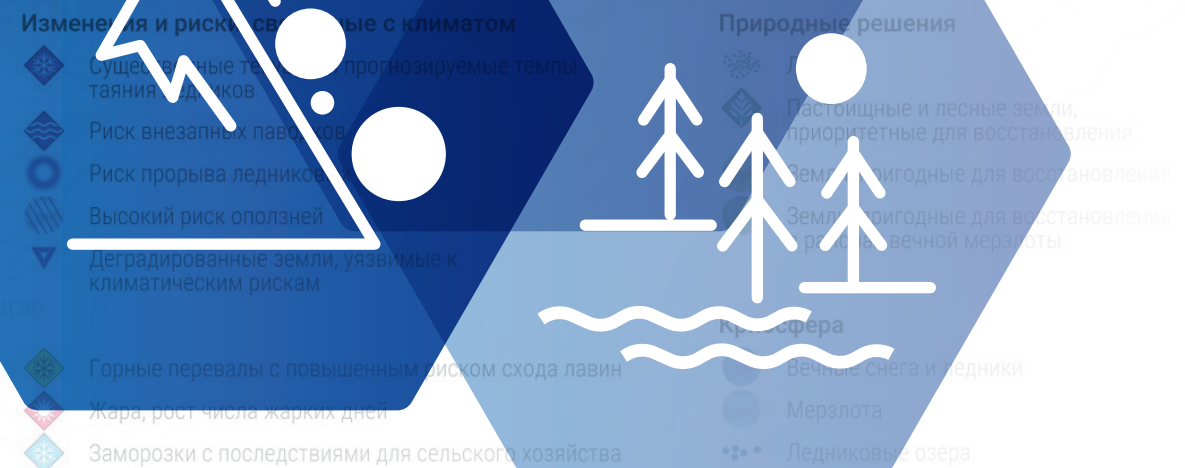




Natural disasters

Water resources

Health



In collaboration with UNITAR and UNDP, Zoï Environment Network produced three thematic maps that illustrate the connections between climate change and natural disasters, water resources, and human health in Kyrgyzstan. The maps are intended to inform interested stakeholders, and to support the implementation of national climate action plans.

The Natural Disasters and Climate Change in the Kyrgyz Republic map is based on cryosphere components, including snow, ice, and permafrost. About half of the country's area is at a high altitude and sensitive to climate impacts. The map highlights areas of glacial lakes that currently pose a risk to populated areas or may in the future. Changes and melting of permafrost and glaciated areas can increase the intensity and extent of emergency situations, including avalanches, mudflows, landslides, and damage to infrastructure.

The connection between climate change and natural disasters manifests through the short- and long-term ramifications. The map shows areas at an increased risk of mudflows, avalanches, landslides, heatwaves, and frosts both currently and in the future.

The map shows areas of land degradation, which makes those areas more vulnerable to climate change and the related risks. It also shows forests that play an important role in reducing erosion and disasters, as well as areas suitable for forest and pasture restoration and recommended measures. The map combines linear and point elements of the problems and solutions outlined in the Kyrgyz Republic's NDC 3.0 (2025) and contains three inserts: 1) a cartogram of climate vulnerability by district, based on UNDP climate risk assessment results, 2) a diagram of natural disaster events by district, based on the Kyrgyz Ministry of Emergency Situations data, and 3) a diagram of glacier area change from the 1960s to the present by major geographic regions of Kyrgyzstan, based on data from the Central-Asian Institute for Applied Geosciences (CAIAG) and Kyrgyz Hydromet.

The Water Resources and Climate Change in the Kyrgyz Republic map depicts the five major river basins as defined by the official water management division. Geographic features, such as sub-basins (small and endorheic basins), are differentiated by color gradients and Roman numerals. Key linear and point map elements that are important in the context of water management include irrigated lands, major rivers, canals, and areas covered by permanent snow and glaciers. To provide a more complete picture, related elements (e.g. irrigated areas) that extend into neighbouring countries are also shown. Approximately 90 per cent of water usage in Kyrgyzstan is for crop irrigation.

In addition to irrigation, Kyrgyzstan water resources are essential for hydropower, summer and winter tourism, health and wellness (e.g. hot and mineral springs), and environmental conservation (e.g. wetlands and protected areas). Wastewater treatment is essential for maintaining good water quality, notably in regard to health protection measures relating to climate change.

Due to the country's diverse natural and geographic conditions, climate change trends — both current and projected — are varied and sometimes contrasting. For high-mountain regions, it is difficult to make robust assessments and projections of precipitation and river run-off. This map uses various sources, including data from the National Academy of Sciences, the MODIS snow cover monitoring, IMPACT Initiatives' assessments of rivers in the southern Fergana Valley, World Food Programme (WFP) climate risk profiles for selected regions of Kyrgyzstan, the Potsdam Institute for Climate (PIK) portal data, results from scientific projects, and global drought monitoring from the Standardized Precipitation Evapotranspiration Index (SPEI). The map shows current and projected trends in water resources. Some rivers are expected to experience decline in flow, others will experience temporary increases in flow due to increased glacial melt. Almost all rivers will experience seasonal shifts in flow. Glacier area and volume are expected to decrease, with changes and reductions in snow cover.

The map contains two inserts: 1) a diagram of the relative water flow and directions of the main rivers, with consideration of the role of mountains in water formation for Kyrgyzstan and neighbouring areas, and 2) a diagram of drip irrigation areas by regions, according to the State Water Resources Service data and NDC 3.0/NAP water-related measures.

The Health and Climate Change in the Kyrgyz Republic map displays population density at three elevations: up to 1,000 metres, between 1,000 and 2,000 metres, and above 2,000 meters. The population data for the main cities of Kyrgyzstan is based on national statistics. Icons indicate areas where human health is under climatic stress, primarily due to heat. Emissions are also concentrated in densely populated areas where meteorological and climatic factors such as still weather and air inversions can exacerbate pollution.

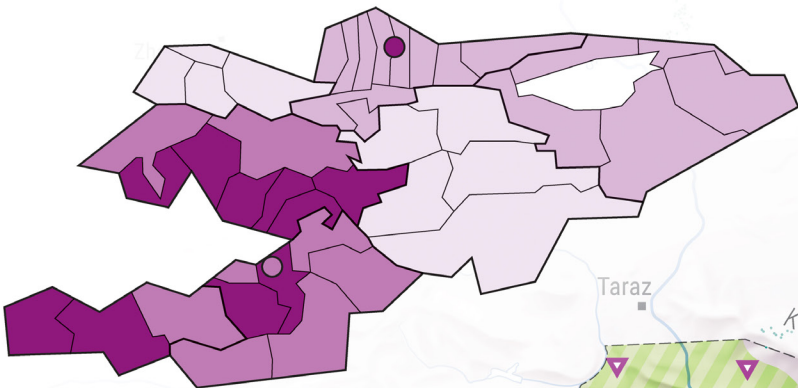
The map contains two inserts: 1) a diagram of population distribution by regions, and 2) a diagram of population distribution by gender and age.

Maps were prepared by Matthias Ballstein, in collaboration with contributors and with financial support from Switzerland through UNITAR.



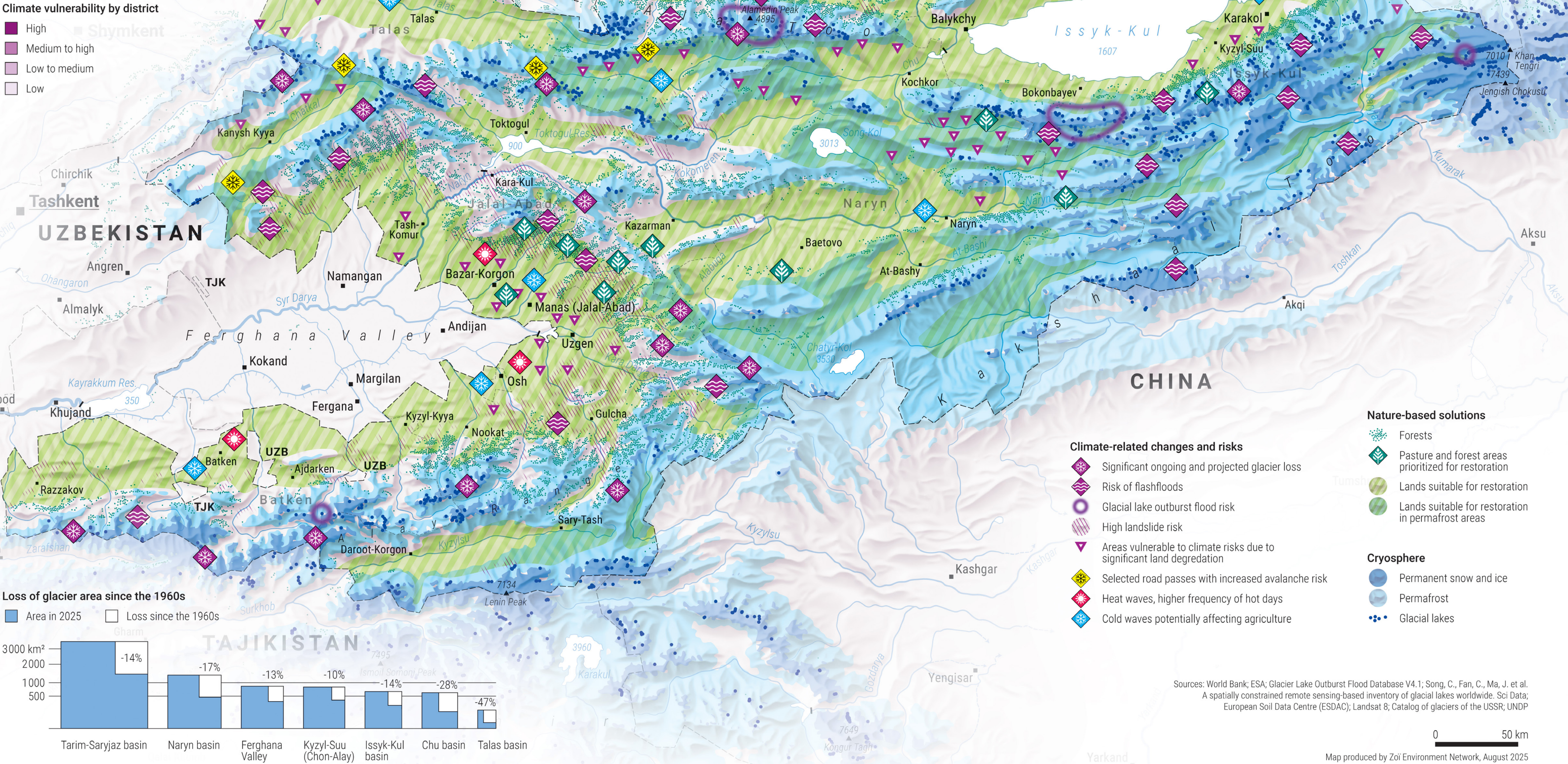
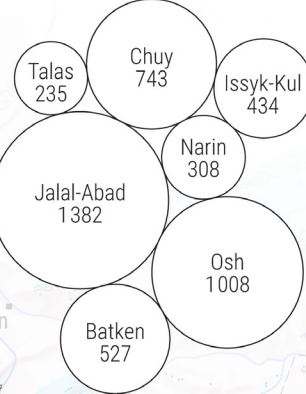
Disaster risk and climate change in the Kyrgyz Republic

Natural disasters 2000–2021, number of events by region

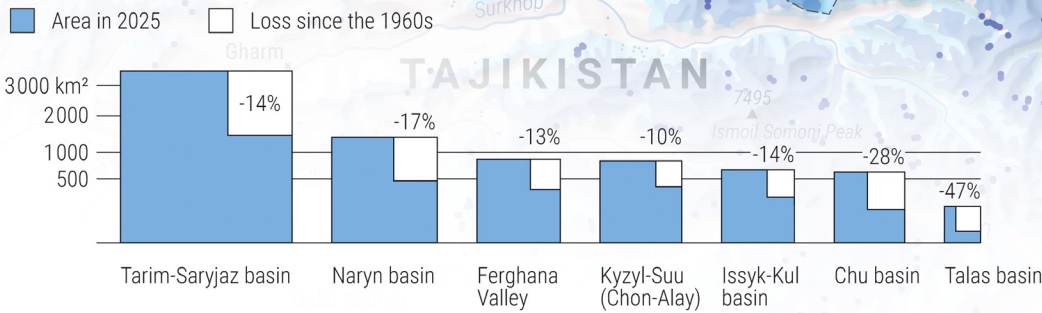


Climate vulnerability by district

- High
- Medium to high
- Low to medium
- Low



Loss of glacier area since the 1960s

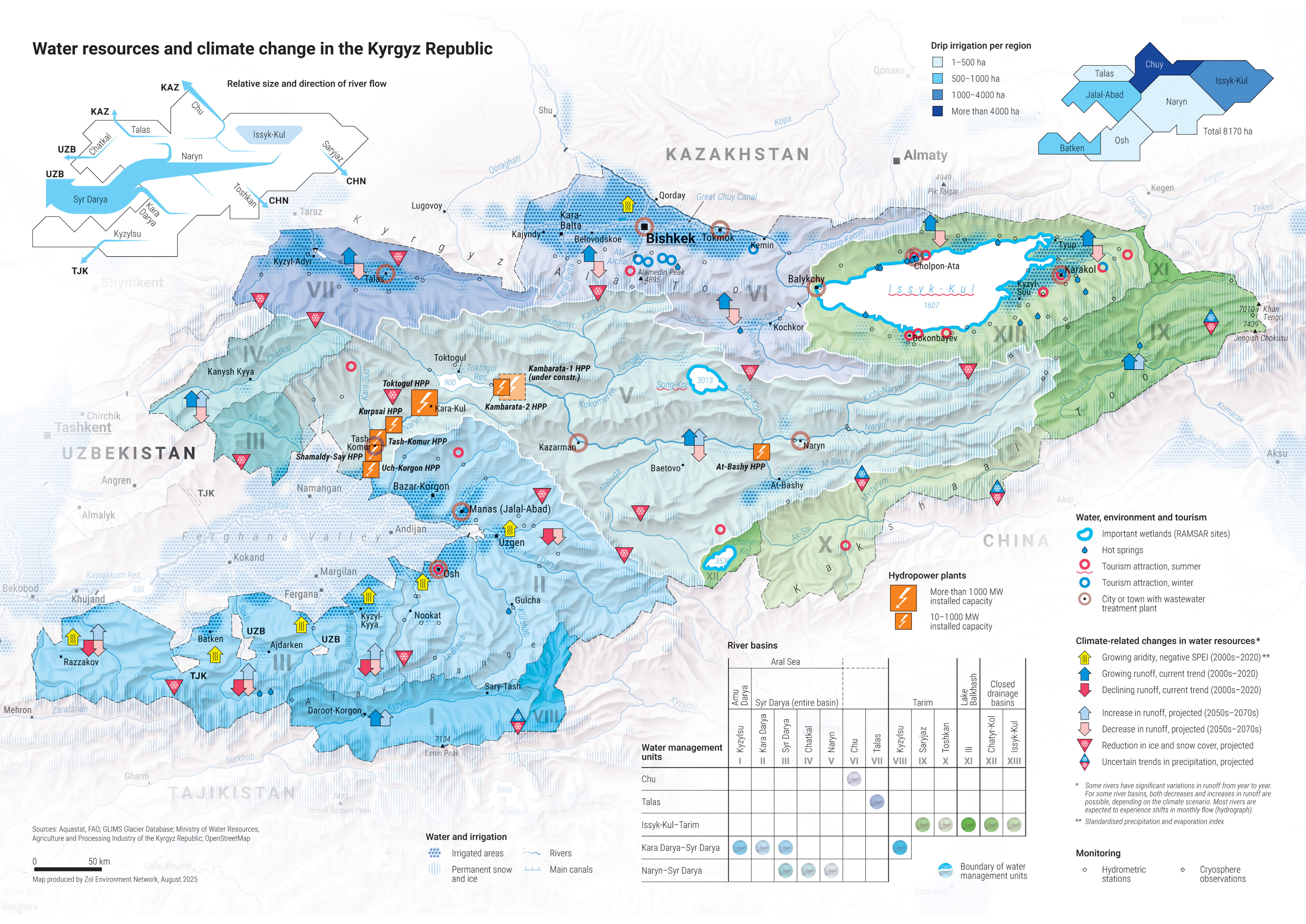


Sources: World Bank; ESA; Glacier Lake Outburst Flood Database V4.1; Song, C., Fan, C., Ma, J. et al. A spatially constrained remote sensing-based inventory of glacial lakes worldwide. Sci Data; European Soil Data Centre (ESDAC); Landsat 8; Catalog of glaciers of the USSR; UNDP

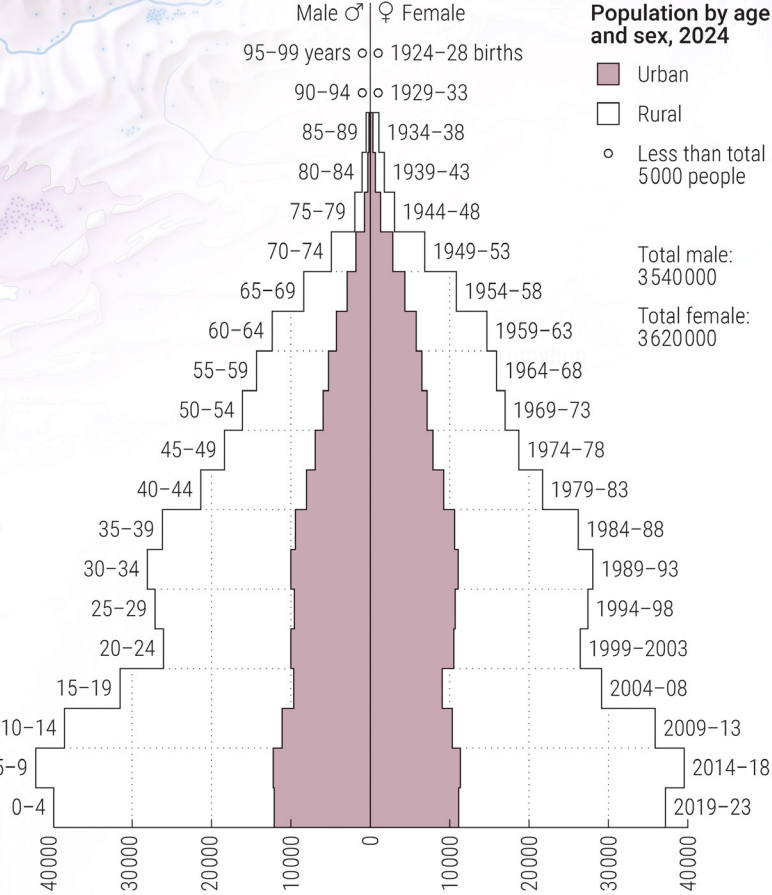
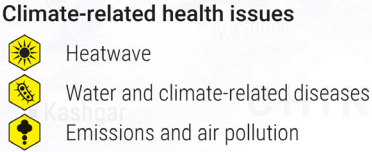
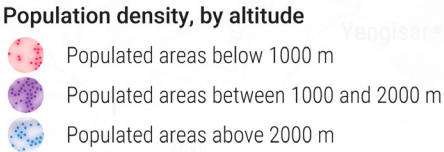
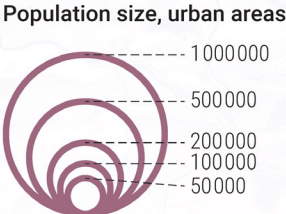
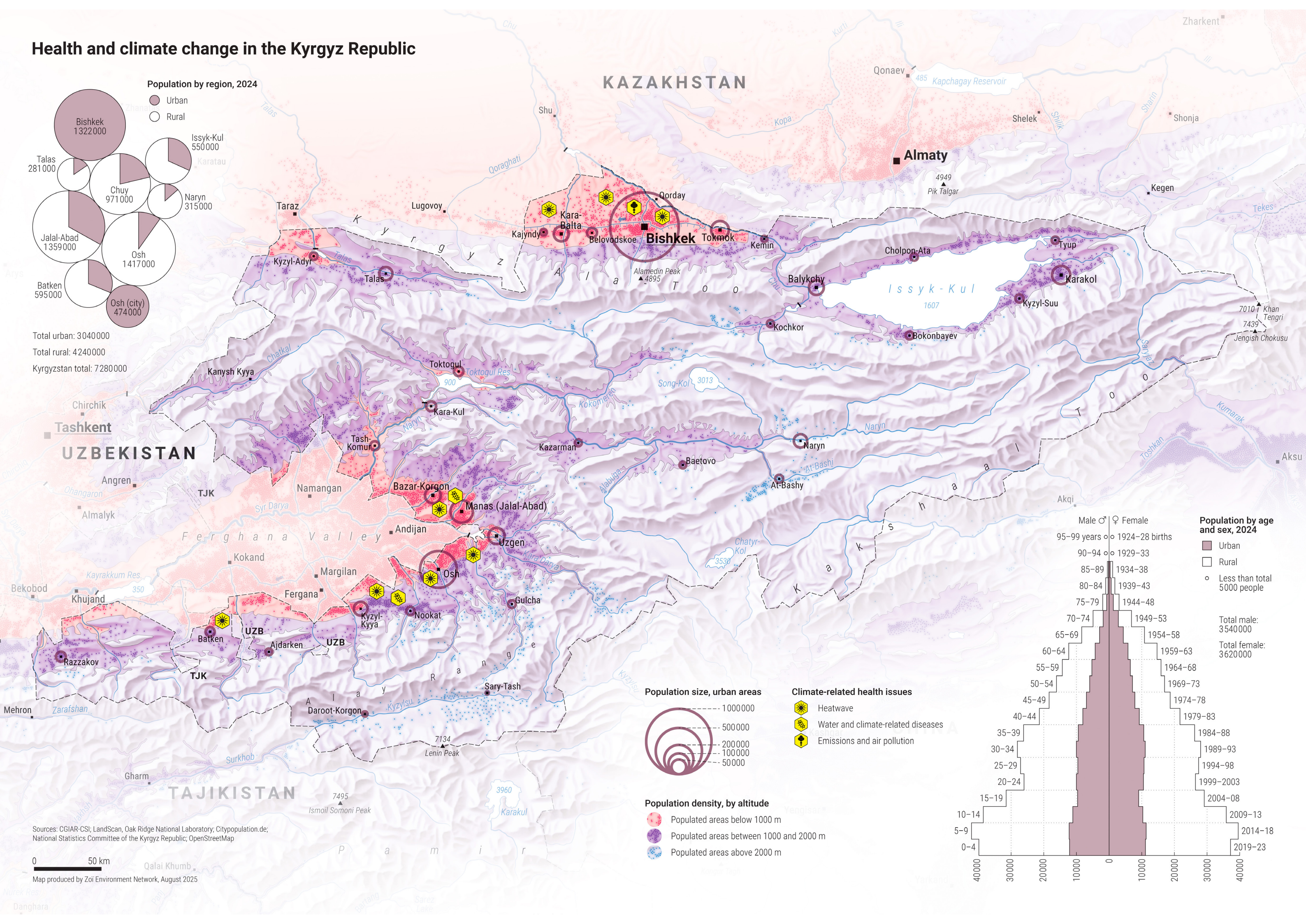
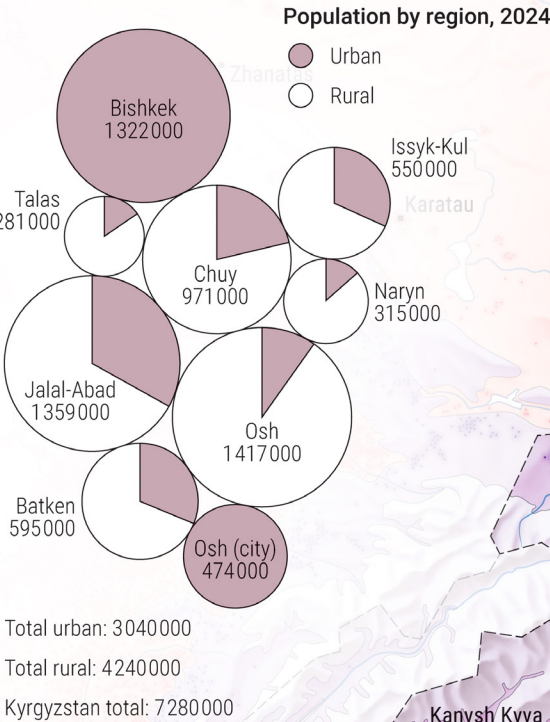
0 50 km

Map produced by Zoï Environment Network, August 2025

Water resources and climate change in the Kyrgyz Republic



Health and climate change in the Kyrgyz Republic



Sources: CGIAR-CSI; LandScan, Oak Ridge National Laboratory; Citypopulation.de; National Statistics Committee of the Kyrgyz Republic; OpenStreetMap

0 50 km
Map produced by Zoi Environment Network, August 2025