Global Water Partnership South Asia

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MANAGEMENT OF URBAN FLOODS IN DHAKA CITY

Background

Dhaka, the capital of Bangladesh is a large city which provides a home for around 20 million people. Presently the city faces a number of environmental and other hazards such as urban and river flooding, water logging, earthquakes, fire hazards, traffic congestion and different anthropogenic problems. The city is surrounded by a network of rivers; the Buriganga to the south-west, the Turag to the north-west the Balu to the north-east and the Shitalakhya to the south.

Dhaka receives about 2,000 mm of rainfall annually, of which almost 80% falls during the monsoon. Floods are one of the main natural hazards affecting the city and are associated with river water overflow and rain water stagnation. The city has become more vulnerable to intense urban flooding due to heavy and unpredictable rainfall in recent years. The drainage capacity of the city has also decreased alarmingly due to development of unauthorized settlements. Illegal occupation of drainage canals and wetlands by land grabbers has further contributed to the problem.

The western part of Dhaka city is protected from river flooding by an encircling embankment. During most of the monsoon period, the water level of the river remains higher than the water level inside the city area. This indicates that the city drainage is heavily dependent on the water levels of the peripheral river systems. Hence, draining of water by gravity flow is not always possible. In order to facilitate and improve storm water drainage, installation of drainage pumps at some of the flood control and drainage (FCD) structures connected to rivers, has been considered.

Objectives of the Project

The aim of the study was to prepare a climate resilient urban flood management framework for Dhaka city, focusing on causes of vulnerability and solutions, in the northern half (136 sq. km.) of Dhaka city. The study was carried out at the request of the Dhaka Water Supply and Sewerage Authority (DWASA) and Dhaka City Corporation (DCC)

The process; conducting the study

The study was carried out from April 2011 to June 2011 by the Bangladesh Water Partnership (BWP). The study consisted of a field survey, preparation of a concept note and the development of a flood risk management framework. During the study investigative research was carried out, incorporating relevant information from available plans, programs, reports, scientific literature and communities. The field survey was conducted by a study team consisting of multidisciplinary professionals. The aim of the survey was to observe the existing flooding and drainage situation of Dhaka city and its flood protection system, to find out the inherent causes of flood in Dhaka city especially in the western part of the city, and to note the probable socio-economic disruptions caused by such flooding. Prevailing problems of drainage congestion and water logging in Dhaka city (West) and the existing situation of different flood and drainage management components such as storm water pump stations and sluice gates were physically observed. Using this information, a concept note was prepared on a climate resilient urban flood risk management framework for Dhaka city.

Lessons learnt

Following are some of the recommendations made in the concept note prepared during the study;

- Capacity of the existing pump stations should be increased.

- Waste management systems should be improved during pre-flooding phase. Haphazard disposal of solid waste on streets or drains should be stopped.
- Proper flood mitigation and early warning systems should be ensured. Operation and maintenance activities should be improved.
- Establishment of an environmental monitoring system for existing rivers, khals and lowlands of Dhaka city is important
- The obstructions of the natural drainage system of Dhaka WASA are very common and frequent. Temporary drainage congestion has occurred at different paces of the city for durations of 2 to 48 hours. The proposed urban flood risk management system has to be established with an advanced early warning system on inundation depending on rainfall.
- The existing wetlands in and around the Dhaka city will have to be maintained as detention pond for storm water.
- Further study is required for rainfall-runoff assessment, with adaptation of rain water harvesting mechanisms in the buildings of Dhaka city.

Outcomes

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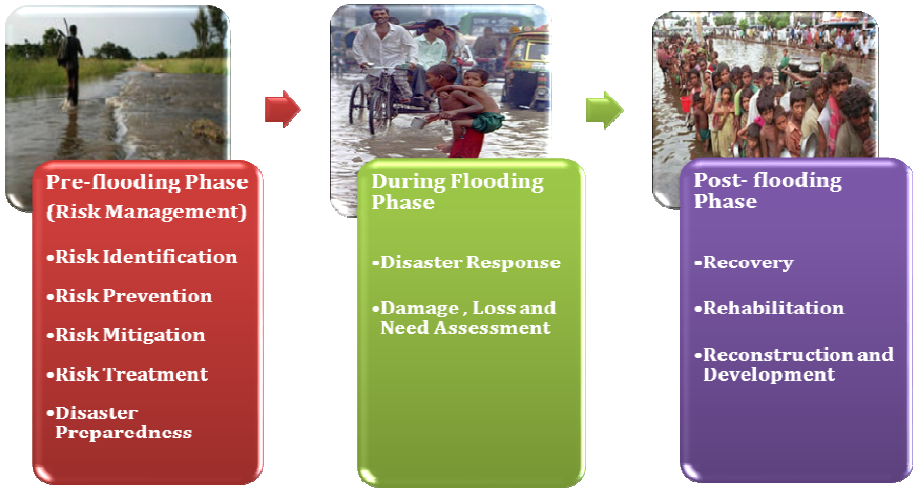

A major outcome of the study was the development of a flood risk management framework with community participation. This framework has now been accepted by the Government of Bangladesh. Major components of the framework include pre-flood prevention, risk mitigation and flood preparedness. Pre-flood prevention deals with the maintenance of flood management interventions. The recommended methodology is based on a risk assessment approach, taking both the probability and consequences of flooding into account. Adaptations to climate change and to economic development are important drivers in designing flood management schemes. Flood risk management is strongly related to spatial planning: the location of new developments, flood proof structures and space for rivers. Risk communication is a valuable way to promote flood awareness and to improve flood preparedness of citizens.

This project helped identify weaknesses in existing flood management systems and developed a flood risk management framework which has now been accepted by the State. It is envisaged that the concepts put forward in this framework will be of immense value in planning future strategies to cope with the problem of flooding in Dhaka city. The concepts developed under this study can be further investigated through follow up studies involving community participation.

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