestrial freshwater storage** (TWS)
- Melting of glaciers = increase the risk of flooding in the medium-term = **reduction in the flow rate of rivers.**
- More frequent flooding in the medium-term = **contamination of water supplies** by pollutants from farming, mining and industry
- The basins of the Syr Darya river, the Ili river, Lake Balkhash and the Chu and Talas rivers = climate-related security risks
- Glacial loss = reduce river flow = reduce the long-term generation capacity via hydroelectricity (11% of electricity production in 2016, only form of renewable energy operating at scale.
- More frequent extreme weather (floods, mudflows) are also expected to cause damage to extensive energy transmission grid.
- Glacial lake outburst floods (GLOFs).
- Mudflows are forecast to increase in frequency by a factor of 10

Kazakhstan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Zoom on critical impacts

Agricultural losses

- More frequent droughts and reduced water security = damage agricultural productivity of crop and livestock farming. (Decline of spring wheat yields of 50% by 2050
- Grain yield losses
- Loss of soil moisture = loss of agricultural productivity
- Increased temperatures are expected to reduce the availability of pasture during summer and autumn months, with a detrimental effect on livestock farming.
- Expected reductions in water availability = impact on the livestock sector, as irrigation supports meadows and pastures in some parts of the country
- Direct and indirect effects on crop growth processes = impact on food production.

Health

- Projections : 42.97 climate-related deaths per million population linked to lack of food availability by 2050 under RCP8.5
- Without adaptation, annual heat-related deaths in the Central Asian region, could increase of139% by 2030 and 301% by 2050
- Increasing threat of disease
- More frequent flooding negatively affects drinking water quality, as pollutants from industry, mining and agriculture are washed into water resources. This could increase the threat of gastrointestinal disease, already a major cause of death in Kazakhstan.
- Hasten the spread of infectious diseases carried by ticks, mites and rodents, such as Crimean-Congo Haemorrhagic Fever.
- Every year, 6,000–9,360 people in Kazakhstan are dying prematurely due to poor air quality.Particulate matter pollution alone causes 9,360 premature deaths and costs the economy more than $7.1 billion. Worsening of the effect of poor air quality on mortality and respiratory diseases in these cities is expected.

Kazakhstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

THE NATIONAL PLANNING SYSTEM

HIGH-LEVEL
10-20 years

- Kazakhstan's strategy 2050
- Strategic development plan 2050
- Forecasting scheme of territorial-spatial development of the country
- National security strategy
- Prognosis of the socioeconomic development

MID-LEVEL
5 years

Government Programs:
- Economic development of the Republic of Kazakhstan, the region, the city of national importance or the capital
- Documents of inter-sphere, inter-sectoral and interdepartmental nature
- Forecast of socioeconomic development for 5 years,
- State programs for a period of at least 5 years

MINISTRY-LEVEL

Strategic plans of state bodies:
- Strategic Plan for Development of the Ministry of National Economy
- Strategic Plan for Development of the Ministry of Energy

Source: Entry Points for Vertical Integration of Climate Action in Kazakhstan, NAP Global Network May 2019.

Kazakhstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Any insights on your indicators ?

What can you tell us about your monitoring system ?

Strategic document	Key content
Development Strategy of the Republic of Kazakhstan until 2050	▪ Basis for the development of all documents of the state planning system ▪ Concept of the new economic policy: necessary to introduce a new system of natural resources management with the aim of using resources as an important strategic advantage for the purpose of economic growth ▪ The development of alternative energy production was announced, and by 2050 alternative and renewable energy should account for not less than half of total energy consumption in the country
Concept for transition of the Republic of Kazakhstan to green economy	▪ To achieve objectives on transition to green economy, set by the Strategy 2050. ▪ Sets the ground for deep systemic transformations in order to move to a new economy by improving welfare and quality of life of the people of Kazakhstan and becoming one of the Top 30 most developed countries of the world, while minimizing the environmental footprint and natural resources degradation.
Strategic Development Plan until 2020	▪ Goals, objectives, priority directions of the socio-economic and socio-political development ▪ Also defines the expected results, indicating their qualitative and quantitative indicators, including those determined for intermediate stages.

Kazakhstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

What can you tell us about your monitoring system ?

Strategic document	Key content
100 concrete steps	▪ 100 concrete steps to implement the five institutional reforms. ▪ 5 institutional reforms: (1) creation of a modem and professional civil service; (2) ensuring the rule of law; (3) industrialization and economic growth; (4) a unified nation for the future; (5) Transparency and accountability of the state.
Concept of Innovative Development of the Republic of Kazakhstan until 2020	▪ To assist Kazakhstan in becoming one of the top 30 most competitive countries of the world through the development of new technologies and services
Territorial Development Program (local scale)	▪ Currently, all provinces in Kazakhstan have a Territorial Development Program that assigns clear responsibilities for planning, implementation and monitoring , under the State program of development of regions for 2020 - 2025 – approved in December 2020. ▪ The Ministry of National Economy requires local governments to develop action plans based on a common methodology, along with indicators to monitor plannimng and implementation. ▪ The Ministry of National Economy provides guidelines to the local governments, which include lists of sectoral indicators. Proposed development measures have to be aligned with these indicators and need to be based on a SWOT analysis for each sector in the province. The current design of the Territorial Development Program does not consider climate risks in its assessment process, which may result in investments being undermined by the impacts of climate change.

Any insights on your indicators ?

Kazakhstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Any insights on your indicators ?

What can you tell us about your monitoring system ?

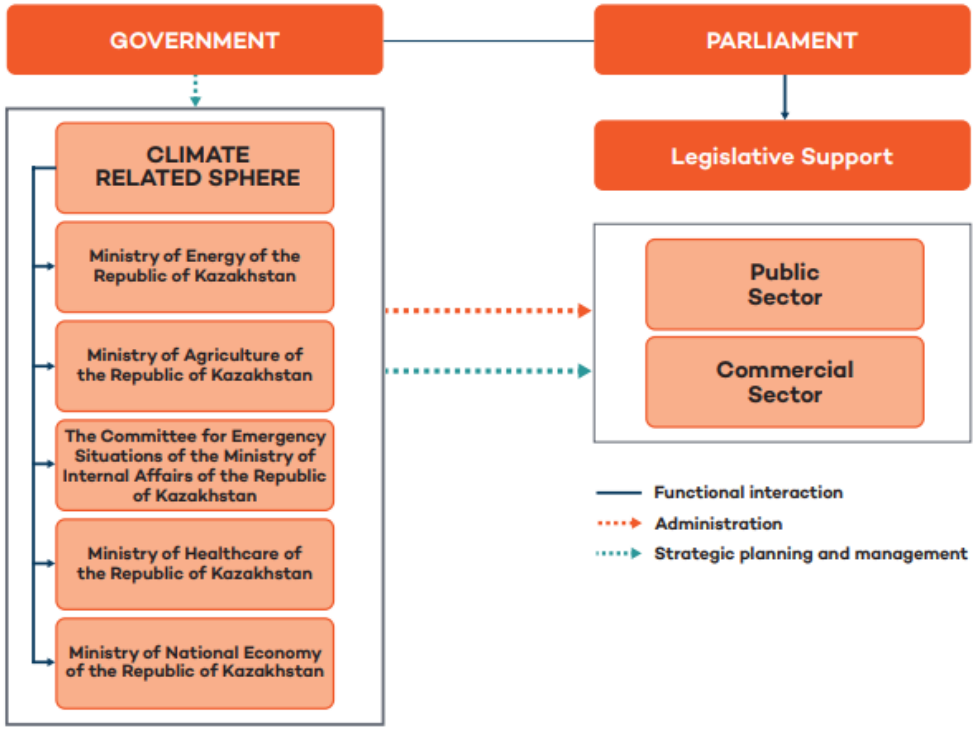
Strategic document	Key content
Ministry of Energy (ME RK)	▪ Responsible for climate policy administration in the country and climate negotiations on an international level. ▪ Authorized to conduct and coordinate activities aimed at mitigating greenhouse gas emissions and adapting to climate change. It coordinates all climate change-related activities of ministries and state bodies, which are responsible for agriculture, emergencies, water management and health. It needs to ensure that all activities are aligned with state bodies' own specific strategies. ▪ The Department on climate change (DCC) was created in the structure of the ME RK (DCC), which consists of the section for low-carbon development and section on adaptation and climatic risks.
The Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan (RoK MEGNR)	▪ RoK MEGNR is the country's central executive body coordinating environmental protection, nature management, protection, control and supervision of the rational use of natural resources and supervision of the national policy on green economy development.

Kazakhstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Climate governance



- There are currently no institutional arrangements for adaptation planning, implementation and M&E.
- However, in cooperation with USAID, the Ministry of Energy is drafting amendments for the environmental code to clarify the responsibilities for various steps within the planning, implementation and Monitoring and & Evaluation phases.

Kazakhstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Climate governance

Strategic document	Key content
"Concept for transition of the Republic of Kazakhstan to green economy"	▪ Ambitious goals for reducing energy intensity of GDP, improving air quality, increasing the share of alternative energy sources and gasification of the country.
Emissions permits trading scheme (ETS)	▪ The pilot phase began in 2013 and encompassed 178 companies from the energy, oil and gas, mining and chemical industries that were responsible for 55% of GHG emissions. ▪ Since 2016, it has been proposed to distribute allowances based on benchmarking. ▪ In the beginning of 2016, emissions trading under ETS was suspended until 2018 to adjust and improve the mechanism.

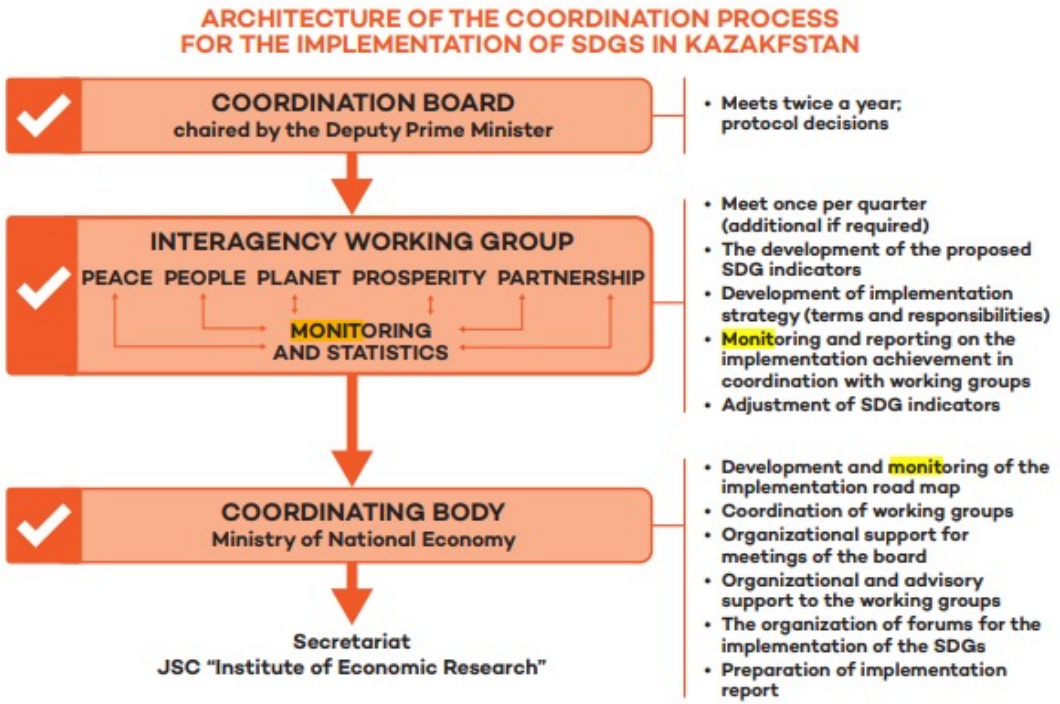
- Through the Climate Promise, UNDP supports Kazakhstan to submit enhanced NDC. The project will be ongoing until March 2023 and one of the key areas of the project is the development of an Adaptation Component for NDC.
- In 2019, the Ministry of National Economy has started to work with GIZ on policy advice for climate-resilient economic development. The project – ongoing until 2022 - covers three pilot countries to use macroeconomic models to incorporate climate risks into their long-term economic and adaptation planning to support transition towards climate-resilient economic development.
- Strategic plan of the RK Ministry of Agriculture for 2017-2021 and RK State program for development of agro-industrial complex stipulates a range of measures which contribute to adaptation to climate change.
- In February 2019, the Ministry of Energy initiated a round table with the Ministry of National Economy and other stakeholders to discuss the integration of climate adaptation into sub-national development planning.

Kazakhstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

SDGs implementation



Source: Entry Points for Vertical Integration of Climate Action in Kazakhstan, NAP Global Network May 2019.

- The SDGs have been integrated into national programs and strategies in Kazakhstan.
- To elaborate SDGs-related policy changes concretely, the ministry established interagency working groups for five key thematic areas, covering peace, people, planet, prosperity and partnership. Each group is coordinated by a designated ministry as national coordinator and meets once per quarter to develop and consolidate a common position on policy changes.
- The Ministry of National Economy will collect proposals from all five working groups and present options for policy changes to the coordination board chaired by the Deputy Prime Minister of Kazakhstan and meets twice a year.
- Main government body responsible for collecting, processing and disseminating data on the SDGs: Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan.

Kyrgyzstan

Kyrgyzstan

National features

Location

- Landlocked country located in Central Asia between two major mountain systemsn the Tien Shan and the Pamir

Population

- The Kyrgyz Republic had a population of 6.5 million in 2019. Most of this population live in the foothills of the mountains, and is centered around two urban conurbations, the capital Bishkek in the north, and between Osh and Jalal-Abad in the west.

Borders

- Kazakhstan to the north, Uzbekistan to the west, Tajikistan to the southwest, and China to the east

Relief

- Approximately 94% of the country is above 1,000 meters (m) elevation, and 40% is above 3,000 m. Over 80% of the country is within the Tian Shan mountain chain and 4% is permanently under ice and snow.

Climate

- Extreme continental climate.
- The majority of the country is arid, with increased cloudiness and precipitation due to the alpine relief.
- Climate determined by location in the Northern Hemisphere, in the center of the Eurasian continent, by remoteness from major water bodies, and close proximity of deserts.

Temperatures

- High inter-annual and spatial variability.
- Average annual temperatures vary from less than −10°C in high altitude regions of the Tien Shan mountains to over 12°C in the northern and western lowlands.
- Average temperatures have risen 1.1°C between 1960–2010

Precipitation

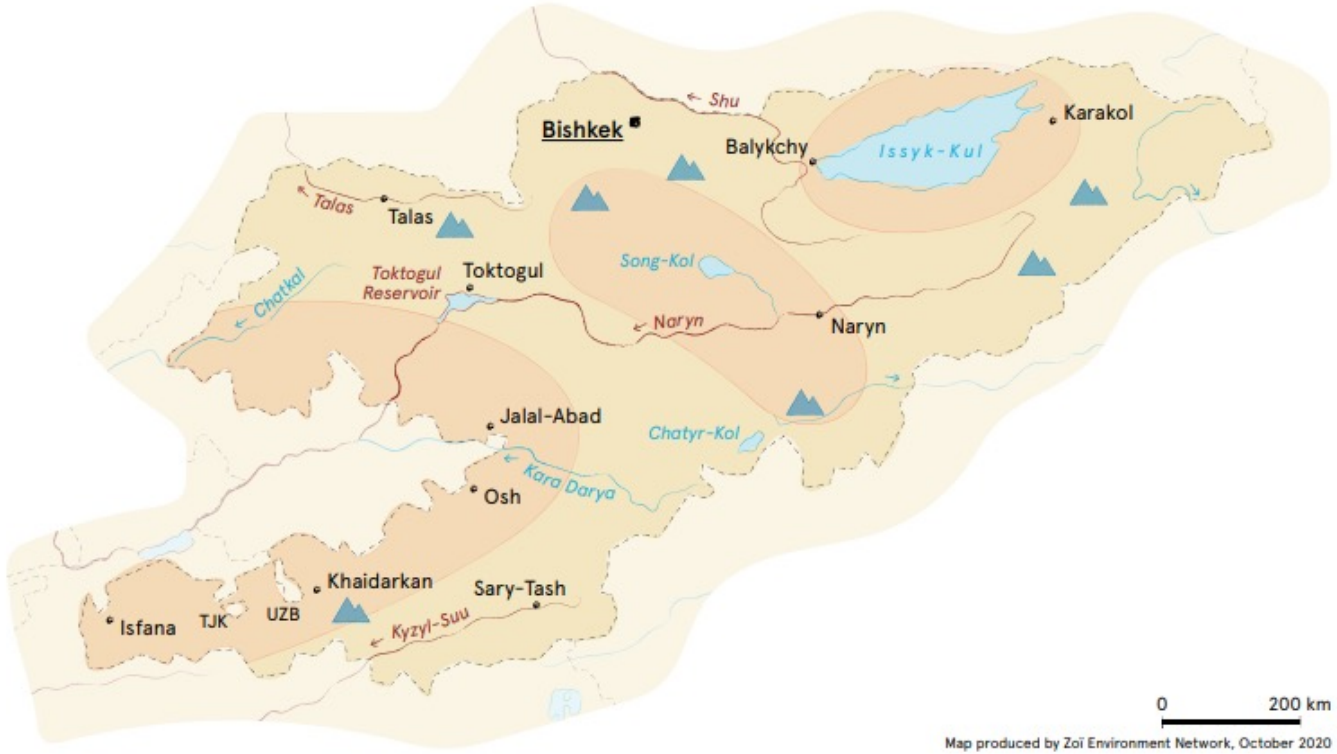
- Mean annual precipitation = 378.3 millimeters (mm), with variation by region, typically between 100 mm to 1,000 mm, highest in the region surrounding Jalal-Abad.
- Little change in average annual precipitation on a national level between 1920–2010.

Kyrgyzstan

Climate Change Trends

Future climate

- The Kyrgyz Republic is projected to experience temperature rises significantly above the global average.
- Warming over the 1986–2005 baseline period could reach 5.3°C by the 2090s, under the highest emissions pathway, RCP8.5.
- The intensity of sub-daily extreme rainfall events appears to be increasing with temperature.



Climate impacts

- Rivers with intensive cross-border water use and increased stress from climatic and hydrological changes
- Areas most exposed to weather and climate risks; environmentally sensitive and stressed regions
- Mountain hazards, reduction of ice cover and risk of glacial lakes outburst floods

Source: World Bank, 2020

Kyrgyzstan

Exposition : Key Areas of concern

Population

- Heat stress may represent a serious risk to human life during peak summer temperatures, with a high likelihood that temperatures will more regularly exceed 40°C, particularly in lowland regions such as the Fergana Valley
- Landslide exposure is widespread: significant areas of population and infrastructure lie in potentially exposed areas.

Territory

The region of the Kyrgyz Republic encompassing the eastern part of the Fergana Valley experiences frequent landslides

Economic sectors

- Sectors most vulnerable to climate change: water, energy, agriculture and infrastructure
- Pressures on water supply caused by climate change are of significance both to the national economic outlook but also to vulnerable communities.
- An important water resource is Lake Issyk-Kul, the tenth largest lake in the world by water volume. It is home to endemic fish species and has historically underpinned significant economic activity, including tourism.
- Agriculture employs 60% of the rural population.
- The food and agriculture sector has suffered from significant damage from natural hazards (at least $14 million in average annual agricultural losses to hazards between 1991–2011

Kyrgyzstan

Climate Change Impacts and Vulnerability and Risk Assessment – Key Vulnerability factors

Water

- Water resources are under pressure: declines in stored water volumes recorded between 2003–2013 + human development (expansion of irrigation) = strongest drivers of water stress.
- Geographic position: controls the upper basin of river networks of great significance to neighboring nations.
- Demand for irritigation is likely to grow significantly

Poverty

- Multidimensional poverty and undernourishment are prevalent
- Women and poorer rural dwellers are most likely to be affected by flash flooding and landslide: more time in exposed residential and a subsistence production area
- The poorest quintile is estimated to be more than twice as likely to be exposed to droughts in comparison with other groups: it works in, or relies on, rural agricultural sector for livelihood or subsistence, where drought impacts are projected to be severe.

Land

- Unstable slopes increased from 162 to 208 between 1962 and 2007.
- Central Asia region = hotspot of potential dryland expansion
- Majority of the land immediately vulnerable to desertification.

Agriculture

- Agricultural sector: falling contribution to GDP but remains vital to community livelihoods and subsistence
- Both slow and rapid-onset climate risks threatening communities dependent on pastoral livelihoods

Urban and energy

- Energy systems are already under pressure, with energy consumption higher than neighbors, and growing rapidly.
- Majority of energy generated and supplied to the grid sourced from hydropower: long-term decline in water resources due to glacier melting = decline in productivity of hydropower
- Rapid expansion of impervious surfaces in urban areas in the country by 35%, 75%, and 15% in Bishkek, Osh, and Jalal-Abad respectively between 1993 and 2017.

Kyrgyzstan

Climate Change Impacts and Vulnerability and Risk Assessment – Adaptation capacity/challenges

Water

- Multiple hazardous glacial lakes demand **disaster risk reduction efforts.**
- Glacier melt = runoff from the Tien Shan mountain range is likely to increase, potentially peaking around 2040.
- **Recent concerted efforts to improve local monitoring and data collection** given the importance of changes to glacier mass in local mountain ranges to local health, biodiversity and economies,
- Condition and sustainability of water resources important to societies across central Asia: majority of the region's fresh water originating from the mountains of Kyrgyzstan and Tajikistan.
- Poorer rural areas have deteriorating water infrastructure and lack the resources to invest privately: importance of effective and inclusive adaptation.
- Increasing water stress and changing runoff regime: careful and co-operative management of key dams, such as Toktogul reservoir, will be essential to minimize health impacts and loss and damage.

Water

- Human development pressures = most important controls on water levels, and water quality of Issyk-Kul, and particularly to the lake's biodiversity.
- Research and monitoring required to understand potential impact of CC on the lake's health.

Land and soils

- Future of land and soil health will depend strongly on local land management and development practices, such as biomass burning and soil conservation
- Poorly managed pastoral land, where soils and ecosystems are allowed to degrade, can compound climate risks such as flooding, drought, and biodiversity loss.

Kyrgyzstan

Climate Change Impacts and Vulnerability and Risk Assessment – Adaptation capacity/challenges

Agriculture and food

- Reliance on food imports since the turn of the 21st century: annual food trade deficit of around $150 million between 2008–2013.
- To maximize yields, farmers will require 'climate-smart' infrastructure and technologies. Without intervention, resources available only to wealthier farmers: access to credit and necessary agricultural inputs = major barriers to adoption of adaptation technologies.
- Uptake of climate-smart technologies = significantly lower than in other Central Asian nations.
- Significant yield gap in the region: scope to increase agricultural production, or offset climate losses, through improvements in practices, technologies and crop choices.
- Impact of livestock grazing practices reduced over 2000–2014: result of improved enforcement of environmental protection policies over most of the country

Urban and energy

- Immediate future: challenges balancing water demands from energy and irrigation + from neighboring countries.
- Better understanding of the regional hydrological system = ensure power generation needs are met + environmental flows and associated ecosystem services are not lost
- Poor energy performance of buildings identified as a vulnerability which requires significant investment.
- Challenge: ensuring that poorest households are able to overcome significant capital investments often required to improve building standards + need to support and encourage households to switch to cleaner energy sources

Human health

- Further research is required to better understand the potential changes to disease incidence in the Kyrgyz Republic.

Kyrgyzstan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Water

- Long term, water sector projected to experience a regime shift. The loss of mountain glaciers may reduce the regularity of flows and result in the drying of some watersheds.
- Flooding issues and associated hazards (landslides) are expected to intensify, potentially costing lives and livelihoods.
- Heavy and prolonged rainfalls = key risk factor triggering mudslides. More intense rainfall under climate change could increase the threat.

Land, soils and ecosystems

- Heat could combine with increased drought incidence to expand arid land cover.
- Ecosystems may shift their geographic ranges and at higher altitudes species are likely to see a significant reduction in viable habitat.
- Historical warming has already had an impact on largescale vegetation health.
  - 1992–2011: rising temperatures associated with significant loss of ‘greenness’ in lowland and cropland regions, linked to increased water deficits driven by greater evapotranspiration which can result in stunted plant growth and desiccation.
- Increased aridity
- Persistent drought periods degrade grassland areas causing transition to sparsely vegetated lands and shrubs. Forested areas, and tree species such as Juniper, documented struggling with increasing aridity
- Significant shifts in species’ viable ranges.

Kyrgyzstan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment –Critical impacts

Agriculture

- Without effective adaptation, agricultural yields are likely to suffer.
- While higher carbon dioxide concentrations and warmer temperatures are expected to boost yields in key crops such as wheat, potential increases in the frequency of drought events and extreme heats could cancel out these gains.
- Cotton yields could reduce towards 2100, as well as becoming more volatile throughout.
- Water deficits (production of cotton and winter wheat).
- Climate changes can impact both on the net primary productivity (NPP) of the land which feeds livestock, and in some cases on the physical health of the animals themselves, particularly through hazards such as droughts, but also through indirect impacts such as increased prevalence of disease

Energy

- Large reduction of days in which heating is required, small increase of days during which cooling is required.
- Possible reduction of the pressure on energy systems

Cities

- UHI effect is likely to grow in relevance, particularly during climate-driven periods of extreme heat. It may damage the productivity of the service sector economy: direct impacts on labor productivity + additional costs of adaptation

Human Health

- There could be approximately 50.1 climate-related deaths per million population linked to lack of food availability by 2050 under RCP8.5.

Kyrgyzstan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

CITEPA

Any insights on your indicators ?

What can you tell us about your monitoring system ?

Strategic document	Key content
National Development Strategy of the Kyrgyz Republic for 2018-2040	▪ Highlights the long-term development priorities of the country and clearly mentions climate change among other development challenges.
National Development Programme until 2026	▪ It points out the climate change impacts on natural resource management exacerbating their degradation. ▪ It promotes development of the economic priorities (hydropower, agriculture climate resilient insurance schemes, efficient use of water resources) with regards of adaptation to climate change.
Climate Investment Program of the Kyrgyz Republic and Program for the Development of a Green Economy in the Kyrgyz Republic for 2019-2023	▪ ?

Kyrgyzstan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

- The importance of climate action and the need to improve the national climate policy has received institutional confirmation in the creation of the State Committee on Ecology and Climate of the Kyrgyz Republic, which is an authorized state body for environmental safety and climate sustainability, and whose chairman is a member of the Cabinet of Ministers of the Kyrgyz Republic. Apparently, it should replace the coordination Commission on the Climate Change Problems headed by the first deputy Prime Minister - established in February 2013.
- The action plans of the Cabinet of Ministers of the Kyrgyz Republic cover important areas related to mitigating and adapting to climate change such as the construction and rehabilitation of the drinking water supply and irrigation systems, and the creation of favorable conditions for attracting investments to promote projects on renewable energy sources (RES).
- In 2017 the UNFCCC focal point and GCF NDA signed an endorsement letter to GCF and a GCF readiness proposal was submitted by UNDP for NAP development; the project was launched effectively in 2021.

Kyrgyzstan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Strategic document	Key content
The Priority Directions for Adaptation to Climate Change in the Kyrgyz Republic until 2017	▪ The Priority Directions for Adaptation to Climate Change in the Kyrgyz Republic until 2017 were prepared in 2013 . The document defines the key vulnerable sectors (water resources, agriculture, energy, health, disaster risks reduction, forestry and biodiversity) and the indicative action for the country overall. The Priorities goal was to establish a national policy to mobilize resources aimed to minimize the negative risks and to use the potential of climate change for the sustainable development through the adaptation measures implementation in the sectors most vulnerable to climate change.
NDC (2021)	▪ The measures developed for the current NDC will form the basis and orient the NAP process, the results of which will be integrated into the subsequent NDC in 2025. In this regard, the time horizon for the adaptation measures of the current NDC has been set to 2025.

All key ministries and agencies developed sectoral adaptation plans and programs based on the Priority Directions. Following adaptation programs were developed covering all the vulnerable sectors, except for energy :

- Water Resources and Agriculture adaptation programme;
- Adaptation Programme of the sector of Emergency Situations;
- Adaptation Program of the Health sector; and
- Adaptation Programme of the Forest and Biodiversity sector.

They include an assessment of the sectors' current state, vulnerability assessment and justification of the adaptation measures and the actual plans with the estimated costs required for the implementation.

Tajikistan

Tajikistan

National features

Location

- Landlocked country with an area of 143,000 kilometers square (km2).

Borders

- Kyrgyzstan and Uzbekistan in the north and west, China to the east, and Afghanistan to the south.

Territory

- Geographically divided into four zones: Northern Tajikistan, Southern Tajikistan, Central Tajikistan, and the Pamirs.
- Western part: foothills and steppes;
- Soutwestern Tajikistan: lowland areas along river valleys
- Pamir mountains (east): sparsely populated, extremely cold winters, considerable snow cover, short summers
- Population and agricultural activities are concentrated in the valleys and in the western part of the country.

Relief

- Mountains = 93% of the terrain, altitudes ranging from 300 m to 7,000 m.
- Nearly 50% of Tajikistan's territory is at least 3,000 m above sea-level.

Water

- Approximately 1,300 lakes + 2 main rivers of Central Asia (Amu Darya and Syr Darya) flow through the country + Pyanj, Vakhsh and the Kofarnihon, tributaries of the Amu Darya.
- Many glaciers, primarily in the eastern regions. Important function by retaining water, controlling flows, and regulating the climate.
- Glaciers, snowmelt and permafrost are important sources of water recharging the Aral Sea river basin.

Climate

- Aridity, extreme temperatures, and significant intra-annual, inter-annual and regional variability are predominant characteristics

Temperatures

- Annual mean temperatures: from 17°C in the south to −6°C in the lower Pamirs.
- East Pamir: minimum temperatures below −50°C have been recorded
- In the south, maximum surface air temperature can exceed 40°C.

Precipitation

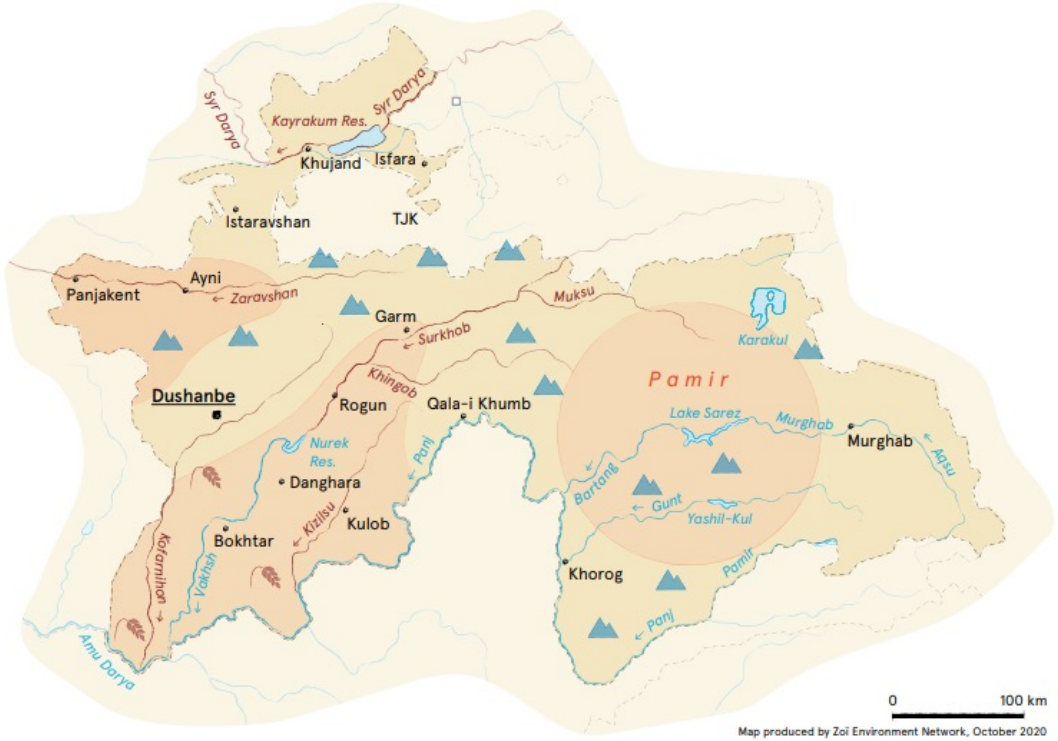
- Lowland, northern hot deserts, cold mountain deserts of east Pamir: averages from 70 millimeters (mm) to 160 mm
- Central Tajikistan: precipitation can exceed 1,800 mm per year.
- Negligible precipitation in July, August, September = frequent droughts.

Tajikistan

Climate Change Trends

Future climate

- Temperature rises significantly above the global average. Under RCP8.5, warming could reach 5.5°C by the 2090s, compared with 1986–2005 baseline
- High likelihood that temperatures will more regularly surpass 40°C, particularly in lowland regions.
- Increase of number of days during which temperatures exceed 35°C under all emissions scenarios, reaching at least 15 per year, and potentially over 30 under higher emissions pathways
- Unlikely that there will be any material increase in the freshwater available for human and ecosystem use due to future changes in annual precipitation.
- Shifts in the rainfall regime are likely.



Climate impacts

- Rivers with intense water use and increased stress from climatic and hydrological changes
- Areas most exposed to weather and climate risks; environmentally sensitive and stressed regions
- Mountain hazards, reduction of ice cover and risk of glacial lakes outburst floods
- Severe drought impacts

Source: World Bank, 2020

Tajikistan

Climate Change Impacts and Vulnerability and Risk Assessment – Key Areas of concern

Population and Economy

- 2010: population annually affected by river flooding estimated at 20,000 people
- 2010: expected annual impact on GDP at $39 million. Average annual losses to all types of flood estimated at $48 million.
- 74% of the nation's population estimated to have access to basic water supply
- Dushanbe (densely populated)
- At present, the poorest quintile are estimated to be more than twice as likely to be exposed to droughts in comparison with other groups.

Territory

- Risks of glacier lake outburst floods (GLOF) are believed to be highest in the Pamir region of Tajikistan, but remain poorly understood.
- Most of the land is yet vulnerable to desertification.
- Lowland and urban areas.
- Uplands and more remote areas (the poorest) are likely to be the most exposed and least able to cope with hazards exacerbated by climate change (flash flooding, landslides, and disease outbreaks)

Agriculture

- Food production: large and diverse agricultural sector employing 43% of the workforce in 2016. Key crops in production include wheat, potato, vegetables, melon and other fruits. Food is primarily produced to satisfy national consumption but around 120,000 tons of food products are exported each year (2%-3% of total exports by volume). Influence of CC on food production via direct and indirect effects on crop growth processes.
- Rain-fed and subsistence-level agricultural operations are likely to be the worst affected

Tajikistan

Climate Change Impacts and Vulnerability and Risk Assessment – Key Vulnerability factors

Water

- Strong reliance on hydroelectric power production and potential drying may impact regularity of flows, which may increase variability of hydropower generation.
- Water resources used to irrigate agriculture, supply industrial and domestic needs, and generate about 95% of all electricity.
- 36% of land area at risk of landslides, compounded by CC.

Food security

- Depends on significant imports of wheat (650,000 tons in 2017, equivalent to more than 50 kg per capita), exposing the country to global supply chain pressures under climate change
- Between 2014–2016 30% of population were undernourished and over 80% of households experienced at least marginal food insecurity (FAO)
- Key features of society: high proportion of income spent on food, (between 70%–80%,) and large proportion of food imported from international markets and exposed to price fluctuation = very high food insecurity.

Population

- Dushanbe: densely populated and urbanized capital
- Hotter, more densely populated, lowland and urban areas.
- Heavy manual labor jobs are commonly among the lowest paid whilst also being most at risk of productivity losses due to heat stress
- Tajikistan is one of the most impoverished nations in Central Asia
- Only 74% of the nation's population estimated to have access to at least a basic water supply

Tajikistan

Climate Change Impacts and Vulnerability and Risk Assessment – Adaptation capacity/challenges

Access to information and knowledge

- Without adaptation efforts and disaster risk reduction preparedness and planning, effects of CC, particularly heat and drought = severe loss and damage
- Glacial retreat and potential increased glacial melt is likely to result in new potential outburst hazards: it requires close, ongoing monitoring and further research into the potential impacts this could have for downstream water resources as well as potential disaster risk.

Institutional arrangements

- Reduction of flow rates and related water availability = potential challenges for the sharing of water resources among riparian zones.
- The future of land and soil health in Tajikistan will depend strongly on local land management and development practices, such as biomass burning and soil conservation

Access to resources

- Lack of access to credit and agricultural inputs = key barriers to adaptation.
- Poorer farmers and communities are least able to afford and access technologies for adaptation
- Poorer businesses are least able to afford air conditioning.

Access to technologies

- Tajikistan has developed technical measures for adaptations to extremes of hot and cold weather conditions, but every year, considerable need for both cooling and heating.
- Hydropower is prevalent and varying projections regarding how future flow changes could affect energy generation potential, and further research is required
- Remarkable poverty reduction in recent years
- Major issues providing necessary energy to meet heat demand
- Inconsistent progress on the eradication of vector-borne disease
- Lack of health and transportation infrastructure and public services, and poor early warning and disaster preparedness systems.

Tajikistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Land and soil

- Increased temperatures + increased likelihoods for aridity + drought incidence = expansion of arid land = affects agricultural yields.
- Increasing erosive capacity of rainfall under all emissions pathways = increasing risk of landslide + exacerbating issues of soil erosion.
- 1992–2011: rising air temperatures were associated with significant loss of 'greenness' of vegetation.
- Losses linked to increased water deficits driven primarily by greater evapotranspiration = stunted plant growth and desiccation.
- Lowlands already being affected by increased aridity.
- Persistent drought periods degrade grassland areas = transition to sparsely vegetated lands and shrubs.
- Increase in erosive capacity of rain + its impact on soil quality = increase pressure on key ecosystem functions.
- Significant shifts in species' viable ranges (both in natural ecosystems and for agricultural purposes).

Tajikistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Agriculture

- Yield declines for several key crops: wheat, barley, maize, vegetables, and fruits, in the order of 5%–10% by 2050.
- Rice, potato and cotton yields are projected to experience small (<5%) yield gains over the same period.
- These changes could reduce national food security
- Impact on the health and productivity of the labor force.
- Impact on national food consumption patterns through direct impacts on internal agricultural operations and impacts on the global supply chain.
- Increased drought and heat wave probability: agricultural production is likely to become less stable, and net production may suffer.

Water for agriculture

- Increasing evaporation rates and crop water demands = greater irrigation water demand.
- Basin scale, irrigation demand no longer satisfied by available runoff even during low-intensity, high-frequency, drought events by 2070–2099.
- Increased competition for water, between sectors and regions.
- Changes to the annual runoff regime = reduction of reliability of energy generation = incentivize development of more water storage capacity to harvest summer inflows for winter hydropower generation = negative effects for downstream communities.
- Increased temperatures = reduction of electricity demand for winter heating = less impact of altered flow rates and generation capabilities.
- Longer-term future: concern that loss of glacier and snow cover could significantly reduce the available water resource, potentially leading to major water shortages for irrigation purposes.

Tajikistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Water

- Risk is enhanced by moderate levels of flood exposure
- Simultaneous flooding issues and associated hazards such as landslides and mudslides are expected to intensify.
- Significant risks from flash floods, notably glacier lake outburst floods (GLOFs): occur when moraine dams holding back accumulated meltwater in high altitude areas are breached. These events can cause, landslides and dangerous mudflows
- Projected increases in extreme rainfall intensity and frequency.
- Smaller glaciers disappear entirely = runoff of smaller tributary rivers can fall dramatically.
- Water supply challenges: cumulative effects of glacier loss are likely to grow, leading to significant declines in runoff.
- Shift of the runoff regime: increase in the variability of flows, amplifying April-June peak and reducing late summer and autumn flows.
- Projected increase in the frequency of meteorological drought.

Water

- The potential for decrease of the country's mountain glaciers may result in the drying of some watersheds.
- Glacial melting is likely to have a very significant impact in the primary river basins, the Amu Darya and Syr Darya. An estimated 50% of the runoff of the Amu Darya river is believed to derive from glacier meltwater (a lower percentage is estimated for the Vakhsh river), with similarly high dependence seen in most of Tajikistan's rivers.
- Glacier and snow melting typically provides regulation of flows, ensuring water resources are available all year round. The ongoing melting of glaciers is already delivering slightly increased runoff (typically less than 10%) in many of Tajikistan's rivers.

Tajikistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment –Critical impacts

Income and inequalities

- Studies have suggested that household income security more arid regions may decline while households in the more humid regions may experience gains
- Environmental shocks which impact on local and international agricultural production are likely to drive up poverty and malnutrition in Tajikistan

Human health

- In many of Tajikistan's cold-stressed, higher altitude regions temperature rises could result in a net improvement in human temperature-related health outcomes and productivity as the number of heating days decline.
- In lower altitude regions, such as the nation's capital Dushanbe, more densely populated and urbanized, extreme summer heat may intensify and create new health challenges compounded by the Urban Heat Island phenomenon (UHI).
- There could be approximately 13 climate-related deaths per million population linked to lack of food availability in Tajikistan by the year 2050 under RCP8.5.

Tajikistan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Any insights on your indicators ?

What can you tell us about your monitoring system ?

Strategic document	Key content
National Development Strategy of the Republic of Tajikistan until 2030 (NDS)	▪ Outlines the general directions of economic development ▪ Outlines the implementing measures that can help to reduce the impact of climate change, which include: i) the use of non-traditional (renewable) energy sources; ii) the minimization of the negative impact of the transportation on the environment and human health; iii) foster the development of "green employment", expanding the environmental entrepreneurship and the environmental services market with the support of the State. ▪ The highest goal is to improve the living standards of the country's population on the basis of ensuring sustainable economic development.
The Program of Medium-Term Development of the Republic of Tajikistan for 2021-2025	▪ Aimed at achieving the goals and strategic priorities and consistent implementation of reforms, minimizing the impact of external and internal risks, increasing the competitiveness of the national economy and welfare of the population of the country, reduction of social and gender inequality in society and ensuring environmental sustainability and adapting the economy countries to climate change based on the principle of "green" economy.

Tajikistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

To address the climate change issues, institutional framework in Tajikistan provides for a number of ministries and agencies, where each of them is responsible for their relevant component of this complex and intersectoral task. Among others, one could mention:

- The Committee for Environmental Protection under the Government of the Republic of Tajikistan,
- Agency for Hydrometeorology,
- Ministry of Economic Development and Trade,
- Ministry of Energy and Water Resources,
- Ministry of Agriculture, Agency for Land Reclamation and Irrigation.
- Involved agencies also include: Ministry of Health, Ministry of Transport, Committee for Emergency Situations and Civil Defence, Committee on Land Use and Geodesy, State Committee on Investments and State Property Management, Interagency Committee and Academy of Science.

Tajikistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

	Key content
National Strategy on Climate Change Adaptation (NSCCA)	▪ The National Strategy on Climate Change Adaptation (NSCCA) of the Republic of Tajikistan until 2030 was adopted by the Government of the Republic of Tajikistan on October 2, 2019, and became a strategic document for the implementation of the Paris Agreement. This strategy summarizes the information needed to identify risks, threats and adaptative measures related to climate change. The Government of Tajikistan has prioritized four sectors that are both climate sensitive and development priorities: i) energy; ii) water; iii) transport; and iv) agriculture.

Turkmenistan

Turkmenistan

National features

Location

- Continental location, southwestern part of Central Asia, covering an area of 488,100 kilometers square (km2)

Borders

- Bordered to the north by Uzbekistan and Kazakhstan, to the southeast by Afghanistan and to the south by Iran, with the 1,748 km Caspian Sea coastline forming a natural boundary to its west.

Territory

- A large proportion of the territory is desert.
- Very low population density of just 12.5 people per square kilometer (Population of 5.9 million in 2019)

Relief

- Rredominantly flat terrain allows for regular and strong winds, favorable for the generation of dust storms.

Precipitation

- Annual precipitation levels are low throughout Turkmenistan
- The bulk of the rain falls from January to April, whereas many parts of the country receive little or no rain from June to September.
- Precipitation levels vary by region, but generally very low. The exception is in mountainous areas of the country, such as the Kopet Dag range on the southern border with Iran: precipitation is higher (300–400mm per year) and more constant throughout the year.
- Average annual precipitation in the country has risen slightly between, 1901–2015, without a statistically significant increase.
- Drought indices have increased (due to evapotranspiration trends).
- Inter-annual variability in precipitation is also influenced by El Niño

Climate

- Climate is extremely dry and a large proportion of the territory is desert.
- Cold desert and cold semi-arid climate classifications, with the Karakum desert being the dominant feature of its topography.

Temperature

- Summers: hot, dry and long, average temperatures of 27°–29°C (June-August), maximum temperatures = 50°C in the hottest parts of the country.
- Warming in all regions. The average temperature across the country rose by approximately 2°C between 1950 and 2010 (0.3°C per decade).
- Warming more pronounced in central and eastern areas of the country, and temperature rises have been slightly less on the Caspian Sea coast.
- Daily fluctuations in temperature have also increased, and temperature extremes have risen sharply, particularly daily minimum temperatures.

Turkmenistan

Climate Change trends

Future climate

- Average temperatures: rise of 5.1°C by the 2090, under RCP8.5, with the pace of warming significantly exceeding the global average.
- Significant 3.3°C difference between the temperature rise projected by the 2090 under RCP8.5 and the rise under RCP2.6
- Increases in average temperature expected to be greater in eastern parts, with less warming projected along the Caspian Sea coast (west).
- Under the RCP8.5: coastal city of Turkmenbashi = rise of 5.5°C, ; interior and east = rise between 6.1°C and 6.5°C.
- Daily maximum and minimum temperatures are expected to warm slightly faster than average temperatures
- Under higher emissions pathways the majority of Turkmenistan's surface is projected to convert to 'hyper-arid' land cover
- Not any significant change in average annual precipitation.

Source: World Bank, 2020

Turkmenistan

Climate Change Impacts and Vulnerability and Risk Assessment – Key areas for concern

Lower income group communities

- 2010: population annually affected by flooding is 14,000 people with an expected annual impact on GDP of $90 million (approximately 0.4%).
- The number of people potentially affected by an extreme flood could reach 100,864 by 2035, an increase in affected population of 60% relative to 1971–2004.
- Eastern Lebap region is the most economically vulnerable to flooding: 7% of its GDP potentially affected by a flood with a 10-year return period, compared with 4% of GDP in the southern half of the country

Land and soil

- Arid land cover spans 80% of the area of Turkmenistan = large parts of the country subject to desertification.
- 16% of the country is subject to moderate desertification, while 6% of its area is susceptible to high desertification.

Agriculture

- 9% GDP in 2015 and 8% of employment in 2018.
- Agricultural sector highly exposed to CC impacts that may affect the water supply of the Amu Darya river
- Cotton = most important agricultural export, accounting for the bulk of textile exports, which constituted 6.2% of all exports in 2017

Territory

- Mudflows are a frequent occurrence in mountainous parts of the country, such as the Kopetdag, Koytendag and Balhan ranges

Turkmenistan

Climate Change Impacts and Vulnerability and Risk Assessment – Key vulnerability factors

Water

- Current level of water stress indicates that providing sustainable water supply could be challenging and may impinge on economic development.
- Agriculture, particularly pasture operations, rely on groundwater resources to make up for limited surface flows.
- The Amu Darya river is currently Turkmenistan's only major water source.
- 2014: 97% of water supply came from resources originating outside borders. This makes the country vulnerable to increased water use upstream by other countries: the situation may worsen as CC affects the patterns of precipitation and snow melting.

Land and soil

- Soils already affected by significant salinization: more than 60% of the agricultural land being salinized.
- Inefficient irrigation systems in many areas

Agriculture

- Dry climate and high average summer temperatures: Turkmenistan is heavily reliant on irrigation to sustain agricultural output.

Turkmenistan

Climate Change Impacts and Vulnerability and Risk Assessment – Adaptation capacity /challenges

Water management

- Impact of sharp decrease in runoff in the case of the Amu Darya will depend on water management practices in upstream reaches which, cross multiple international borders.
- Management of water resources in the Amu Darya basin could be complicated: potential increased demand in Afghanistan and other neighboring countries.
- Ongoing official efforts to improve irrigation technology

Agricultural practices

- With adaptation, one study has suggested that it is still possible to achieve significant gains in productivity and revenue across the major crops produced in Turkmenistan.

Urban planning

- Urban heat island is poorly understood in Turkmenistan, but recognized by UNDP and former Ministry of Nature Protection as a key focus area for urban adaptation activity in Ashgabat.
- Challenges delivering 'greening' of urban areas to enable cooling and health benefits, in the context of a pressing need to carefully manage water shortages.

Financial incentives / support

- CC could disproportionately affect the poorest groups in society. Poorer businesses are least able to afford air conditioning.
- Poorer farmers and communities are least able to afford to establish local water storage, irrigation infrastructure, and technologies for adaptation.

Turkmenistan

Any comments / knowledge improvements to present ?

CITEPA

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Water

- Multiple forms of flooding: river flooding and flash (pluvial) flooding.
- 1986–1995: increase in the occurrence of flash flooding, mudflows and heavy rainfall
- Longer-term projections for flood risk in Turkmenistan are more uncertain.
- Hydrological projections for the Amu Darya river and the glaciers that feed it: reduced risk of summer flooding, with mean runoff reduction of 25% during July and August, and an increase in spring runoff levels that may increase flood risk at that time of year.
- It would also cause major water supply issues for both agriculture – cotton and wheat growth is heavily dependent on irrigation – and drinking water in Turkmenistan
- Severe water shortages on the Amu Darya by 2050 = zero risk of flooding.

- Sharp decrease in runoff as glacial mass becomes critically low, which might point to a significant reduction in flood risk.
- Change in the seasonal patterns of river flow: peak flow shifting from the summer to the spring in line with broader climate change impacts across central Asia.
- By 2050: severe water shortage in the Amu Darya basin, with 50% of demand being unmet.
- Lower river flow is also likely to be accompanied by water quality issues such as high mineral content, as has been the case during recent low-water years.
- Higher temperatures could contribute to increased evaporation, exacerbating soil salinization and water salinity in the Amu Darya.
- Reduction in the river's runoff, especially in summer months when demand for irrigation is highest, may also drive elevated salinity levels upwards.

Turkmenistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment – Critical impacts

Coastal zone

- Landlocked but westernmost regions may still be affected by the impact of CC on the level of the Caspian Sea. Average temperatures increase = decrease in the level of the Caspian Sea is expected to continue, unless offset by corresponding increases in inflows from rivers such as the Volga.
- Research suggests that CC may drive ecosystem shifts in the Caspian Sea which are as-yet poorly understood.

Urban and energy

- Number of cooling degree days (when cooling systems are required) = increase significantly by 2090 under RCP6.0 and RCP8.5 pathways.
- Under RCP8.5, the median projection could see the number of cooling degree days increase by 84% relative to the country's 1986–2005 baseline

Land and soil

- Increased temperatures = increased demand for irrigation water = increased evaporation, accelerating the process of soil salinization.
- Significant increase in drought probability is likely to hasten the process of desertification.
- Transition of much of Turkmenistan's land surface to hyper-arid cover by 2041–2071 under RCP8.5 = fundamental impacts on the biodiversity and ecology of the region = reduced productivity and viable species ranges of desirable species.
- Land degradation and aridity = driving range extension of less desirable species such as the locust, with knock-on effects for agricultural production.

Turkmenistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment –Critical impacts

Agriculture

- Temperature rises, increases in drought frequency and water shortages = reduced yields of the country's major crops. Without adaptation, significant falls in agricultural revenue, and food shortages, may result.
- Droughts are a frequent occurrence, negatively affecting water supply and reducing availability of pasture for livestock.
- CC could influence food production via direct and indirect effects on crop growth processes.
- Water shortages are likely to severely affect crop productivity in major crops such as cotton and wheat. The affect being amplified by seasonal shifts towards lower water availability in the Amu Darya Basin during the hotter summer months

- Increased frequency of very high temperatures = reduced crop productivity via evaporation and lower soil moisture.
- In combination, and without adaptation, reduced revenue generated by irrigated agriculture.
- More frequent extreme heat may also affect livestock farming directly (via heat stress on the animals) and indirectly (via lower productivity of pasture).
- Increase in the probability of drought = severe effects on the availability of pasture for the livestock subsector, as seen during the severe drought events of 2000-01.
- Impact on the health and productivity of the labor force.

Turkmenistan

Any comments / knowledge improvements to present ?

Climate Change Impacts and Vulnerability and Risk Assessment –Critical impacts

Urban and Energy

- Temperature peaks that could result from combined UHI and climate change (frequently breaching 40°C), and future urban expansion = damaged productivity of the service sector economy, through direct impacts on labor productivity, and through the additional costs of adaptation.
- Sharp increase in electricity demand for air conditioning

Population and Economy

- Lack of data available on the effects of mudflows on the population and economy of these mountainous regions. But the severity of the mudflows recently experienced suggests the potential for loss of life and extensive damage to physical infrastructure
- Threat in the northern regions: dust storms. They spread salt and agricultural pesticides from the drying Aral Sea and can cause respiratory illness in the local population + damage the productive potential of surrounding agricultural land.
- The source area for salt storms in the Aral Sea grew in area by 36% between 2000 and 2008.
- The risk of dust and salt storms could increase as the desiccation of the Aral Sea continues.

Turkmenistan

Any comments / knowledge improvements to present ?

CITEPA

Climate Change Impacts and Vulnerability and Risk Assessment –Critical impacts

Human health and disease

- 47.7 climate-related deaths per million population linked to lack of food availability by 2050 under RCP8.5
- Humidity relatively low in summer months, but further warming could pose a serious risk of heat-related mortality to the population of Turkmenistan by 2050-2100.
- Deterioration in the water quality of the Amu Darya river = threat to public health, exacerbated by the impacts of CC. Poor quality drinking water in the lower parts of the Amu Darya linked to increases in kidney, thyroid and liver diseases and anemia.
- Heat stroke and cardiovascular disease are likely to increase as warming occurs. Considering the high average and maximum temperatures at present, even the lower emissions pathways suggest that temperatures that are hazardous to public health could become more common in Turkmenistan in the near future.

- Lack of available evidence for Turkmenistan on the relation between heat, water quality and disease, but parts of the country may see similar impacts as in neighboring Uzbekistan, where acute intestinal infections are positively correlated with air temperature and the incidence of bacterial dysentery is three times higher during summer months than at other times of the year.
- Discharges of water from agriculture (including in neighboring countries) has raised salinity in the river to levels that pose a health risk to the population of the northern Dashoguz region.
- Pollution along the Amu Darya has also introduced pesticides and other chemicals into the water supply.

Turkmenistan

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

CITEPA

What can you tell us about your monitoring system ?

Strategic document	Key content
National Program for Social and Economic Development 2011-2030	▪ States that the overarching national development goal is to shift to a growth model based on innovation and sustainable development.
Presidential Programme of Social and Economic Development of Turkmenistan, 2019-2025	▪ Main principles, priority directions. required actions and expected outcomes. ▪ Primary objectives of this program are to continue the implementation of market reforms and transition to a market-led economy, economic diversification, improving human capital, and improving the living conditions of the population.
The National Action Plan on Gender Equality (2015-2020)	▪ Sets the county's strategy on achieving gender equality.

Any insights on your indicators ?

Turkmenistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

Strategic document	Key content
Climate change policies	▪ In Turkmenistan, Climate change policies are formulated by the Ministry of Agriculture and Environmental Protection (MAEPT) in close cooperation with the Ministry of Foreign Affairs and the Cabinet of Ministers. ▪ The MAEPT is responsible for coordinating all the environmental protection activities of various ministries and departments, environmental programs, and projects under the UNFCCC.
National Strategy of Turkmenistan on Climate Change (NSTCC)	▪ At the international level, this is the main instrument of Turkmenistan for determining its positions in negotiations under the UNFCCC, the Paris Agreement, and the basic document for preparing reports on the implementation of its obligations under the global climate agreements. ▪ To finance the implementation of the NSTCC, the Government plans to establish a National Clean Climate Fund. The NSTCC highlights the critical role of the private sector, international organizations, and development banks in the implementation and financing of adaptation measures and cooperation. ▪ At national level, progress of implementation of adaptation measures is under control of the government and relevant ministries and agencies. One time a year all ministries, departments prepare reports for the higher instances on implementation of the NSTCC and NAP. ▪ There are institutional arrangements for adaptation coordination related to water resources
National Communication and ETF	▪ The Intersectoral Committee for Environmental Protection (ICEP) - expected to be engaged in the preparation and approval of the 4th NC - could be expected to play a similar role in the design of the ETF for adaptation and mitigation - as well as preparation and submission of the BTR.

Turkmenistan

Climate governance

Strategic and Institutional arrangements_Overview

FOR UPDATE BY PARTICIPANTS

- In addition to the 4th NC and the NDC update, Turkmenistan has begun work on a National Adaptation Plan, expected to be completed in 2023, focused on water resources.
- The Government of Turkmenistan seeks to strengthen its adaptive and resiliency capacities to climate change by integrating climate risks and adaptation measures into planning and budgeting processes via the development of a national adaptation process (NAP).
- The Government of Turkmenistan has developed several policies that define its broad strategic priorities to address climate change. Most of these policies, at least initially, have been largely focused on mitigation. However, in the last few years, the GoT has prioritized climate change adaptation as they recognize the need to integrate climate risks into policies and planning. As such, the GoT is working on the development of a Plan to Implement the Paris Agreement which will focus both on mitigation and adaptation. This plan will serve as a form of a national adaptation plan and implementation document of the Paris Agreement.

Next steps

Please prepare your feedback on your country You will be asked to provide your comments during the first session, orally (you can share slides if relevant)