



Climate change in Tajikistan Illustrated summary





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Management of the CAMP4ASB project in the Regional Environmental Centre for Central Asia: Zafar Makhmudov (Executive Director), Irina Bekmirzaeva (Program Manager)

Contributors: Irina Bubenko, Saltanat Zhakenova, Viktor Novikov, Alexandra Povarich, Geoff Hughes, Dina Adylova



Produced by Zoï Environment Network

Mountains define the weather and climate conditions in Tajikistan. Winter temperatures in the mountains can be as cold as -60°C , while summer temperatures in the lowlands can reach $+40^{\circ}\text{C}$. Half the country is above 3 000 metres, with the highest summits exceeding 7 000 metres. Glaciers cover nearly 6 per cent of the country, twice the area of its forest cover. Glaciers and snow in the mountains comprise essential water reserves for the Amu Darya River.

Tajikistan is the least urbanized nation in Central Asia. Its rapidly growing population depends on rain-fed agriculture for food, and on irrigated agriculture for cotton exports. Deforestation, soil erosion and excessive livestock grazing are increasing the vulnerability to climate change.

Tajikistan is prone to natural disasters and ranks high on the international climate impact lists. Disruptions in rainfall, growing temperatures, reductions in glacial cover and extreme weather events are among ongoing and anticipated impacts of climate change in Tajikistan. The long-term weather trends show more hot days and fewer cold days with considerable variations in precipitation.

Hydropower generation is highly sensitive to weather and water conditions, and the changing climate is creating new challenges for the planning and management of hydropower plants. Avalanches in winter, flash floods in spring, and high temperatures and dust storms in summer affect both the transport sector and people in their dwellings.

The country's approach to climate actions is the full-scale integration of climate resilience into the planning and rehabilitation of major infrastructure and local adaptation measures. Adaptation measures in agriculture include the use of greenhouses to grow a variety of crops, planting frost- and drought-resistant varieties of fruit trees to protect against extremes and providing shelter and shade for livestock to lessen the risk of heat stress.

Tajikistan's reliance on hydropower has helped keep its total and per person greenhouse gas emissions the lowest in Central Asia, and one of the lowest in the world. While its economy and population grow, Tajikistan has committed to keep its emissions below 1990 levels. Completion of construction of the Rogun hydropower plant may double its clean energy production capacity. A key source of greenhouse gas emissions in Tajikistan remains agriculture, but the country's emissions per unit of agricultural production are the lowest in Central Asia.

Tajikistan

Geography and climate

93% mountains

800 mm per year

Glaciers cover 6% of total area

-60°C min

Numerous natural hazards

Population and economy

27% urban population

Almost 50% of Central Asia water resource formation

Renewable energy 95% of total generation

Industry

- * Mining and smelting
- * Cement

53% GDP

Services

73% rural population

Agriculture

Growing use of coal

Migration and remittances

Rapid growth in horticulture

5 million 1991

9 million 2019

Population growth

1 000 US\$ per person 2019

2010

Economy growth 5-7% per year

Environmental issues

Soil erosion

Pest infestations, crop damage

Food insecurity

90%

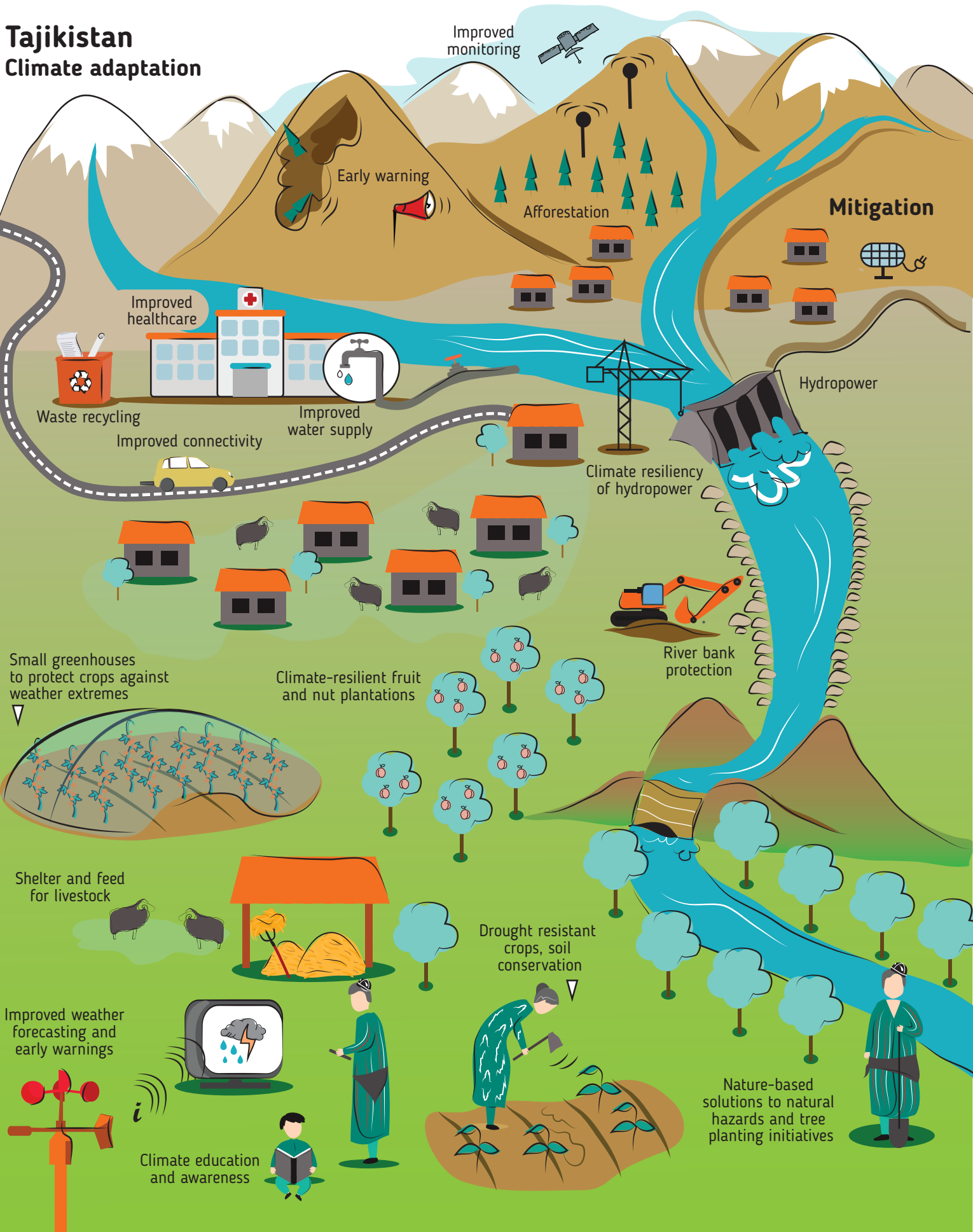
of water consumed is used in agriculture

Significant damage from natural disasters each year, up to 3% of Gross Domestic Product



Tajikistan

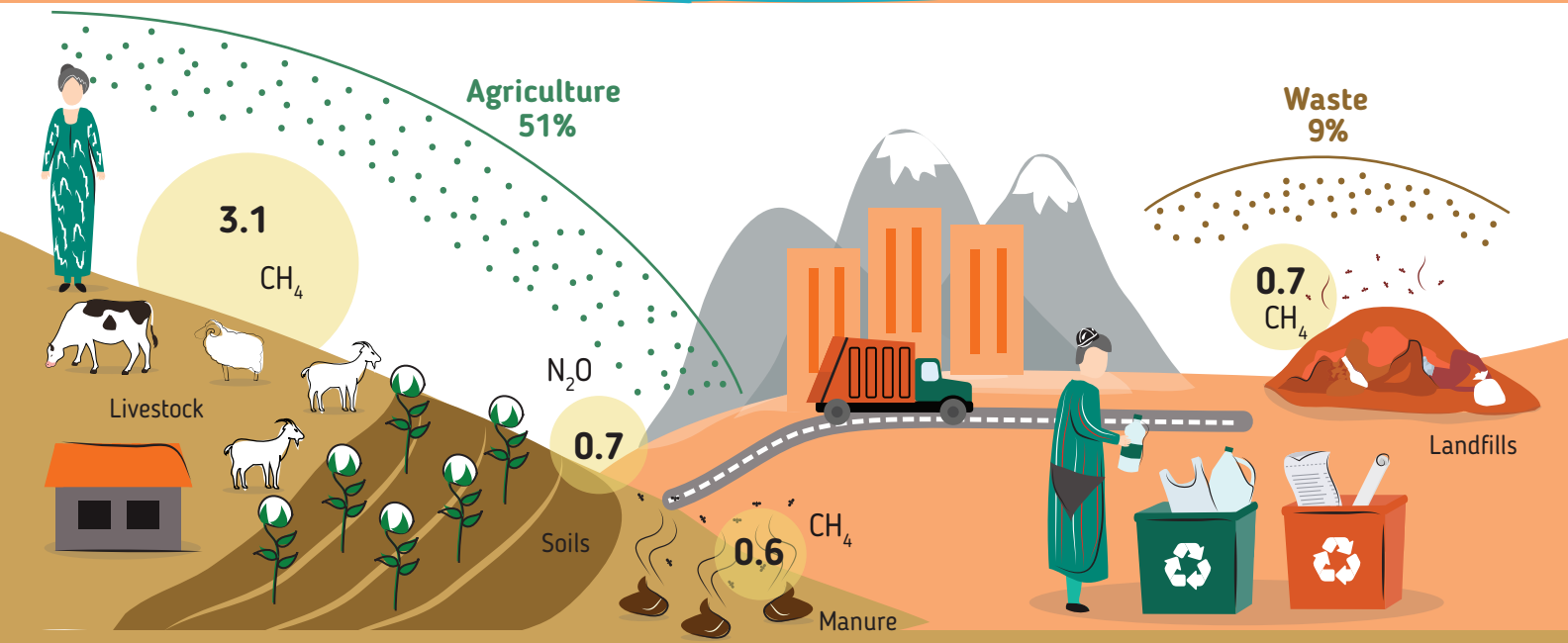
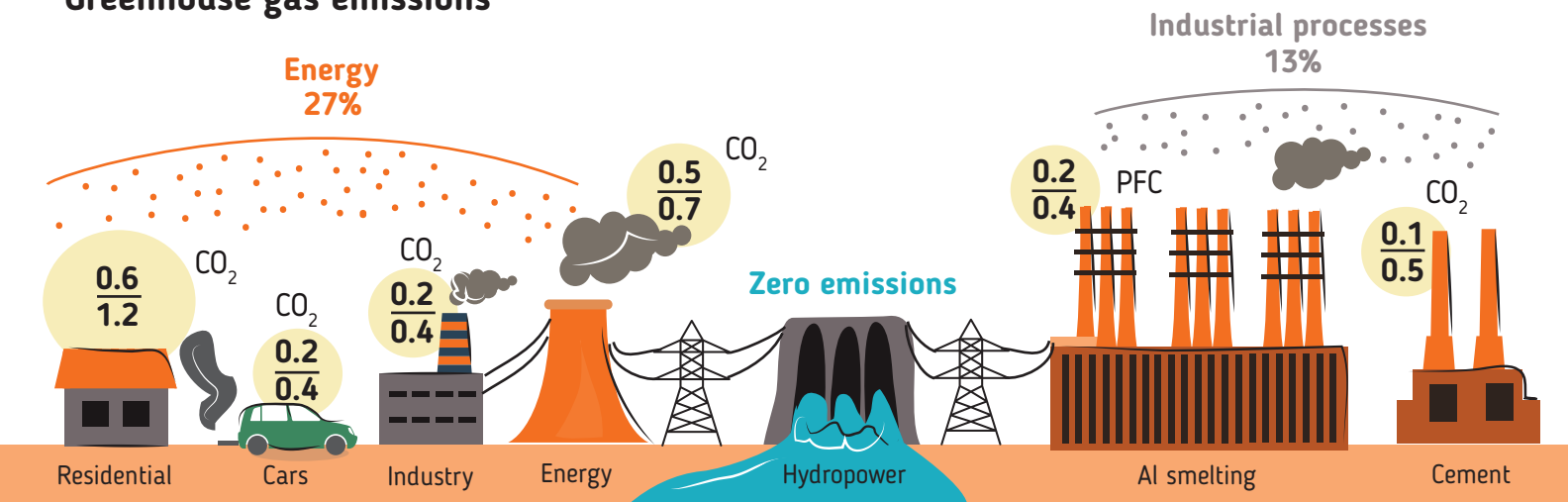
Climate adaptation



Tajikistan

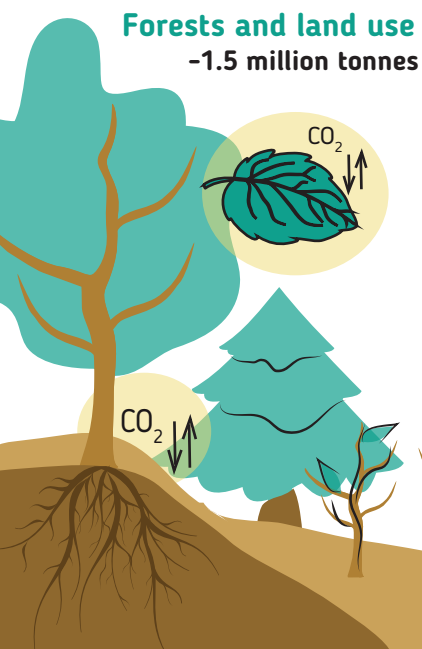
Greenhouse gas emissions

Million tonnes of CO₂ equivalent

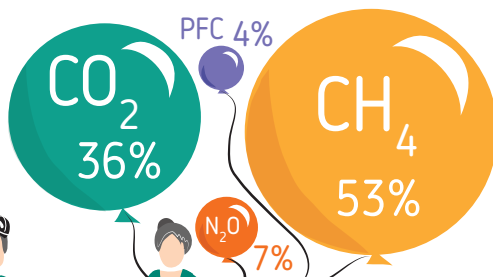


Forests and land use

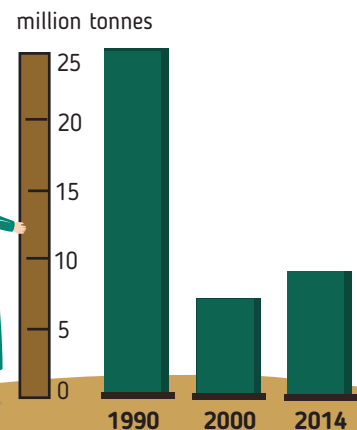
-1.5 million tonnes



Emissions by gases



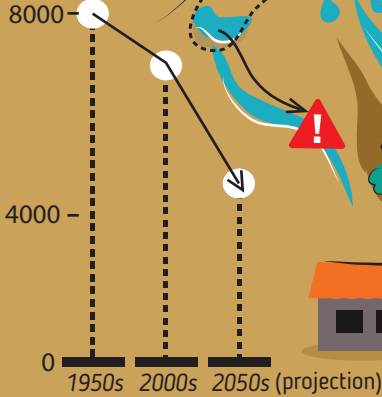
Emissions by years



Information is based on the national GHG inventories (2010-2012/2014)

Tajikistan Water

Glacier area, km²



Melting glaciers, annual loss **0.1-0.5%**

Contrast trends and variability in river flow increase or decrease

Runoff increase from heavily glaciated areas

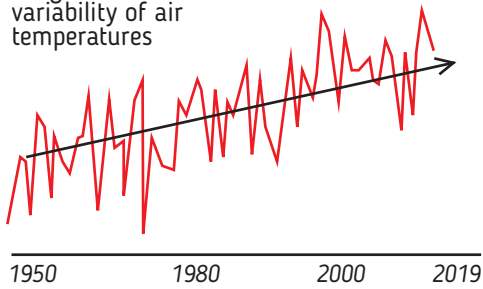
Seasonal shift in river flow

Water flow variability in the Amu Darya River

Jan Jun Dec 1960 1980 2000 2015

Weather

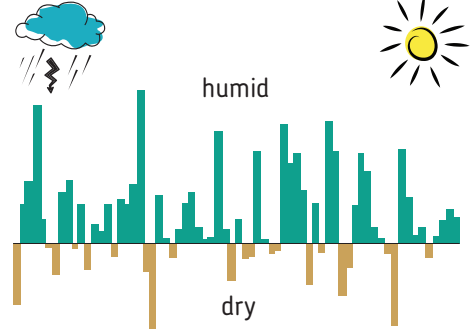
Long-term trends and variability of air temperatures



Number of hot days

Number of cold days

Long-term variability of precipitation



Impact of climate extremes

Avalanches

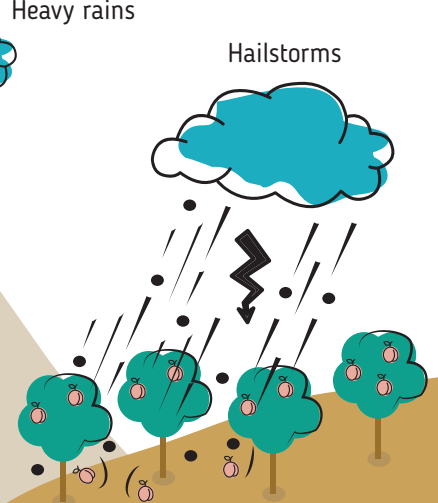
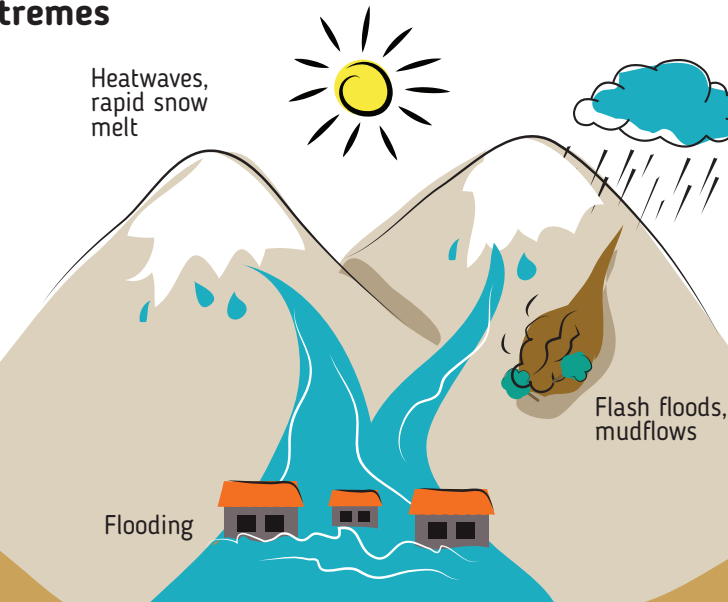
Heatwaves, rapid snow melt

Heavy rains

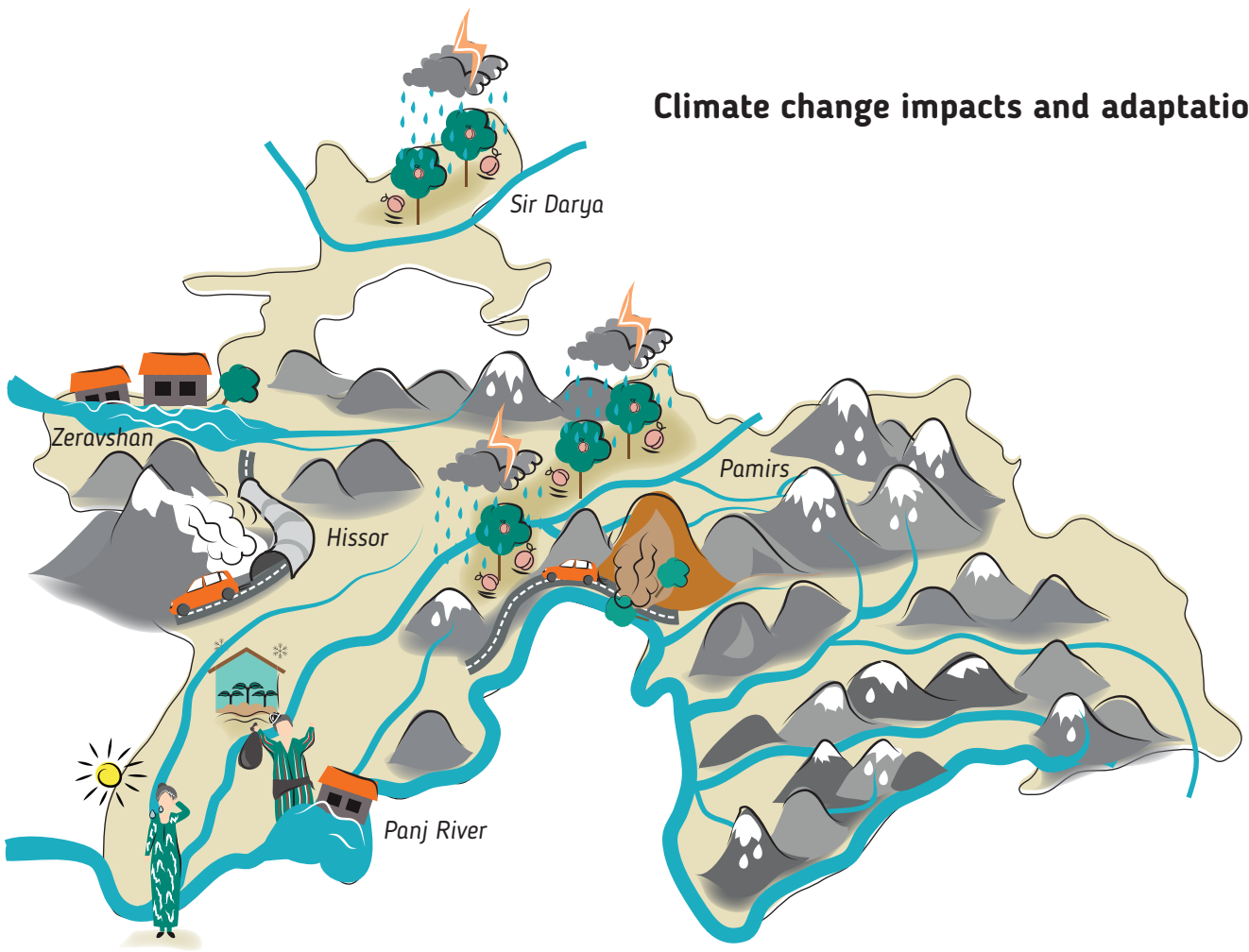
Hailstorms

Flash floods, mudflows

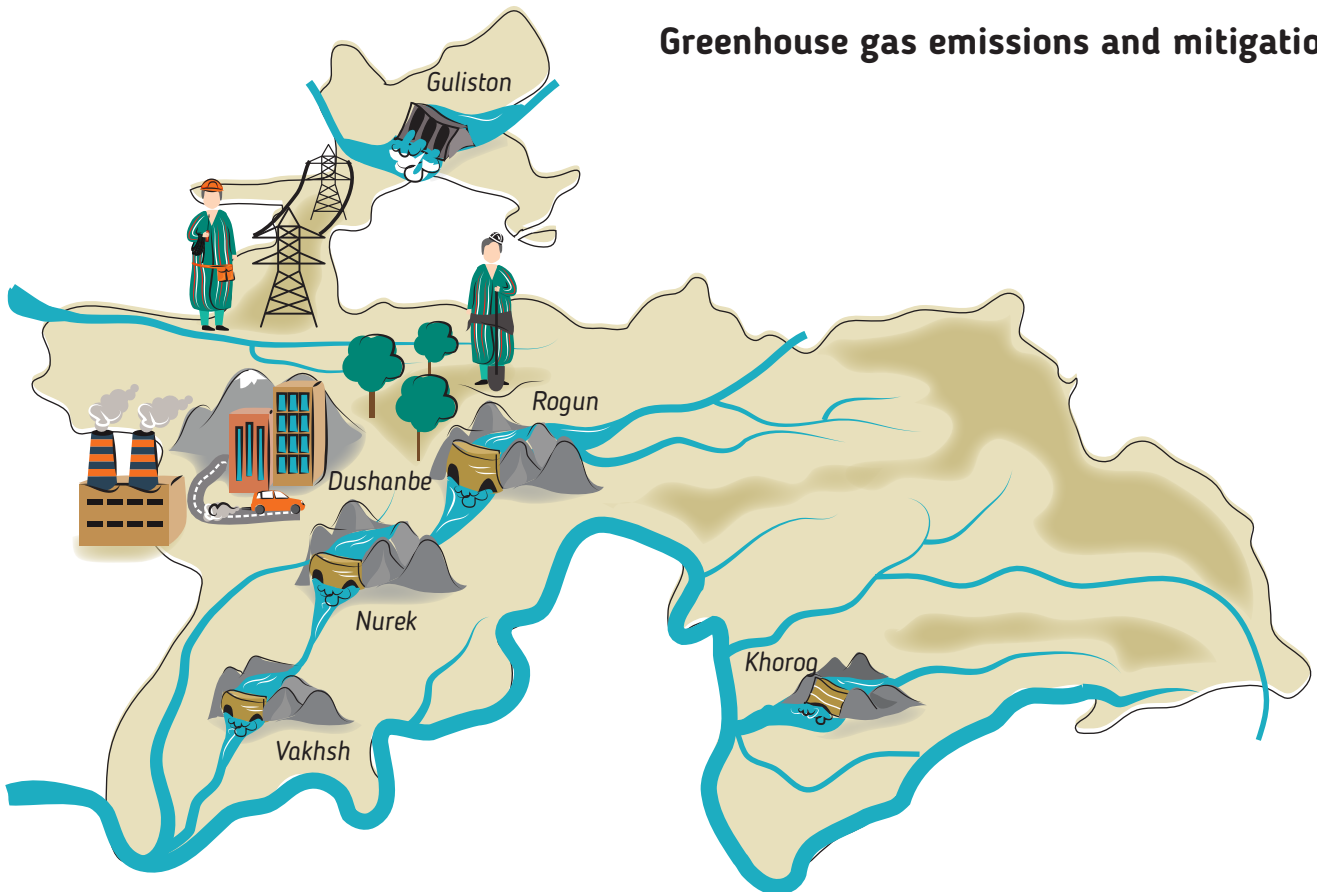
Flooding



Climate change impacts and adaptation



Greenhouse gas emissions and mitigation



Useful links

NATIONAL HYDROMETEOROLOGICAL SERVICES OF CENTRAL ASIA: OFFICIAL FORECASTS, CLIMATE AND WATER DATA

Kazakhstan: kazhydromet.kz

Kyrgyz Republic: meteo.kg

Tajikistan: meteo.tj

Turkmenistan: meteo.gov.tm

Uzbekistan: meteo.uz

REGIONAL CLIMATE, WATER AND ENERGY INFORMATION

Central Asia climate information portal: centralasiacclimateportal.org

Central Asia Regional Environmental Centre (CAREC) carececo.org and its climate web-page: ca-climate.org

Central Asia Interstate Commission on Sustainable Development (ICSD): mkurca.org

Central Asia water and environmental information portal: cawater-info.net

Central Asia Water and Energy Programme: worldbank.org/en/region/eca/brief/cawep

GLOBAL CLIMATE INFORMATION AND DATA PORTALS

UN Framework Convention on Climate Change (UNFCCC) greenhouse gas data by countries: di.unfccc.int/detailed_data_by_party

UN Framework Convention on Climate Change (UNFCCC) national communications: unfccc.int/non-annex-I-NCs and <https://unfccc.int/NC7>

Intergovernmental Panel on Climate Change: ipcc.ch

International Energy Agency: iea.org

weADAPT: weadapt.org and climate action in the mountains adaptationataltitude.org

World Bank climate change knowledge portal: climateknowledgeportal.worldbank.org

World Meteorological Organization, climate data catalogue: climatedata-catalogue.wmo.int

Contacts

The Regional Coordination Unit for CAMP4ASB,
Regional Environmental Centre for Central Asia (CAREC)

🌐 PO Orbita-1, Republic of Kazakhstan, A15D5B3

✉ camp4asb@carececo.org

☎ +7 727 265 43 34

💻 carececo.org

💻 ca-climate.org

TAJIKISTAN

The National Coordination Unit for CAMP4ASB under the Committee for Environment Protection,
Government of the Republic of Tajikistan

🌐 5/1 Shamsi, Dushanbe, Republic of Tajikistan, 7340346

✉ camp4asb@gmail.ru

☎ +992 44 640 15 16

💻 tajnature.tj

The National Coordination Unit for CAMP4ASB
under the Ministry of Finance, Republic of Tajikistan

🌐 3 Ak. Radzhabovykh St., Dushanbe, Republic of Tajikistan

✉ camp4asb@greenfinance.tj

☎ +992 37 221 02 34, +992 37 221 02 33

💻 camp4asb.tj