

URBAN FLASH FLOOD MITIGATION IN EMERGING AND LEAST DEVELOPED COUNTRIES; A RESEARCH AGENDA AND LEARNING PROGRAMME

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Losses as a result of urban flash floods are increasing because of human activities and geophysical factors. Large parts of least developed and emerging countries are witnessing rapid and uncontrolled urbanisation, increasing climate variability will likely result in changing precipitation patterns and more extreme weather events, and ongoing deterioration of the natural environment will alter hydrological runoff processes drastically.

The direct and indirect impacts of urban flash floods are often devastating due to their short warning time and usually cause a severe backlash on the development of urban areas, the engines of socio-economic progress in least developed and emerging countries. The extreme loss potential in urban areas is the result of high population densities, capital intensive and vulnerable economic assets, complex and often poorly designed and maintained drainage systems, and obviously the urban environment itself with limited pervious surfaces. Nowadays, human activities are expanding into more hazardous areas, which usually puts considerable investments at risk. Moreover, the urban poor are often disproportionately affected as they are forced to live in increasingly marginal areas and lack the capacity to cope with hazardous events.

Despite of the suspected draconic influence on socio-economic developments, urban flash floods are not systematically documented and little sound scientific data and knowledge exists on their (short and long-term) impacts. Holistic and integrated approaches to assess, analyse and mitigate the risks are generally lacking. Urban flash flood mitigation is often not integrated in the spatial planning process, neither is part of Integrated Water Resources Management. Consequently, flash flood mitigation is hardly taken into account during the development of infrastructural investments and has practically no place in designing insurance coverage's. Knowledge and intelligence on best practices is not available to practitioners, and the political will and awareness to implement mitigation measures is often negligible.

One of the major research and capacity building challenges in the coming decades is to find appropriate triggers and incentives to apply and implement feasible and sustainable urban flash flood mitigation and recovery strategies. The problems that arise with mitigating urban flash floods are often a reflection of political reality, due to a complex aggregation of stakeholders, socio-economic issues and (non-) technical aspects. The need to focus on sustainable and community-based mitigation measures is inevitable, but also provides challenges by linking up with structural poverty alleviation. The existing knowledge base on the incidence and impacts of urban flash floods is rather fragmented and has to be strengthened to develop a sound scientific basis to achieve sustainable and feasible solutions,

which should be found in a combination and integration of structural and non-structural measures, policy-making and planning, vulnerability reduction, capacity building, etc.

Hence, an integrated research agenda and learning programme, which primarily focuses on emerging and least developed countries, is elaborated to increase the awareness among catchment and urban authorities, to integrate feasible flash flood mitigation strategies, to stimulate sustainable economic development and to attain the Millennium Development Goals by alleviating urban poverty. Outcomes of research and capacity building activities should provide stakeholders with an applicable set of tools to mitigate urban flash floods more effectively.

Collecting and systemising documentation of flash flood events and their impacts in a database will contribute to the development of holistic and integrated approaches to assess, analyse and mitigate the risks involved.

In order to document flash flood events, mitigation efforts and lessons learnt, case studies in various countries and continents should be elaborated, focusing on a wide variety of impacts. The findings of these studies contribute to the development of innovative approaches to enhance the adaptation of integrated and holistic strategies for urban flash flood mitigation.

A continuous dialogue with (multi-disciplinary) stakeholders from the public and private sector as well as civil society is of utmost importance to develop innovative mitigation approaches and to ensure that research activities remain rooted in the day-to-day reality.

The synthesis of case studies primarily focuses on best and worst practices, which give input to the development of impact and gender sensitive assessment methodologies and policy frameworks for integrated urban flash flood mitigation. A toolbox with various methodologies and instruments contributes to the assessment of for instance short and long-term impacts, the implementation of strategies, the execution of flood risk analysis, etc.

A flash flood forecast or warning is only successful when it is disseminated and presented in a way, which allows the public to actually receive, understand, believe and act upon the information. The development and implementation of simple, effective and low cost warning methodologies and tools, including appropriate institutional frameworks, will reduce the loss of life in slums and lower-class urban areas.

The development of policy frameworks and innovative coping and mitigation strategies has to focus on amongst others the integration of catchment management and urban planning.

Regional Training (for Trainers) programmes have to be developed for various groups of stakeholders and should be handed over to relevant educational and training institutes after careful assessment, testing and evaluation.

Urban flash flood intelligence basically refers to the capacity to acquire and apply knowledge to innovatively adapt to, and/or solve a broad array of problems. A series of best practices to increase the awareness of, cope with, and mitigate urban flash floods has to be developed, which can be used as guidelines for urban planners and decision makers, policy makers and researchers, leading to both sustainable flash flood mitigation as well as poverty alleviation.

Due to the fragmented character of the existing knowledge base on urban flash floods, a network of various research and knowledge institutes and international experts should be established to exchange and disseminate information, knowledge and intelligence. Furthermore, communities of practice will share experiences and lessons learnt. These activities will contribute to the practical applicability of methodologies and instruments, the knowledge base and its dissemination.