



DISASTER RISK REDUCTION FOR INFRASTRUCTURE AND WASTE MANAGEMENT

Goal

The goal of this project initiative is to lay the foundation for a larger programme that aims to reduce the potential negative human health and environmental impacts of a significant incident, such as flooding, wildfire or technological event.

Such events can lead to, for example, spillage of hazardous substances into the surrounding natural environment or generation of huge quantities of solid waste which overburdens the waste management system – both of which lead to substantial public health risks.

Focus

The focus of the activities is on **derelict industrial infrastructure and solid waste management**, two areas that often overlap in potential negative socio-economic impacts and are both vulnerable to a range of disaster incidents.

This will be in the context of ongoing broader Disaster Risk Reduction (DRR) initiatives in Ukraine and will provide specific results within these two focus areas to demonstrate on-the-ground benefits.

Approach

By focusing on specific disaster vulnerable regions, the project will work with the relevant local authorities and stakeholders to reduce negative impacts of the disaster event by:

- Identifying key risks aligned with the 'risk passport' mechanism for the regions
- Projecting potential outcomes of an incident and assessing current response mechanisms
- Developing mitigation measures and associated training programmes for DRR
- Preparing "Preparedness Plans" for the region based on identified risks and associated mitigation

This will be through a range of facilitated and structured workshops, review of relevant Ukrainian studies and global best practice and development of a concept paper for each region detailing proposed way forward in Disaster Risk Reduction for Infrastructure and Solid Waste.



Photo 1: A flood-damaged building along the Limnytsia river bank near Kalush, the major petrochemical and extractive industry area of western Ukraine.

Photo 2: A railway bridge into Donetsk has been destroyed, blocking a key route into the city. UA, Donetsk, 2014.

Photo credit: Roman Olearchyk

Regions

Within Ukraine there are numerous regions vulnerable to disasters triggered by natural hazards or having derelict and run-down industrial infrastructure. From UNDP's own programmes and consultations the following regions are included in this project initiative:

Flooding	Flooding & Industrial Facilities	Industrial Facilities & Conflict Debris	Wildfire
Ivano-Frankivsk and Chernivtsi (Western Ukraine)	Kalush area of Ivano-Frankivsk region	Donetsk and Luhansk (Eastern Ukraine)	Zhytomyr and Kyiv (Northern Ukraine)

Flooding...

...leads to waste landfills and dumpsites being washed away, waste entering the rivers and subsequently the sea as well as flood waters damaging buildings that need repair/demolition. Recovery efforts generate large quantities of solid waste and debris that overburden the waste management systems and can result in uncontrolled dumping of waste which in turn decompose and attract vermin and vectors as breeding ground for diseases.

Preparedness plans can provide guidance on securing items prior to flooding, pre-event contracts for clean-up being agreed, pre-determined locations for

waste storage and treatment and disaster waste recycling concepts. UNDP has experience of developing disaster waste preparedness planning. Furthermore, improved waste management reduces the risk of drainages being clogged with waste which in turn can be a cause of increased urban flooding. Meanwhile, poor riverbed governance leads to uncontrolled growth of alluvium deposits and the vegetation thereon, impacting the direction of water streams and strengthening the destructive effect of currents in a flooding event, getting the risk generation process viciously cycled and begging for policy responses as well as the routine clean-up

arrangements to be institutionalized at community levels.

Derelict industrial sites...

...gradually degrade leading to structural failure of tanks, pipelines and site systems. This results in spillages of hazardous substances, chemicals and wastes into the natural environment and ultimately into both the groundwater as well as air. Within this context are also included mining activities where large mine tailings are located which may be at risk of subsidence/collapse following flooding or geological activities.

Through this initiative a target administration will prepare a risk



Photo 1: A partner from the EU assesses damage to an apartment building in Ukraine, 2016.
Photo credit: EU

Photo 2: Handling hazardous waste following 2009 Victoria Bushfires.
Photo credit: EU

Photo 3: Debris from flooding in Germany 2021.
Photo credit: REUTERS/Thilo Schmuegen

register for the industries in the region with risk ranking for the sites as well as mitigation measures based on:

- **Type of industry** which informs which onsite materials and wastes may be present;
- **Condition of the site**, i.e. are chemical and fuel storage tanks secure or dilapidated, is radioactive contamination a risk or are the mines flooded and waters mixed with mine tailings;
- **Proximity to sensitive receptors** such as residential areas and water courses with identification of pathways for contamination; and,
- **Mitigation and monitoring mechanisms** to reduce the risk

and impact of structural failure.

Wildfires...

...leading to widespread damage to nature and the built environment including homes, industries and transport routes. The clean-up works generate significant quantities of debris which can be hazardous. In addition, damaged structures pose a threat to public safety and health requiring prompt and safe removal enabling early recovery for the communities.

Preparedness planning can project the requirements for such clean-up works and focus on timely support to affected communities through a combination

of self-help tools and equipment, pre-event contracts with relevant contractors, waste identification approaches to support correct management of hazardous wastes and more.

Post Conflict clean-up works...

...require a holistic approach incorporating explosive remnants of war (ERW), debris removal with demolition of damaged buildings, land ownership and opportunities for recycling the debris into (re)construction materials. Many of these activities are aligned with the DRR approaches for Infrastructure and Waste Management and synergies will be explored for the relevant regions.