

Floods are one of the world's most common natural hazards, causing losses amounting to about USD 40 billion per year. In Ukraine, 27 percent of the territory – home to almost a third of the country's population – is prone to flooding.

The Carpathian mountains and their foothills in Chernivtsi, Ivano-Frankivsk, Lviv and Zakarpattia oblasts are frequently hit by serious flooding, and other regions of western Ukraine often face large-scale negative effects from floods as well. For example, as a result of torrential rain in 2020, five administrative regions of Ukraine were declared the most badly affected: Chernivtsi, Ivano-Frankivsk, Lviv, Ternopil and Zakarpattia.

Torrential rain in these areas is becoming one of the most common causes of emergencies, threatening the lives and health of residents, causing death and injuries, and inflicting significant material damage. Scientific studies show that the hydrological cycle, influenced by climate change, will alter, increasing the intensity and frequency of devastating floods around the world.

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According to the latest data from the World Resources Institute (WRI), by 2030 the number of people suffering from river flooding will double worldwide, from **65** million to **132** million, and the amount of losses will increase by more than three times, from **\$157** million to **\$535** million.



## FLOOD PROTECTION OF TERRITORIES

As part of a flood risk management system



Until now, little attention has been paid simultaneously to all three elements (prevention, protection and preparedness) of the disaster risk management framework, including where related to floods caused by torrential rain. The lack of necessary prevention, mitigation and preparedness measures against climate change-related hazards is leading to a rapid increase in the resultant amount of damage and number of victims. Insufficient flood protection measures – which constitute a crucial component of a risk management system, equal to all others in importance – meanwhile increase the risk of flooding in urban and rural settlements, and in agricultural land, leading to local populations and economies suffering multi-million-dollar losses.

According to a report on the findings of an audit of the effectiveness of flood protection measures carried out within the National Target Programme on Water Resources Management and Environmental Rehabilitation of the Dnipro River for the period until 2021, no actual flood protection system has been created in Ukraine, and existing hydraulic facilities (dams, flood retention basins, etc.) are not being properly maintained. The report also notes that the largest share of funding (more than 84 percent) is channelled into land reclamation and improving the ecological state of irrigated and reclaimed lands. Only from 0.6 percent to 8.5 percent of the entire amount of funding has been allocated for the implementation of measures in other thematic areas, including comprehensive flood protection in the river basins of the western regions of Ukraine. At the same time, no steps were carried out for the maintenance and restoration of flood defence structures, no water gauging or hydrometeorological monitoring equipment has been introduced, and no planned resettlement assessments have been made.

**1. Prevention/Mitigation of negative effects** entails taking measures to prevent and/or warn of potential damage to human health, the economy, the environment and cultural heritage (for example, by preventing construction on a floodplain, ensuring sustainable water and forest management, improving monitoring, forecasting and the population warning system, cleaning rivers, etc.).

**Protection** is a set of structural (engineering) measures (for example: the construction of protective dams, riverbank flood defences, reservoirs, flood retention solutions, etc.) aimed at reducing the likelihood of flooding and/or mitigating its negative effects.

**2. Preparedness for response and recovery** is a set of measures aimed at improving the preparedness of the local population and communities for the possible effects of flooding (for example: the preparation of personal protective equipment, food, drinking water, medicines and first aid kits, fuel and lubricants for rescue equipment maintenance, the review of evacuation plans, etc.).

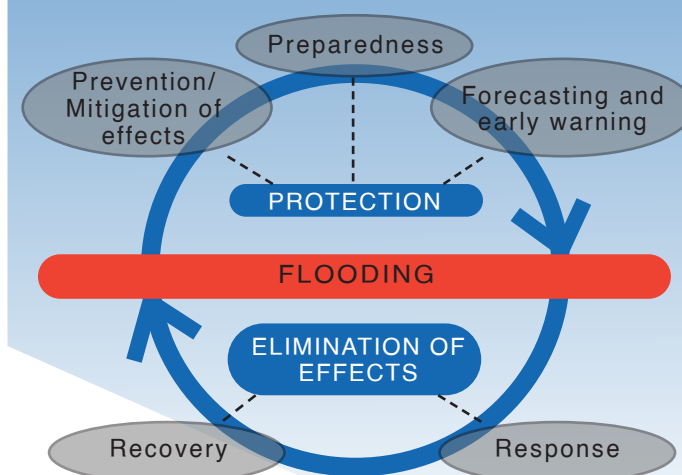
**Response** is a set of measures aimed at stopping the action or impact of disasters; rescuing the population and property; localising an emergency zone; and eliminating or minimising the effects of emergencies that endanger the life and health of the population and that cause damage to a territory, the environment, or property (for example: search and rescue, emergency medical care, evacuation of the population, etc.).

**Recovery** is a set of measures aimed at rapidly restoring the conditions preceding the flood, as well as mitigating social and economic impacts (for example: developing programmes for social protection, medical and psychological rehabilitation, etc.).



International experience shows that the most effective approach is to develop flood risk management programmes that include elements of *prevention, protection, emergency response and recovery*.

Within the implementation of Directive 2007/60/EC, work is currently underway in Ukraine on flood risk management plans, and the development of flood hazard and flood risk maps for selected areas within highly flood-prone river basin areas. As stated in Directive 2007/60/EC, flood risk management plans focus on *prevention, protection and preparedness*.



In Ukraine in 2020 there was an increase in the magnitude of recorded emergencies, and an increase in the assessed amount of losses by more than six times compared to the previous year. One of the greatest contributors to this was the devastating effect of torrential rain and resultant flooding in western Ukraine. A sharp rise in water levels in the region's river basins led to the flooding of 349 settlements, 14,300 houses, and 22,400 homesteads, along with damage to 3,500 farming facilities, destruction of and damage to more than 940 kilometres of roads, more than 140 kilometres of riverbank flood defence structures, more than 20 kilometres of dams, and more than 300 bridges. In

the most affected Ivano-Frankivsk Oblast, five people, including one child, were killed by the flooding.

The effects of the 2020 floods in the western regions of Ukraine thus once again demonstrated the importance of coordinating efforts to manage risks from flooding disasters. Flood risk reduction is a set of measures that aims to control the factors that cause flooding, reduce the likelihood of their occurrence, and mitigate potential adverse effects, while also reducing the vulnerability of the local population/property and increasing their preparedness for, and recovery from, disaster events.



UNDP recommendations:

**1.** Introduce a flood risk management approach that includes all three elements of the risk management system (prevention, protection, and preparedness for response and recovery).

**2.** Improve the implementation of flood protection measures, both structural (engineering, such as the maintenance, restoration or construction of flood defences), and non-structural (such as introducing programmes to resettle people from high-risk areas, cleaning and stabilising riverbeds, and improving flood-risk monitoring, early detection, public education, and public awareness of flood risks.)

**3.** Eliminate shortcomings in the system of financing structural (engineering) and non-structural flood protection measures.

