

12.2 Hazard Map of the Danube Delta (UNECE)

OECD GP Activity	UN SF Activity	UN SD Goals / Targets
12. Natech risks in transfrontier or international cooperation	2. Strengthening disaster risk governance to manage disaster risk	17.6 Enhance ... regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing ...

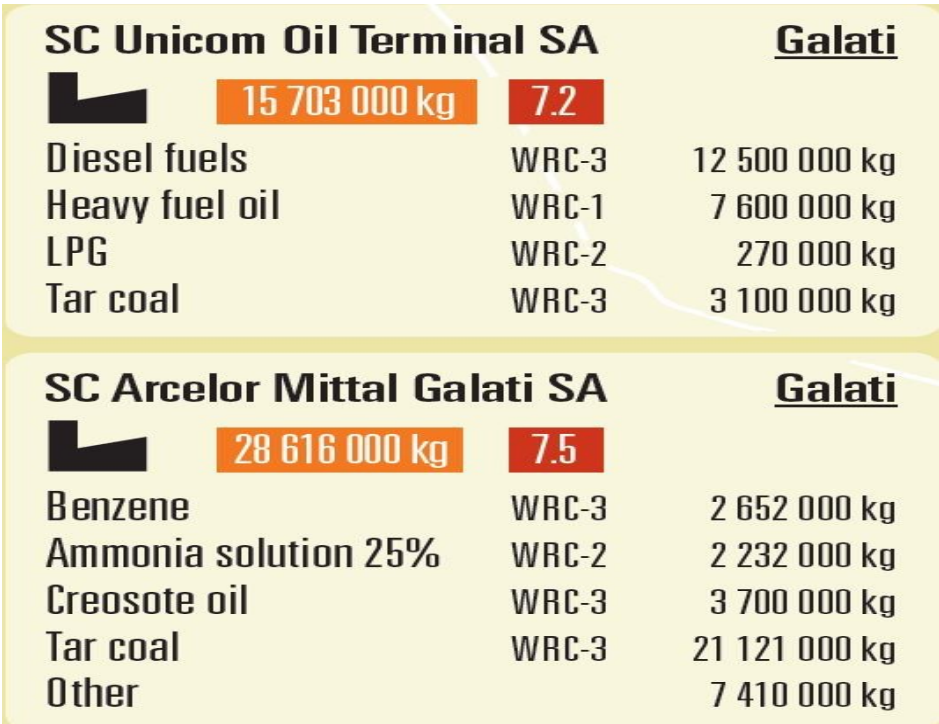
Classification according to OECD Guiding Principles, UN Sendai Framework Priorities/Activities, and UN SDGs and Targets

Figure 1: Hazard Map for the Danube Delta



Source: © United Nations Economic Commission for Europe (ZOI Environment Networks, 2016)

Figure 2: Zoom on two examples of standardized keys for hazardous facilities



Source: © United Nations Economic Commission for Europe (ZOI Environment Networks, 2016)

Short Facts:	Natural Hazard(s) Considered:
<p>Governance approach: International cooperation</p> <p>Source: UNECE Industrial Accidents Convention, Republic of Moldova, Romania, Ukraine</p> <p>Entry into force: 2010</p> <p>Targeted Stakeholders: Relevant Authorities for the Development of Disaster Risk Maps</p> <p>Scope of applicability: International, regional, catchment areas</p>	<ul style="list-style-type: none"> Floods Extreme weather events Earthquakes Landslides Forest Fires <p>Climate change: Not considered</p>

Description

The hazard and crisis management in the Danube Delta, Europe’s largest remaining natural wetland, is very good example of international cooperation. In order to protect it from industrial accidents, and to enhance cooperation on industrial accident prevention, preparedness, and response, the Republic of Moldova, Romania, and Ukraine jointly implemented the UNECE Project on Hazard and Crisis Management in the Danube Delta (Danube Delta project, 2010–2015). This project was carried out under the Assistance Programme of the UNECE Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention).

As part of this project, a ‘hazard map’ of the Danube Delta region was prepared, which identifies the location of oil terminals, oil extraction, water treatment facilities, and other facilities containing hazardous substances in the Delta region that are likely to cause water pollution in the event of an accident. The map classifies these industrial hazards in a harmonized way, helping three countries understand, share and update information on each hazardous facility within and across country borders. The preparation and utilization of this hazard map helps the countries be better prepared for Natech events. It elaborates on vulnerability and risk maps using a dedicated GIS mapping system, to inform decision-makers and industry of the various hazards in the region:

natural disasters such as floods, severe storms, earthquakes, landslides, and forest fires, as well as technological disasters such as industrial accidents. A risk matrix was developed for estimating the risk of flooding that could trigger industrial pollution of the water systems, and integrated into the hazard map as a 'water risk index'.

The hazard map is an example of transboundary cooperation among riparian countries in the UNECE region, particularly in relation to developing common criteria for the elaboration of natural hazard maps to reach a common standard in hazard mapping. It assisted countries to better understand and reduce the risks (particularly water risks to the Danube Delta) associated with the hazardous industrial activities, namely oil terminals, in that region, and to update their crises management accordingly. By enhancing the mechanisms and approaches for efficient and effective hazard and crisis management, the countries can effectively work together to reduce and risks and impacts associated with Natech events.

Table 1: The risk matrix for estimating the risk due to industrial pollution

Probability				Consequences				
				Negligible	Minor	Major	Hazardous	Catastrophic
				1	2	3	4	5
Extremely improbable	$<10^{-12}$	1		1	2	3	4	5
Improbable	10^{-8} la 10^{-12}	2		2	4	6	8	10
Remote	10^{-6} la 10^{-8}	3		3	6	9	12	15
Occasional	10^{-4} la 10^{-6}	4		4	8	12	16	20
Extremely certain	$>10^{-4}$	5		5	10	15	20	25

(Red being the greatest risk of pollution) adapted to the amount of risk, according to the Directive 93/67 / EEC (European Commission, JRC, 2003). Source: UNECE

Link/Contact:

<http://www.unece.org/env/teia/ap/ddp.html>
<http://193.231.20.119/doctorat/teza/fisier/2696>

Comments by the UN/OECD Natech-Steering Group:

This is a useful example of cooperation in the elaboration of common criteria which allow uniform communication of risks e.g. by mapping of natural hazards and technological risks.

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