

# Increasing Capacity for DRR/CCA at the Community and Subregional Levels

## Development of ICT & Knowledge Management Applications to deal with Urban Floods



Recent catastrophic floods in cities in developing countries have highlighted the importance and urgency of urban flood management.

Rapid urbanization with unplanned land use, coupled with increasing intensity of rainfall, has contributed to devastating floods in urban areas across many parts of the world.

The problem is aggravated by aging infrastructure, and general lack of real time scientific and technological intervention within decision making and poor management of urban drainage systems

## Overall Aims:

**poorly managed response to urban floods** to a highly efficient, automated, human-computer interaction, and sensor technology driven end-to-end management

use of **sensor and communication technologies** coupled with ultra-high resolution (~ 100 m) real-time nested forecasts of rainfall, **state-of-the-art hydrologic models**, downscaled analytical models for point scale information

Initial focus will be on convective rainfall that results in high intensities. These events are embedded within the monsoon rainfalls but are highly localized, and difficult to predict using continental scale monsoon models

**citizen driven portal** with crowd sourcing capabilities to upload digital pictures or tweets on the flood levels will be tested for its ability to provide visual, numerical input to complement the sensor data

## The CATALYST-Local perspective:

The project will also bring-in the **knowledge base developed through previous initiatives**, such as the EU funded **CATALYST**, into its project design to eliminate duplication of efforts and to ready-to-use or dispatch resources for preparedness, post-flood rescue and recovery processes.

## Technical Objectives:

(a)...(e): scientific objectives

### CATALYST related:

(f) to lead the **development of post-flood management training and educational material.**

(g) to create **public awareness programs**, a knowledge management and delivery system by **involving communities** in preparedness, post-flood rescue and recovery processes

**Work package 1: Development of locally relevant flood hazard risk reduction training and educational material.**

**Institutional and cultural analysis** – local institutions are analyzed in terms of the current governance of DRR/CCA responses to flood hazards;

**Hydrological physical analysis.** The **vulnerability and exposure of urban areas in the context of a larger catchment analysis**. The catchment with rivers and streams constitutes the boundary condition of urban flooding in urban areas. This includes transboundary issues.

**Climate change consequence analysis.** The **hydrological impact of urban flooding as impacted by climate change**. Consequence analyses of various scenarios following climate projections

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**Bayesian Belief Networks.** The use of **BBN to support participatory processes** for identification of flood hazard issues.

**Cultural analysis** – analysis of **local perceptions** of flood hazards

**Requirements analysis** – the **needs for DRR/CCA in the locality** will be identified with respect to flood hazards;

**Participatory knowledge product identification** – the **flood hazard-related CATALYST knowledge products** that match the requirement of the locality, and that are potentially relevant to **linguistic, cultural and institutional and physical / hydrological context of the municipality**, are identified in collaboration with local practitioners as well as local communities identified in WP3;

**Knowledge product interpretation and tailoring** – the identified **CATALYST knowledge products are translated into locally relevant capacity development material**;

**Training and dissemination** – **practitioners' training workshop in the locality, based on the locally relevant capacity development material**, will be undertaken with key local practitioners in flood hazard management (30 participants per workshop). Distance learning opportunities will be provided via the citizen portal (WP2). **Locally relevant capacity development material** will be disseminated via this portal as well

## Work package 2: Development of the citizen portal

This work package includes the following activities:

**development of a citizen portal** to be integrated into the flood forecasting system.

This citizen portal will include:

**a knowledge management system (in English and the local language)** providing up-to-date **knowledge and information to support local communities** in preparedness, rescue and recovery with respect to flood hazards.

**a multi-media interface to allow community participation in monitoring**, e.g. via **crowd sourcing capabilities** to upload digital pictures or tweets on the flood levels, as source of complementary data input to the forecasts .

**a multi-media interface to provide flood forecasting information useful and usable by local communities**

**a multi-media interface to access and share knowledge** from the knowledge management system the citizen portal will make use of paper, online and social media to make it **accessible to local communities** identified in WP3.



### Work package 3: Public awareness programs

**create information material** in the **local language** regarding the availability of the flood forecasting system, and the citizen portal (WP2). This material would be made available on flyers, webpages, and social media;

**awareness-raising** - community and neighbourhood groups in the urban area would be identified, with the support of local government, and 30 community, street, workshops (10 local people) would be organised with these groups providing **training on: flood hazard risk reduction and planning for communities** (using material developed in WP1);

flood forecasting system being developed by the project and the role that communities can play in supporting it and using it via the citizen portal;  
the knowledge management system (developed in WP2) and the role that communities can play in supporting it and using it via the citizen portal;

**garner community group support** for the proactive use of the citizen portal