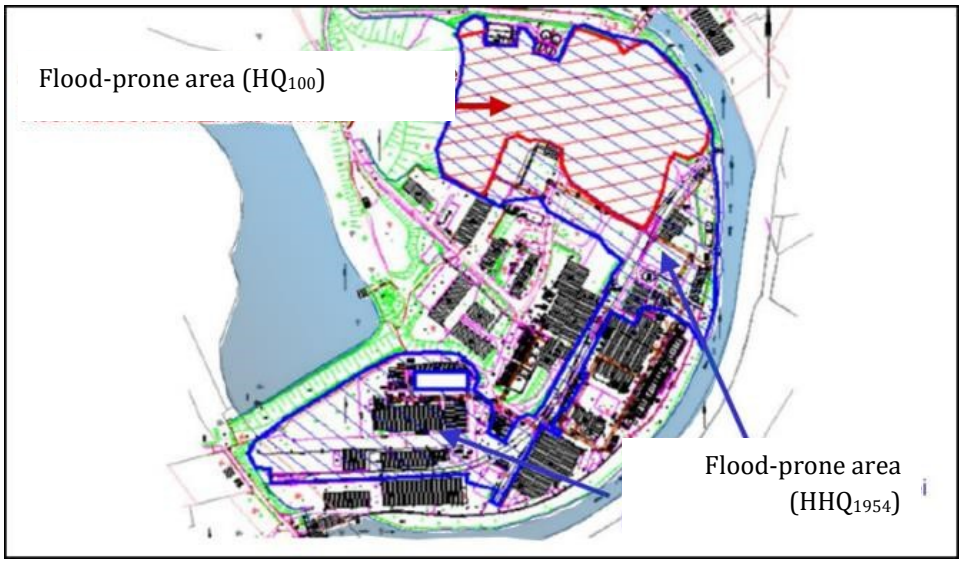
4.2 Flood Risks Analysis (Germany)

OECD GP Activity	UN SF Activity	UN SD Goals / Targets
4. Natech prevention: consideration of natural hazards in design and layout	5. 'Build Back Better' in recovery, rehabilitation and reconstruction	Non-specific targets relevant for Natech Risk Management (3.8, 6.3, 9.4, 11.5, 11.B, 12.4)

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

Figure 1: Map of a site showing flood prone areas and areas flooded in 1954



Source: © Köppke et al., 2013: Prevention and preparedness due to hazards by precipitation and floods

Figure 2: Site flooded in 1954

Source: © Köppke et al., 2013: Prevention and preparedness due to hazards by precipitation and floods

Short Facts:	Natural Hazard(s) Considered:
Governance approach: Codes **Source:** Ing.-Büro Prof. Dr. Köppke GmbH, German Environment Agency (UBA) **Entry into force:** **Targeted Stakeholders:** Operators, authorities, assessors/safety experts and other stakeholders **Scope of applicability:** Enterprises, sites, installations	• Flood **Climate change:** Can be included

Description

A flood-risk analysis was carried out for a company in the chemical industry, including a review of the existing measures to prevent flooding of the site. The plant and its production facilities are located in a river loop. In the north and south the plant is bordered by a river. In addition, the site is limited by a dam of a reservoir. Heavy rainfall in 1954 caused major flooding. There are numerous installations on-site that are subject to the German Hazardous Incident Ordinance.

With the help of flood risk maps, an altitude map and the analysis of a historical event of 1954, the flood-prone areas of the site were accurately identified. The water level could be determined for all endangered parts of the plants. The study also examined how much the level of the reservoir can rise in extreme rainfall events. Due to the known water level the designs of all technical measures (protection wall, channel closures, flood pumps etc.) were checked in 2007. The protection wall was designed for a flood event that statistically occurs once in 100 years.

In 2013 another flood threatened the factory site. Approximately 20% of the factory premises were flooded, but no production facilities were affected. All production facilities were shut down in time. The risk analysis showed that the protection wall was designed correctly. The results of the risk analysis were confirmed. The inundation was caused by the heavy rainfall. However, the wastewater treatment plant of the enterprise caused problems when the plant attempted to restart production; it resumed only after the wastewater treatment plant had been put back into operation.

Link/Contact:

Prevention and preparedness due to hazards by precipitation and floods. Report of the German Federal Environmental Agency, 2012
https://www.umweltbundesamt.de/sites/default/files/medien/461/publikationen/4447.pdf
Roland Fendler, https://www.umweltbundesamt.de/en Worked_examples.pdf

Comments by the UN/OECD Natech-Steering Group:

The example demonstrates the successful implementation of the results of a flood risk analysis.

Imprint

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