Resilient Central Asia

Strengthening Disaster Resilience and Accelerating Implementation of the Sendai Framework Programme

Укрепление устойчивости к бедствиям и ускорение выполнения Сендайской программы

National Disaster Loss Databases implementation in Central Asia
Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan

Country Disaster Risk Profile of the Republic of Turkmenistan

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Funded by the European Union

UNDRR
UN Office for Disaster Risk Reduction

Description of the project

The "National Disaster Loss Databases implementation in Central Asia" project that covers Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan from July 2020 to January 2023, supports the participating countries in the development of damage and loss data and information collection, in accordance with the Sendai Framework for Disaster Risk Reduction 2015-2030 and in alignment to the requirements of the Sustainable Development Goals Agenda 2030.

The project is coordinated by the United Nations Office for Disaster Risk Reduction (UNDRR) within the framework of the "Strengthening disaster resilience and accelerating implementation of the Sendai Framework for Disaster Risk Reduction in Central Asia" initiative, funded by the European Union.

The focus of the project is the establishment of the DesInventar Sendai[1] at National Disaster Risk Reduction authorities in Central Asia. The DesInventar Sendai enables the collection of disaster losses and damages data and the analysis of such information associated to natural and technogenic hazards. The system further facilitates the countries in their reporting on Sendai Framework Targets.

DesInventar Sendai is an updated version of the widely used software that simplifies damage and loss data collection and provides a structured recording of damage and loss indicators that are required for the Sendai Framework reporting for Targets A to D. DesInventar Sendai allows definition and the use of Sendai Framework metadata to describe several indicators that includes a finer disaggregation of data. One of the main benefits of DesInventar Sendai is the full compliance with the Sendai Framework Monitor (SFM) to support and facilitate the annual Sendai Framework reporting through the SFM. On this link[2] official data of Sendai Framework Targets are reported for different years.

Both the SFM and the DesInventar Sendai are UNDRR's initiatives to accelerate the implementation of the Sendai Framework priorities to achieve the 7 global targets.

Historical records on disasters

Turkmenistan is located in Central Asia, between the Caspian Sea in the west, Iran and Afghanistan in the south, and Uzbekistan and Kazakhstan in the north. Turkmenistan is the second largest country in Central Asia with a total area of 488 100 square kilometers and a population of 6 341 855 (2021)[3]. The Kara Kum desert covers 80% of the country. Turkmenistan, like other countries in Central Asia, is prone to natural and technogenic hazards. Over the past decades according to data from the hydrometeorological service of Turkmenistan[4], the number of events, such as mudflows and floods, droughts, cases of extreme heat, dry winds, and heavy rains, has significantly increased in the country[5]. The table below presents statistical data of the Hydrometeorological Service of the Republic of Turkmenistan on the number and type of hazardous events for the period from 1986 to 2007. As reported by Hydrometeorological Service, trends indicate an increase in the number of cases of dangerous hydrometeorological phenomena and adverse weather conditions in last decades, primarily mudflows and floods, heavy rains, droughts, dry winds, dust storms and intense heat.

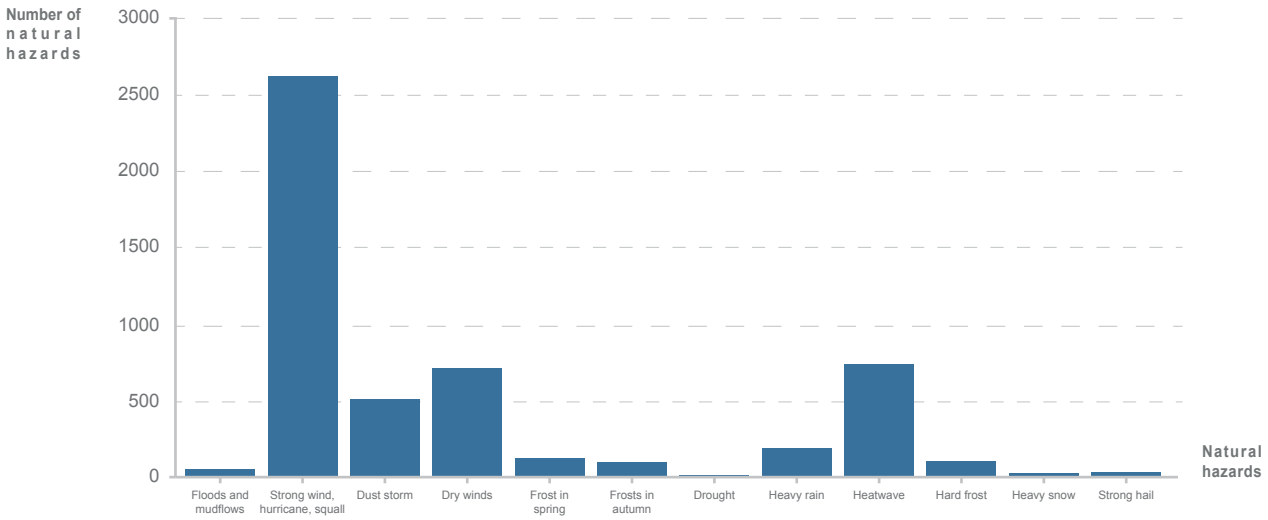


Figure 1. Dangerous hydrometeorological phenomena for the period from 1986 to 2007, statistical data of the Hydrometeorological Service of the Republic of Turkmenistan[6]

Turkmenistan is located in one of the most seismically active zones. Numerous earthquakes, some of them catastrophic, have occurred in both ancient and modern times. As reported by CAREC[7] (2022) the total average modelled annual loss from earthquake and flood is around US $151 million dollars which is equivalent to around 0.18% of the country's gross national income (GNI)[8]. Turkmenistan is also situated in a drought-prone area, with significant hot temperature extremes and diminishing amount of precipitation, exacerbated by the effects of climate change. The country is prone to mudflows from Kopetdag and Kugitangau mountains, and to hurricanes and violent storms[9]. Strong winds, hurricanes, and storms at any time during a year, causing substantial damages. The table below lists the most dangerous natural hazards of Turkmenistan[10].

HAZARD	YEARS
Earthquakes	1929 Termab, 1946 Kazandzhik, 1948 Ashgabat, 1983 Kum-Dag
Mudflows	1963, 1969, 1972, 1981, 1986
Tornadoes	1963, 1965, 1967, 1987
Hurricanes	1953, 1968, 1975, 1985

Among the potential technogenic hazards there are oil spills caused by oil exploitation related activities concentrated on the coastal zone of Caspian Sea with numerous oil refineries, petrochemical complexes, oil and gas pipelines, and chemical plants.

INFORM Risk Index

Since 2021, INFORM risk index for Central Asia is maintained by the Center on Emergency Situations and Disaster Risk Reductions (CESDRR) in collaboration with UNDRR Regional Office for Europe and Central Asia and with financial support from United States Agency for International Development (USAID) Bureau for Humanitarian Assistance (BHA). The INFORM risk index for Central Asia is developed at the first administrative level (corresponding to the provinces/oblasts/regions and few independent cities) in Central Asia.

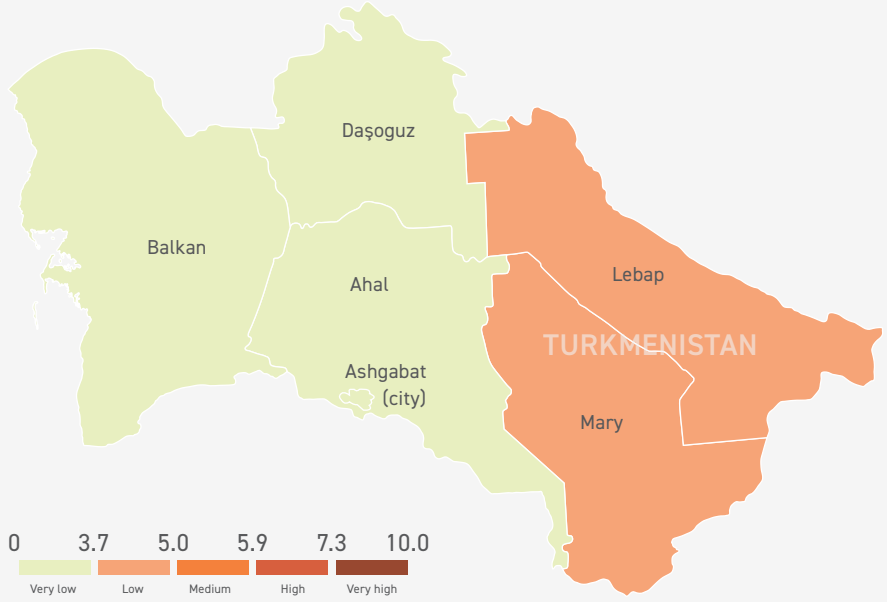
The subnational INFORM risk index 2022[11] for the Republic Turkmenistan was defined as Very low 3,2, considering the level of hazards and exposure of the country, its vulnerability to hazards, and the need to strengthen its coping capacity to disaster risks.

The INFORM risk concept[12] envisages three dimensions of risk:

- **Hazards & Exposure** - events that could occur and the exposure to them.
- **Vulnerability** - the susceptibility of communities to those hazards.
- **Lack of coping capacity** - lack of available resources that can alleviate the impact.

HAZARD & EXPOSURE INDEX

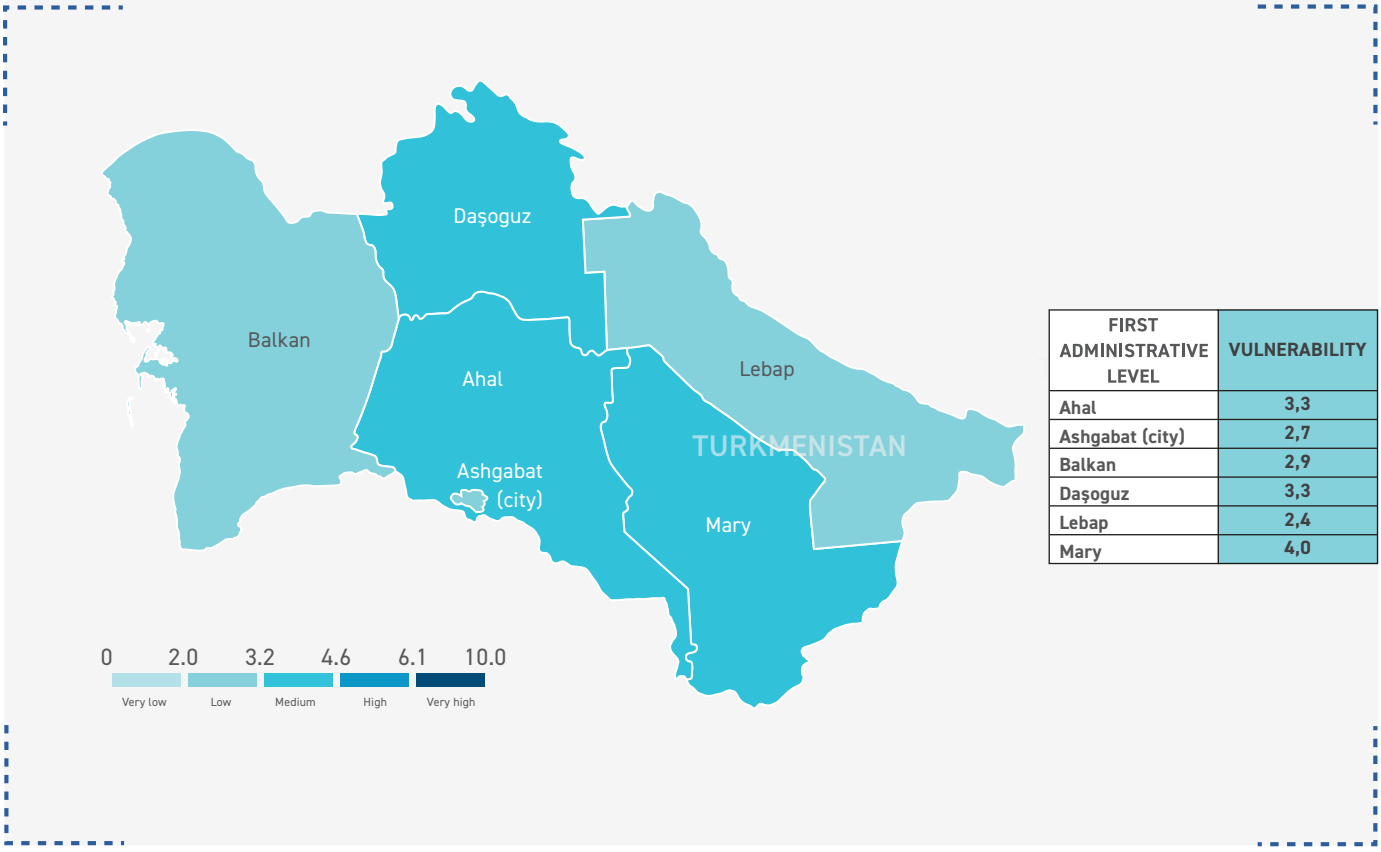
The Hazard & Exposure dimension at country level was defined as Very low 3,0. Hazards & Exposure dimension is Medium for the Mary region and Low for the Lebap region. It does not exceed the Very Low level for all other regions.



FIRST ADMINISTRATIVE LEVEL	HAZARD & EXPOSURE (0-10)
Ahal	3,0
Ashgabat (city)	1,4
Balkan	3,4
Daşoguz	1,5
Lebap	3,8
Mary	4,8

VULNERABILITY INDEX

The **Vulnerability** score at the regional level, is Medium for Mary 4.0, Ahal 3,3 and Dashoguz 3,3, and low for all other regions.

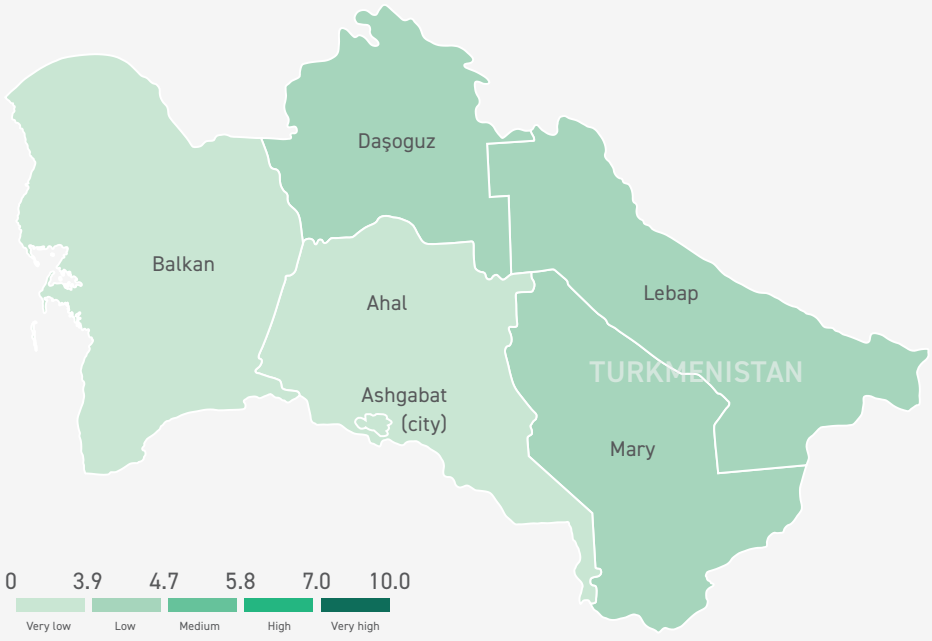


FIRST ADMINISTRATIVE LEVEL	VULNERABILITY
Ahal	3,3
Ashgabat (city)	2,7
Balkan	2,9
Daşoguz	3,3
Lebap	2,4
Mary	4,0

Central Asia

LACK OF COPING CAPACITY INDEX

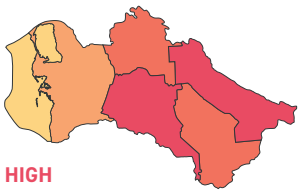
The **Lack of coping capacity** dimension was defined as low 3,8. At regional level the Lack of Coping Capacity dimension is Low or Very Low for all regions.



FIRST ADMINISTRATIVE LEVEL	LACK OF COPING CAPACITY
Ahal	3,8
Ashgabat (city)	3,0
Balkan	3,5
Daşoguz	4,1
Lebap	4,0
Mary	4,1

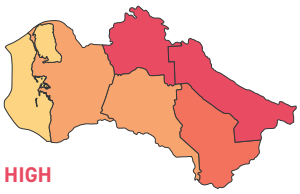
"ThinkHazard!" hazards likelihood

The ThinkHazard! web-based tool is developed and maintained by the Global Facility for Disaster Reduction and Recovery (GFDRR) providing a general view of hazards, for a given location to promote disaster and climate resilience. The tool highlights the likelihood of different natural hazards affecting an area (very low, low, medium, and high)[13] and is based on published hazard data, provided by a range of private, academic, and public organizations[14]. The high level of likelihood was defined for following hazards[15]: river flood, urban flood, earthquake, water scarcity, extreme heat, and wildfire. The low level of likelihood was defined for landslide, and very low for cyclone.



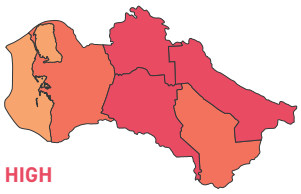
HIGH

RIVER FLOOD
The potentially damaging and life-threatening river floods are expected to occur at least once in the next 10 years.



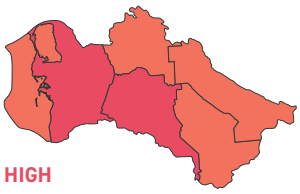
HIGH

URBAN FLOOD
The potentially damaging and life-threatening urban floods are expected to occur at least once in the next 10 years.



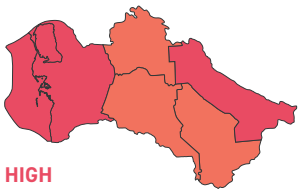
HIGH

WATER SCARCITY
The droughts are expected to occur on average every 5 years. The present hazard level may increase in the future due to the effects of climate change.



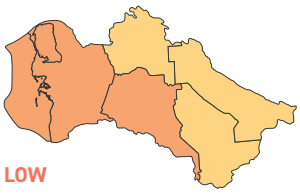
HIGH

EARTHQUAKE
There is more than a 20% chance of potentially-damaging earthquake shaking in your project area in the next 50 years.



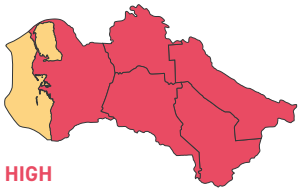
HIGH

EXTREME HEAT
The prolonged exposure to extreme heat, resulting in heat stress, is expected to occur at least once in the next 5 years.



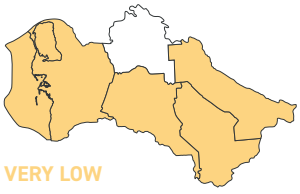
LOW

LANDSLIDE
Rainfall patterns, terrain slope, geology, soil, land cover and earthquakes that make localized landslides an uncommon hazard phenomenon.



HIGH

WILDFIRE
There is greater than a 50% chance of weather that could support a significant wildfire that is likely to result in life and property loss in any given year. Damage can occur due to direct flame and radiation exposure, and also include ember storm and low level surface fire. In area already affected by wildfires the fire season is likely to increase in duration and severity, and include a greater number of days supporting fire spread because of longer dry periods during fire seasons.



VERY LOW

CYCLONE
There is less than a 1% chance of potentially-damaging cyclone-strength winds in your project area in the next 10 years.

Legend:

- **HIGH** — Severe damage expected within project\ or human lifetime, mitigation measures essential.
- **MEDIUM** — Damaging effects expected within project or human lifetime, consider mitigation measures.
- **LOW** — Less likely, but damaging events still possible, prudence in critical locations.
- **VERY LOW** — Unlikely damaging effects, but potential still exists.
- **NO DATA AVAILABLE** — No dataset for chosen location in ThinkHazard.

Implementation of DesInventar Sendai in the Republic of Turkmenistan

The collaboration between UNDRR and the Government of Turkmenistan is guided by the State Programme for implementation of primary areas of state policy in the field of civil defense for 2019--2030 (approved by the Decree of the President of Turkmenistan No. 1156, dated 1 March 2019, and recognized as the National Strategy on Disaster Risk Reduction)[16]. The National Action Plan for the implementation of the State Programme outlines the developing of international cooperation in implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. The Plan includes disaster preparedness, response, mitigation, and prevention activities.

The legislation in the field of civil defense is based on the Constitution of the Republic of Turkmenistan, and the Law on Civil Protection (Law of Turkmenistan on Civil defense, No. 206 – II, dated November 29, 2003), and normative legal acts in regard of the civil defense.

The State Commission of Turkmenistan for Emergency Situations is the principal government institution responsible for the disaster management and disaster loss data accounting at national level (Law of Turkmenistan on the Prevention and Elimination of Emergency Situations, No. 308-1, dated September 15, 1998). The information related with loss and damage assessment due to the negative impacts of natural and technogenic disasters is provided by regional and local emergency commissions, which consist of local authorities. The commissions (control centers) are establishing in areas affected by disasters and assess loss and damage and provide information to superior level commissions. Each type of information related with disaster impact is assigned to the relevant ministry or entity.

During the project "National Disaster Loss Databases implementation in Central Asia", the officers of the Main Department for Civil Defense and Rescue Operations (CDROD) supported by UNDRR Coordinators and the project team, participated in the trainings on DesInventar Sendai system. The DesInventar Sendai system was configured in accordance with the official list of hazards at national level, which includes drought, earthquake large and medium scale, windstorm and hurricane, sandstorm, biological, infectious disease, and technogenic hazards. Consultative meetings and training on the use of DesInventar Sendai system tools were held with representatives of the CDROD. The system DesInventar Sendai has been successfully tested for data entry and use of functions of analysis module.

Conclusions

Disaster loss reporting has substantially advanced in Turkmenistan. The technical capacity of the Government has been enhanced through dedicated training workshops and adapted systems.

In the framework of the project the Ministry of Defense has created a Technical Working Group (consisted of 20 specialists from various departments in the Ministry) whom, jointly with UNDRR, developed the data card and list of hazards for the DesInventar Sendai trial version, aligned to both national legislation and to the requirements of DesInventar Sendai.

Currently, the national Technical Working Group has the capacity to collect and disaggregate data, for managing general and detailed information on losses caused by disasters for identifying tendencies in risk and hazard profiles.

The DesInventar Sendai system can support to further strengthen of existing capacity of relevant national ministries and agencies in the systematic collection and analysis of information on disasters that will lead to more specific measures for disaster risk reduction in the country.

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