LESLIE
LAND MANAGEMENT
ENVIRONMENT &
SOLID-WASTE

LAND MANAGEMENT, ENVIRONMENT & SOLID-WASTE: INSIDE EDUCATION AND BUSINESS IN CENTRAL ASIA
ERASMUS-EDU-2023-CBHE Project Number: 101129032

MICRO-CREDENTIAL

CLIMATE CHANGE FOR SUSTAINABLE LAND MANAGEMENT IN CENTRAL ASIA

5.- Climate Extremes, Hazards and Risk

Case Study

One past extreme event in Kazakhstan or Uzbekistan

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1. INSTRUCTION GUIDELINES

Read the following passage about a major flood across multiple regions of Kazakhstan in spring 2024. Answer the following questions based on what you will read.

1. What were the main physical drivers of the 2024 Kazakhstan floods?
2. How did exposure contribute to the scale of impact?
3. Which forms of vulnerability may have increased losses for households and communities?
4. Where in the warning chain might delays or weak communication have increased risk?
5. What long-term risk-reduction measures would reduce similar flood losses in the future?
6. How does this case illustrate the difference between hazard, exposure, vulnerability, and risk?

KAZAKHSTAN
Floods

acaps | Briefing note
23 April 2024

CRISIS IMPACT OVERVIEW

The recent flooding in Kazakhstan that started on 27 March 2024 has become the largest in 80 years. In response, the Government declared a state of emergency on 6 April in ten of the country's 17 regions, including Abai, Akmola, Aktobe, Atyrau, Karaganda, Kostanay, North Kazakhstan, Pavlodar, Ulytau, and West Kazakhstan (UNN 11/04/2024; IFRC 11/04/2024; Tengri News 06/04/2024). As at 17 April, the flooding continued, with water still not receding in the flood-affected regions. Work to protect riverbanks and discharge water also continued (Caravan 22/04/2024). The flooding is a result of rapid snow melting and river flooding (Radio Azattyk 01/04/2024).

As at 19 April, floods had evacuated or displaced approximately 118,200 people, almost 44,300 of whom were children, and inundated around 6,000 homes. By 22 April, around 24,500 people had returned to their homes, while 8,850 remained in shelters. As at 18 April, the flooding had killed seven people (Caravan 22/04/2024).

Despite disaster management improvements over the years, Kazakhstan remains prone to floods, highlighting the need for stronger prevention and response. As climate change increases weather extremes, floods become more of a threat to lives and livelihoods, requiring coordinated efforts (Daryo 15/04/2024 a). Emergency rescue services and local authorities are currently involved in flood control efforts, such as draining meltwater and strengthening coastal areas with sandbags and non-reactive materials to reinforce canal and ditch systems. In 2024, Kazakhstan initiated building five reservoirs to prepare for future flooding. These structures will increase irrigated land by 250,000 hectares while reducing flood risks in 70 settlements with 137,000 inhabitants (Daryo 15/04/2024 b).

Anticipated scope and scale

The flooding reached its peak in Akmola, Aktobe, Karaganda, Kostanay, and Kulsary regions on 11 April and was expected to reach its peak in Petropavl (North Kazakhstan) on the following week. Instead, the second wave of flooding began in North Kazakhstan on 17 April (IFRC 11/04/2024; Caravan 22/04/2024).

The second wave of flooding was expected to hit West Kazakhstan region as at 11 April, resulting in the further evacuation of settlements. As at 17 April, water levels in Akmola and West Kazakhstan were still expected to rise further (IFRC 11/04/2024; Caravan 22/04/2024). The second wave of floods involves large quantities of water arriving from Russia (BBC 11/04/2024).

The Ural (Zhaiyk) River is expected to have new inflows of water. As at 17 April, the water level in the river was 7.79m and continued to rise on a daily basis. According to the Ministry of Emergency Situations of the Republic of Kazakhstan, the threshold for danger is 8.5m (UW 17/04/2024; Prime Minister of Kazakhstan 10/04/2024). It is worth noting that when water levels exceed 6.5m, the Ural (Zhaiyk) River floodplain could overflow (Radio Azattyk 02/04/2024).

Humanitarian constraints

As at 19 April, flooding restricted access to 44 settlements from other parts of the country because of damaged bridges and roads (Daryo 15/04/2024 b; Caravan 22/04/2024).

By the same date, the country had experienced over 60 road overflows and 63 washouts, and ten bridges had collapsed in Akmola, Aktobe, Atyrau, Kostanay, and North Kazakhstan regions (Caravan 22/04/2024; ECHO 15/04/2024; Daryo 15/04/2024 b). The destruction of critical infrastructure, such as bridges and flooded roads, will further challenge access to these areas (Caravan 22/04/2024; BBC 11/04/2024; ECHO 15/04/2024).

KEY PRIORITIES

118,200
EVACUATED OR DISPLACED PEOPLE

44,300
DISPLACED CHILDREN

24,500
RETURNED HOME

6,000
FLOODED HOUSES

FUNDING AND RESPONSE CAPACITY

- UN agency (UNICEF)
- National and local authorities, local businesses, military, police, the national guard
- Red Crescent Society of the Republic of Kazakhstan
- Ministry of Emergency Situations of Kyrgyz Republic

CRISIS IMPACTS

Shelter

The flooding has displaced thousands of people, who have evacuated to safe places (Radio Azattyk 01/04/2024). As at 19 April, there were 118,180 flood-displaced people, 44,254 of whom were children (Caravan 22/04/2024). The main reason behind the evacuation of people in the affected areas is the destruction or severe damage of residential houses, household structures, and civic infrastructure, as well as safety and access issues (IFRC 11/04/2024). As at 22 April, 8,850 people were in shelters, including 3,840 children (Caravan 22/04/2024). The situation could still worsen, and further displacement is anticipated, with a second wave of flooding expected to occur in some regions.

The local authorities are providing food and water, bedding, and hygiene items to the shelters, but the capacity is unable to meet the needs for clothing, footwear, medicine, and baby care items (IFRC 11/04/2024). Increased displacement will likewise increase the demand for these items.

WASH

In North Kazakhstan region, flooding has caused water and power supply interruptions. It has contaminated the primary reservoir that supplies drinking water to Petropavl, the largest city in the region. As a result of the lack of drinking water, people have had to queue for water trucking that moves from one neighbourhood to another (DW 15/04/2024; RFE/RL 15/04/2024). Bottled water is considered a primary necessity (IFRC 11/04/2024).

Hygiene items, such as washing and toilet soap, toothpaste, toothbrushes, shampoo, washing powder, hygiene napkins, sanitary pads, diapers, and razors, are in high demand at evacuation centres (IFRC 11/04/2024).

Even before the flooding, the shortage of drinking water in Kazakhstan's rural areas was already a major issue because of the unequal distribution of Kazakhstan's water resources across macroregions. As at 2016, the eastern macroregion received 34.5% of total water resources, whereas the central macroregion received 2.6%, the north received 4.2%, the south received 21.2%, the southeast received 24.1%, and the west received 13.4% (EIR accessed 16/04/2024). The northern and central macroregions, which received the lowest water distribution, comprised five of the flood-affected regions: Akmola, Karaganda, Kostanay, North Kazakhstan, and Ulytau (EIR accessed 16/04/2024; IFRC 11/04/2024). Consequently, floods are anticipated to worsen pre-existing water-related issues.

Health

As at 8 April, the flooding had inundated eight cattle burial grounds and 14 anthrax burial sites in West Kazakhstan region (Meduza 08/04/2024). Floodwaters have the potential to disrupt the soil, which in turn may expose the spores that trigger anthrax. When this occurs, the floodwaters can move the spores to cattle grazing areas, and the bacteria can enter an animal's body through ingestion. Anthrax primarily affects ruminant animals, such as cattle, sheep, goats, and camels, but can also affect humans (OSU accessed 16/04/2024; MARK 2003). Humans can become infected through the consumption of contaminated meat or by inhaling spores (Mayo Clinic accessed 19/04/2024).

Contaminated water can also increase the transmission of a number of communicable diseases, including waterborne diseases such as typhoid fever, cholera, leptospirosis, and hepatitis (UNDRR accessed 16/04/2024).

Staff members and volunteers actively involved in evacuation centres are currently providing psychological first aid (IFRC 11/04/2024).

Food security and livelihoods

As at 19 April, close to 113,900 farm animals had been evacuated to safe places (Caravan 22/04/2024). According to information obtained from evacuated people, there have been huge losses in livestock, food stocks, and household goods (IFRC 11/04/2024). As at 7 April, the flooding had killed 5,711 animals, including 1,137 cattle, 4,051 small ruminants, and 457 horses (MARK 07/04/2024).

The floods have also affected grain warehouses and production areas, damaging seed material. Infrastructure destruction also limits farmers from properly preparing for the planting season (Forbes 16/04/2024).

The current flooding, which concerns such a large area of the country (ten out of 17 regions), has also affected agriculture. Grain-growing areas have been inundated, and many agriculture animals have been killed or evacuated, affecting the agriculture sector as a whole (Forbes 16/04/2024; IFRC 11/04/2024; Caravan 22/04/2024; MARK 07/04/2024).

Agriculture is an important component of the economic, social, and environmental development of Kazakhstan. The prevalence of livestock breeding in the country is a direct reflection of its nomadic heritage, as approximately 75% of agricultural land is dedicated to grazing (PS accessed 17/04/2024).

DRIVERS OF THE CRISIS

Climate change and melting of snow

The current spring flooding is occurring in the majority of Kazakhstan's regions as a result of rapid snow melting and river flooding (Radio Azattyk 01/04/2024).

Kazakhstan has a highly continental climate, with annual temperature fluctuations where the winter is extremely cold and the summer is hot. Prolonged freezing conditions characterise the winter in the northern region of the country. In certain years, temperatures have plummeted to as low as -52° C, while occasional thaws bring temperatures of up to 5° C. In contrast, during the summer, temperatures in the western region can exceed 35° C (WB accessed 16/04/2024; Cabar 02/08/2022).

Climate change has already affected Kazakhstan's climate. Heatwaves, in particular, are becoming increasingly common. For example, in 2020, the temperature rose by 1.92° C, surpassing the previous record of 1.89° C set in 2013 (UNDP 12/05/2023). The rise in temperature will increase the frequency of rapid snow melting during the snow melting period, which usually occurs in Kazakhstan between March–April (KazNU accessed 19/04/2024). Unlike rainfall, which quickly reaches the soil, snow retains the water for a significant period until it melts, resulting in a delay of water reaching the soil for days, weeks, or even months (NWS accessed 19/04/2024).

Kazakhstan is located in a desert region, making it highly susceptible to climate change (Kaliyeva et al. 2021). Between 2011–2023, the country experienced a succession of catastrophic floods in different areas, highlighting the recurring difficulties caused by natural disasters (Daryo 15/04/2024 a).

COMPOUNDING/AGGRAVATING FACTORS

Measles epidemic

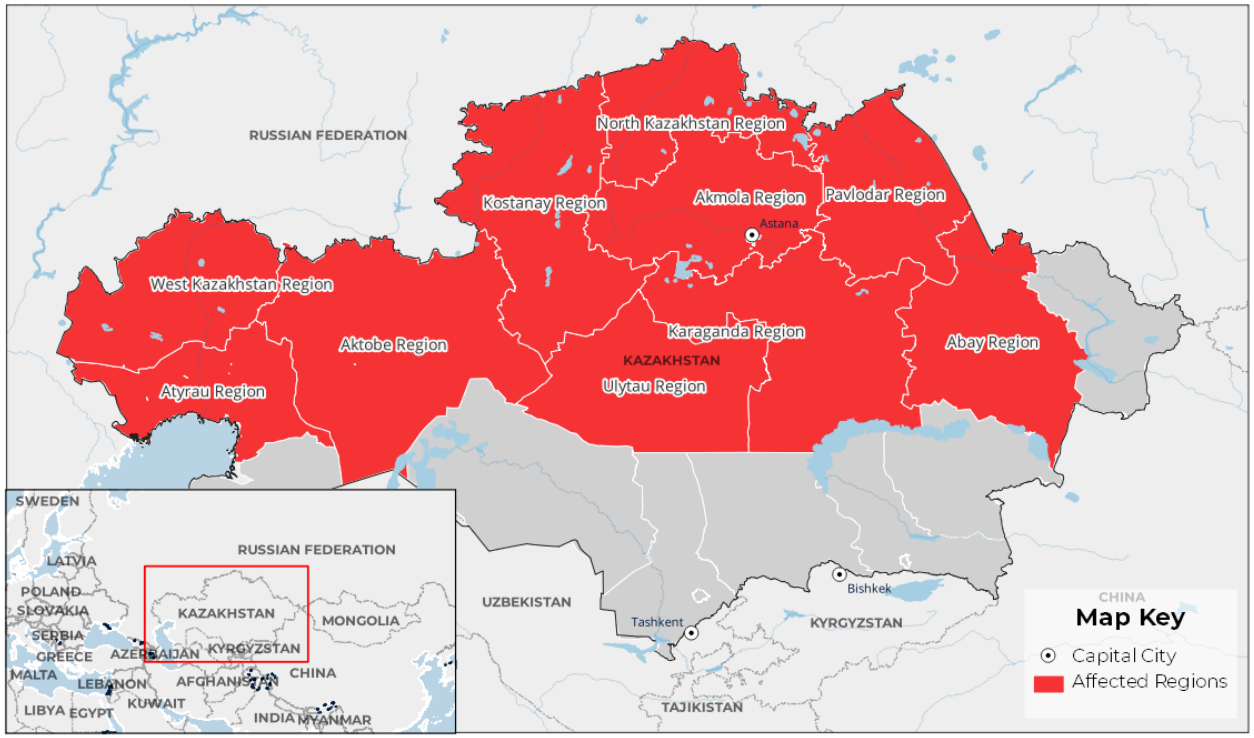
In late 2023, Kazakhstan faced a measles epidemic. The country reported a high incidence that year, with 13,677 cases overall, which corresponded to more than 639 cases per million people. The country recorded more than 11,300 cases among children below 14, 70% of whom had not received the measles vaccine. The spread of misinformation about vaccinations likely contributed to the outbreak (WHO 23/01/2024; Eurasianet 14/02/2024). As at 9 April 2024, the measles outbreak continued (WHO 09/04/2024). The displacement of people by flooding may result in an increased risk of disease spread if shelters are overcrowded and do not have adequate WASH services.

FUNDING AND RESPONSE CAPACITY

Rescue operations are being carried out by a variety of organisations and government institutions, including the Ministry of Emergency Situations, the Ministry of Internal Affairs, the Ministry of Defense, and local executive bodies. The State has also called upon the military, the police, and the national guard to assist with the evacuation of people, the pumping of water, and the establishment of water protection constructions (IFRC 11/04/2024).

The President of Kazakhstan has directed the Government to use the state reserve to assist those affected by flooding (BBC 11/04/2024). Considering the severity of the floods and the allocated budget in the affected areas, local authorities will provide one-time financial assistance to affected households. After evaluating the extent of the damage, the State has officially announced its commitment to assist in the repair and rebuilding of damaged houses. Local businesses, private funds, and individuals have also been organising fundraising efforts to provide assistance to the affected population (IFRC 11/04/2024). Kyrgyzstan's Ministry of Emergency Situations has declared the beginning of humanitarian aid delivery to Kazakhstan that will consist of 300 tonnes of humanitarian aid. UNICEF and the Red Crescent Society of Kazakhstan have also come to a joint decision regarding humanitarian cargo and transportation logistics (Daryo 15/04/2024 c).

MAP. FLOOD-AFFECTED REGIONS OF KAZAKHSTAN AS AT 8 APRIL 2024



Source: IFRC (11/04/2024)