

SURE Highlights

Shaping Sustainable
Urban Regions



Sustainable Development
of Urban Regions

Multiple Risks Management of Extreme Events in Fast Growing (Mega)cities in Myanmar

MYrisk focuses on disaster risk reduction and management of multiple risks in the megacity of Yagon and further fast growing cities in Myanmar, for the public and private sectors, academia and the civil society. Yangon and other megacities in the Global South face enormous challenges due to rapid economic and urbanisation dynamics and are additionally threatened by multiple hazards, such as earthquakes, floods, cyclones or pandemics. The overall goal of the project is to develop an Integrated Multiple Disaster Risk Management (IMDRM) for Yangon and other cities in Myanmar to strengthen the resilience for urban societies to disasters. This holistic concept is based on transdisciplinary urban risk and resilience research.

Main Results

MYrisk developed scientific, integrated concepts for maintaining and ensuring the provision of basic services and for risk prevention, implemented locally and transferred them to other (mega)cities. In the partner cities in Myanmar, Yangon, Mandalay and Taunggyi, six household surveys, seven private sector surveys and more than a hundred expert interviews with key informants from the public sector were conducted. In addition, more than 50 workshops have been held on a variety of topics related to disaster risk reduction. On this basis, new insights were gained into risk perception and preparedness, as well as institutional risk prevention, crisis communication and crisis management. The collection of data on previous tropical cyclones, floods and earthquakes, as well as the systematic processing of risk-related data provides insights into past disaster management and the consequences of such extreme events and improvements in disaster risk management in Myanmar.

The analysis of both primary quantitative and qualitative data served to improve the risk communication and cooperation concepts and to develop local disaster risk reduction concepts. For Yangon, a holistic integrated concept for the management of multiple disaster risks was developed for the first time, accompanied by information and qualification programmes to reduce the consequences of multiple risks for a tropical megacity.

A water risk check was developed for the German city of Cologne as an online advisory tool for flood prevention for private households. The tool combines the Cologne flood hazard maps with guidelines and expertise to provide initial assistance in planning measures. This tool was transferred to Yangon based on the information, data and tools available and usable in Myanmar. In addition, the Cologne Fire Department worked with representatives of public institutions in Yangon on extreme,

disaster and emergency situations, as well as on evacuation plans and strategies for the cities.

Furthermore, educational and awareness-raising concepts for protecting of personal documents and economic foundations were developed, along with disaster preparedness concepts for system-relevant micro-, small- and medium-sized enterprises (MSMEs) to secure critical infrastructure. In parallel to the research activities in Myanmar, MYrisk also surveyed 775 MSMEs in Cologne. This study revealed that only 17% of these enterprises have an emergency plan for natural disasters, indicating a lack of awareness of the importance of emergency plans in Germany as well. MYrisk used Innovative methods for risk analysis and visualisation in urban areas, developed by integrating existing databases with high-resolution remote sensing data.

» Managing Extreme Events and Multiple Risks in Fast Growing (Mega)cities in Myanmar.«

Impacts

- Development of a holistic, socio-culturally adapted, integrated multiple disaster risk management concept for fast growing tropical (mega)cities.
- Reduction of the impact of multiple disaster risks for civil society, private companies and public institutions.



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www.myrisk.uni-koeln.de



R&D Phase – Project Duration

05/2021 – 04/2025

German Partners

- University of Cologne
- Flood Control Center of the Municipal Drainage Operation Cologne
- Cologne Fire Department
- German Committee for Disaster Reduction

Asian Partners

www.sustainable-urban-regions.org/project/myrisk

Selected Publications

- Heinkel, S.-B. et al. (2025). Institutional risk and crisis communication on natural hazards and disaster risks in Yangon, Myanmar. *International Journal of Disaster Risk Reduction* 116: 105064.
- Zin Mar Than et al. (2023). Disaster risk perception and preparedness of households in Yangon, Myanmar: Disaster experiences, socio-demographic factors and spatial variation. *Erdkunde* 77 (4): 303-321.

Looking into the Future

- Increased disaster risk awareness, improved preparedness and capacity enhancement in civil society, research and education, public institutions and private companies.
- Guidelines for emergency and evacuation plans for public institutions and private companies (MSMEs).
- Exchange platforms for sustainable 'build back better' strategies.



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For more information visit

www.sustainable-urban-regions.org

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