

Importance of development of flood disaster prevention and mitigation strategies

According to the available statistics, floods and storms (hydrological and meteorological hazards) are among the most common disasters worldwide (Fig. 1), with floods prevailing for the last couple of decades. When reviewing other disaster indicators, we can note that for the last century the total number of people killed during the disasters can be characterized by overall decreasing trend (Guha-Sapir et al. 2016), however the total number of affected people, as well as total economic damage are noticeably increasing (Fig. 2, Fig. 3). Floods and droughts are the two types of the disasters which affect the biggest number of people (Guha-Sapir et al. 2016).

While the increasing trend in the total number of the reported disasters can be clearly seen through the available statistics (Guha-Sapir et al. 2016), the floods are among the most common disasters, especially in the recent decades (Fig. 1), while as an extensive events, they can affect a lot of people. Flood itself is a general term for the overflow of water in various forms, for instance, European Union Directive 2007/60/EC on the assessment and management of flood risks introduce Flood as “the temporary covering by water of land not normally covered by water” (EU 2007). According to IRDR’s “Peril Classification and Hazard Glossary” (IRDR 2014) at least three types of floods can be identified:

- Riverine Flood “A type of flooding resulting from the overflow of water from a stream or river channel onto normally dry land in the floodplain adjacent to the channel.”
- Coastal Flood “Higher-than-normal water levels along the coast caused by tidal changes or thunderstorms that result in flooding, which can last from days to weeks.”
- Flash Flood “Heavy or excessive rainfall in a short period of time that produce immediate runoff, creating flooding conditions within minutes or a few hours during or after the rainfall.”

Fig. 1 Total Number of reported Natural disasters between 1900 and 2015 (EM-DAT)

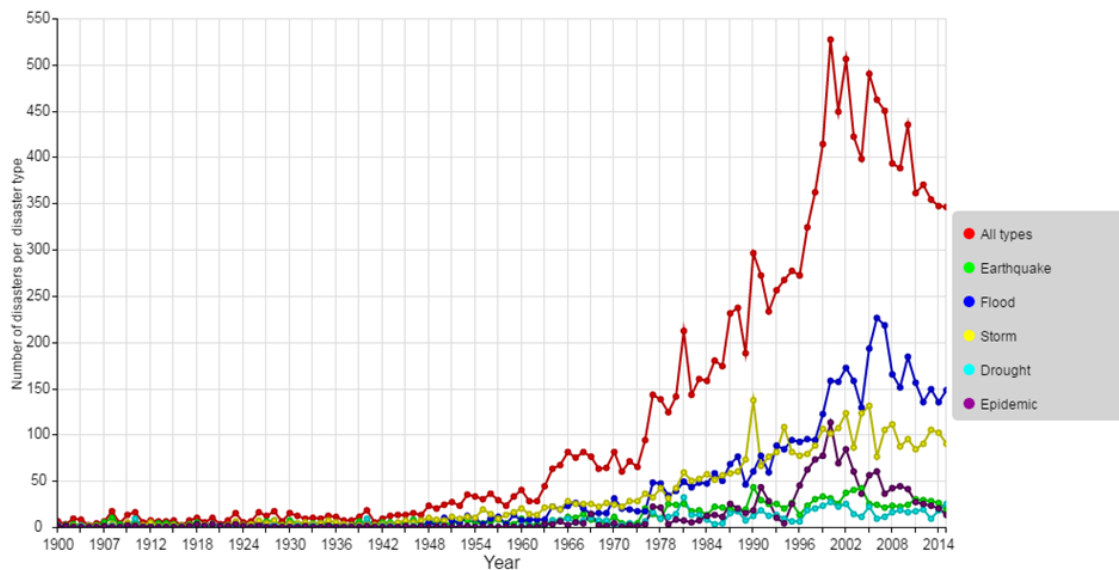
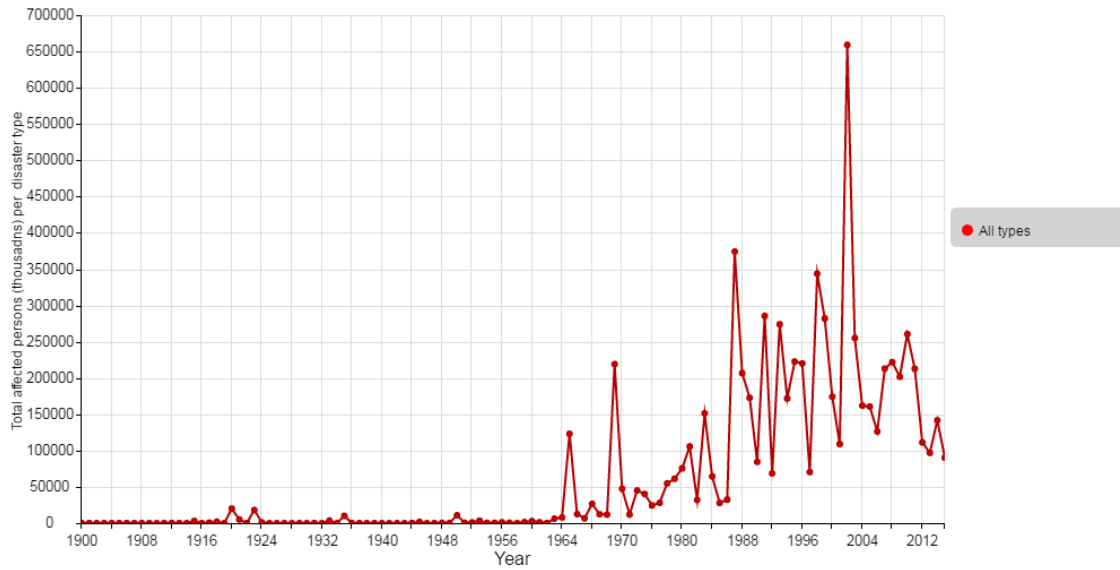
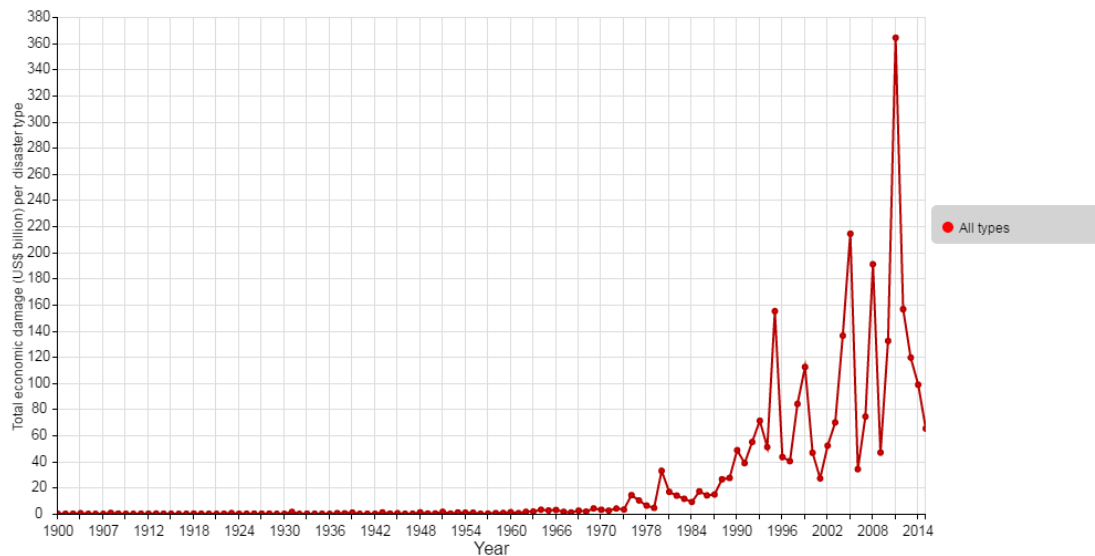


Fig 1 Total affected persons by reported Natural disasters between 1900 and 2015 (EM-DAT)



EM-DAT: The OFDA/CRED International Disaster Database - www.emdat.be - Universite Catholique de Louvain, Brussels - Belgium

Fig 2 Total Economic Damage caused by reported Natural disasters between 1900 and 2015 (EM-DAT)



EM-DAT: The OFDA/CRED International Disaster Database - www.emdat.be - Universite Catholique de Louvain, Brussels - Belgium

Disaster Management Cycle (or Disaster Phase Model), which describes the disastrous event in four stages (mitigation, preparedness, response and recovery), remains the most commonly used and widely applied model in emergency management (Dahlberg *et al.* 2015). Below are presented definitions of these main stages, according to the UNISDR terminology on disaster risk reduction (UNISDR 2009), yet these definitions may vary depending on the specific organization or country (for example, prevention instead of mitigation, etc.) (Table 1).

Table 1 Definitions of main stages of Disaster Management Cycle (UNISDR 2009)

Stage	Definition
Mitigation	The lessening or limitation of the adverse impacts of hazards and related disasters.
Preparedness	The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.
Response	The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.
Recovery	The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Dahlberg, R., Rubin, O. and Vendelø, M.T. (ed). 2015. Disaster Research: Multidisciplinary and international perspectives. Routledge.

EU. 2007. Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks (Text with EEA relevance) Official Journal of the European Union.

Guha-Sapir, D., Hoyois, P. and Below, R. 2015. Annual Disaster Statistical Review 2014: The numbers and trends. Brussels, Belgium, Centre for Research on the Epidemiology of Disasters (CRED), Université catholique de Louvain.

IRDR. 2014. Peril Classification and Hazard Glossary (DATA Project Report No. 1). Beijing, Integrated Research on Disaster Risk.

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