

## **Disaster Management Strategy for Resilient Society- An Approach to Train Flood Management Stakeholders of Bangladesh**

Gulsan PARVIN, Rajib SHAW <sup>(1)</sup> and Kumiko FUJITA <sup>(2)</sup>

(1) Professor, Keio University, Japan

(2) Researcher, Department of International Studies, Graduate School of Frontier Sciences,  
The University of Tokyo

### **Synopsis**

In order to resolve disaster related issues, always there are strong and imperative requests for close collaborations between Japanese and Bangladesh researchers and policy-makers. As an initiative of such collaboration a SATREPS project titled `Disaster Prevention/Mitigation Measures against Floods and Storm Surges in Bangladesh` started in April 2014. This project is composed of 5 different components. Among these, only component 5 is primarily dealing with local people. It addresses flood related different social aspects of a community. Component 5 is working on two phases. First phase is evaluation of current disaster management practices and second is development of a new disaster management strategy and its implementation. Finally, outputs of the component 5 are contributing to formulate a series of training modules to train different stakeholders related to flood management including local communities. It is expected that this trained manpower would be efficient to deal with flood disaster of Bangladesh and that would be locally effective for a flood resilient society.

**Keywords:** Flood Management, Training, Stakeholders, Bangladesh

### **1. Introduction**

In order to promote international joint research Japanese Government introduces Science and Technology Research Partnership for Sustainable Development (SATREPS) programs. Different projects under SATREPS program are supported by Japan Science and Technology Agency (JST), Japan Agency for Medical Research and Development (AMED) and Japan International Cooperation Agency (JICA). JST provides competitive research funds for science and technology projects, AMED provides competitive research funds for medical research and development, and JICA provides development

assistance (ODA) (<https://www.jst.go.jp/global/english>).

So far in 40 developing countries SATREPS carried out 100 projects. All these projects address critical issues of the country that need international support and collaboration. Flood and cyclone is the most common and crucial natural disasters in Bangladesh cyclones since ancient time. Global warming and sea level rise would possibly enhance ever severer disasters in Bangladesh (Van, 2006). Therefore, in order to resolve these issues, always there are strong and imperative requests for close collaborations between Japanese and Bangladesh researchers and policy-makers. As an initiative of such

collaboration a SATREPS project titled `Disaster Prevention/Mitigation Measures against Floods and Storm Surges in Bangladesh` started in April 2014 and it will be completed in March 2019. Prof. Dr. Hajime Nakagawa, a famous professor of Disaster Prevention Research Institute (DPRI), Kyoto University and Prof. Dr. Md. Munsur Rahman, Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology are leading this project. Both from Bangladesh and Japan, about 20 faculty members from different universities are contributing as the key researchers in different components of this project. There are 5 main components of this project. These components are

1. Prevention/mitigation of River Flood Disaster Considering Climate Change Impacts
2. Development of Improved Storm Surge Warning and Evacuation Systems for Bangladesh Coast
3. Flow/sediment management and land protection measures against erosion along the river
4. Study on Flood Assisted Spreading of Deposited Toxic Substances and Possible Mitigation Measures
5. Disaster Management Strategy for Resilient Society

In Bangladesh among various SATREPS project, one of the most important ongoing project is `Disaster Prevention/Mitigation Measures against Floods and Storm Surges in Bangladesh` This project investigates storm surge and flood hazard mapping, river channel stabilization and evacuation system considering the effect of sea-level rise with the aid of high-resolution elevation data of embankments and floodplains. Deterioration of living environment due to pollutants propagation, deposition and infiltration into underground space is also to be investigated, together with countermeasures against them. Moreover, attempts will be made to adopt research results for the benefits of the local society.

## **2. Disaster Management Strategy for Resilient Society: An Approach to Train Flood Management Stakeholders**

The project titled `Disaster Prevention/Mitigation Measures against Floods and Storm Surges in Bangladesh` are composed with 5 different components. Among these, component 1 to 4 are to some extent technical and involve different structural and engineering issues. Only component 5 is primarily dealing with local people. It addresses flood related different social aspects of a community. In Bangladesh, generally disaster management is handled locally by the national government through its line departments and involving NGOs. International stakeholders are also engaged in disaster management work. Crucial issue is that the context of disaster is localized, but, interventions to deal with the disaster are globalized.

Here, conflicts are explicit in the areas of policy guidelines, methods of disaster assessment and needs assessment, and intervention approaches. Local knowledge of disaster management is often ignored by outsiders. Disciplinary boundaries are also conflicting to each other. Sometimes, the interventions generate complex situations which produce vulnerabilities of the local people. In order to minimize these vulnerabilities and to build a disaster resilient society, component 5 is working on two phases. First phase is evaluation of current disaster management practices and second is Development of a new disaster management strategy and its implementation. Finally, outputs of the component 5 are contributing to formulate a series of training modules to train different stakeholders related to flood management including local communities.

### **2.1 Training Modules**

Since march 2014, component 5 has conducted both theoretical and field level studies to explore the limitation, vulnerabilities, strength and resilience of flood management efforts of government, NGOs and different communities. Based on the studies conducted by the researchers of component 5 a series of training module have

been formulated. Within last 4 years it has completed 8 training modules targeting different stakeholders. Following is the list of the training modules.

- 1) Overview of Flood Management Actions and Policy Planning in Bangladesh .
- 2) Resilience Profiling and Community Based Disaster Risk Reduction.
- 3) Role of NGOs in disaster management in Bangladesh.
- 4) Social Issues Related to River Bank Erosion.
- 5) Flash Flood Risk Management in the Haor Areas of Bangladesh in Support of ICT.
- 6) Farmers` Adaptation Options to Cope with Early Flash Flood in Bangladesh.
- 7) Gender Aspects in Flood Management of North-east and North-west Regions of Bangladesh
- 8) Social Strategy for Effective Science Communication: Lessons for SATREPS Project and Beyond

These 8 different training modules are distinctly different in their content and targeting different stakeholders. Starting from the top-level policy planner, decision makers, academics, students, field level development workers to the community all would be benefited with these different modules.

#### ***Training Module 1: Overview of Flood Management Actions and Policy Planning in Bangladesh***

The geographic location of Bangladesh is at the confluence of the three mighty river systems of the world the Ganges, Brahmaputra and Meghna. This unique location has made Bangladesh as one of the most vulnerable places on earth to floods and cyclones (Khan and Rahman, 2007). Therefore, historically, Bangladesh is formulating and implementing different policies, strategies and action plan to deal with floods.

This module attempts to analyze the flood policy in Bangladesh. Flood issues are described

in different policy / action plan documents, which belong to different ministries. With an introduction and categorization of floods in Bangladesh, the module looks at the major historic floods. The module then analyzes the evolution of flood management policy and planning over last several decades, and links to flood related policies and gradual evolution of flood action plan. Finally, the module concludes with an analysis of key actors in the major policy process.

All sorts of stakeholders, actors, policy makers, development workers (Government, Non-Government and private organizations) and academicians who are involved in flood and disaster management related activities would be benefited from this training module.

#### ***Training Module 2 Resilience Profiling and Community Based Disaster Risk Reduction***

The term resilience is used to describe capacity to recover and more generally the ability of a community that is exposed to hazards to resist, absorb, adapt to, and recover from the effects of a hazard (UNISDR, 2009). This module aims to teach development workers, academic and local government to evaluate their community resilience by using different frameworks. In this module, useful framework for evaluating resilience against flood disaster is introduced. The concept of resilience is popular among social as well as psychological scientists recently, and resilience of community is considered to be effective for disaster risk reduction. Therefore, many frameworks for evaluating resilience are developed, and the results are reflected to the policies, strategies, plans and so on. Since the definition and framework of resilience is varied, definition is reviewed first and resilience profiling is introduced.

These types of trainings are important for the community or field level development officials or workers from Government or Non-Government Organizations.

#### ***Training Module 3: Role of NGOs in Disaster Management in Bangladesh***

Main focus of this training module is examining learning and experiences of NGOs` disaster management activities in Bangladesh. It aims to highlight best practices of NGOs in disaster management. It attempts to share strategic approaches of NGOs in different changing situations.

This module it expected to be effective to enhance knowledge and efficiency of field level disaster management workers and also it would spread best practices in disaster management and help local community in disaster management.

#### ***Training Module 4: Social Issues Related to River Bank Erosion***

River bank erosion induced social issues and displacement are persistent and recurring hazard of Bangladesh (Mutton and Haque, 2004). Both in rural and urban areas river erosion affected people are dealing with numerous social problems and issues. This training module highlights different critical issues related to river erosion. By highlighting these social issues, it aims to aware and train local people and development workers.

#### ***Training Module 5: Flash Flood Risk Management in the Haor Areas of Bangladesh in Support of ICT***

Use of Information and Communication Technology (ITC) for disaster risk reduction is embracing huge attention these days (APCICT, 2010). Bangladesh Government has started to put importance to use of ICT in all sectors of development (Asaduzzaman, et al. 2011). Haors have a unique hydro-ecological characteristics that cover about 1.99 million hectares of area in the North-East of Bangladesh (CEGIS 2012). This training module aims to train manpower to use ICT for flash flood management in Haor areas. Thus, it is an attempt to build capacity of trainees for flash flood management by using different ICT technologies. Mostly development workers and officials who are engaged with flash flood management are the target group of this module. However, local community will also be introduced about the use and benefit of using ICT in flood management.

#### ***Training Module 6: Farmers` Adaptation Options to Cope with Early Flash Flood in Bangladesh***

This training module is prepared on the basis of field level information. In this module will be the outcome of the survey on flashflood affected farmers in Haor. Considering present adaptation mechanism, this module attempts to train farmers and development stakeholders about potential mechanism of disaster management.

#### ***Training Module 7: Gender Aspects in Flood Management of North-east and North-west Regions of Bangladesh***

Natural disaster does not affect all gender equally. It is claimed that in disaster more women died than men (Neumayer and Plümper, 2007). Therefore, gender aspects are important priority of JICA projects. In Bangladesh, gender aspects are not much highlighted in disaster related initiatives. This training module has two parts. Initially, in the first part it examines gender aspects in policy level, gaps in practice, problem/difficulties in gender balance situation in Bangladesh. Government and NGOs activities related to women empowerment. It highlights how gender aspects are integrating into the mainstream of disaster management efforts. In the second part this module focuses on the field experiences in the North-east and North-west part of Bangladesh and focus on vulnerabilities and risk of women in flood. It also highlights the importance aspects of improvement to have a better society for the women and to reduce their disaster risk. This module would give an overall knowledge to the trainees and thus help to have gender friendly disaster risk reduction and management.

#### ***Training Module 8: Social Strategy for Effective Science Communication: Lessons for SATREPS Project and Beyond***

This training module has some specific objectives. Most important objectives are to chart a course for dissemination of scientific findings of different components of the SATREPS project for the uptake and benefits of the society and to establish an interface with the scientists, key stakeholders, and the community people. This

module also intends to establish a comprehensive strategy so that scientists can establish a trusted relation with the public and policymakers. It would train how to enhance a proper science communication of the research results, especially for the hazard / risk maps and improved early warning system. Further, this module would to institutionalize knowledge resources developed under the project through involvement of resources organizations i.e. university network, NGO network.

Apart from the training module prepared by component 5, there are 5 other training modules prepared by other 4 component members. These are

- Flood Disaster Risk Assessment and Mitigation (Component 1)
- Tidal Basin Concept of Tidal Flood/Sediment Management (Component 1)
- Development of Improved Storm Surge Warning and Evacuation Systems for Bangladesh Coast (Component 2)
- River Bank/coastal Erosion and Embankment Failure Related Disasters and their Mitigation (Component 3)
- Legacy Pollution with Flood and Other Anthropogenic Activities (Component 4)

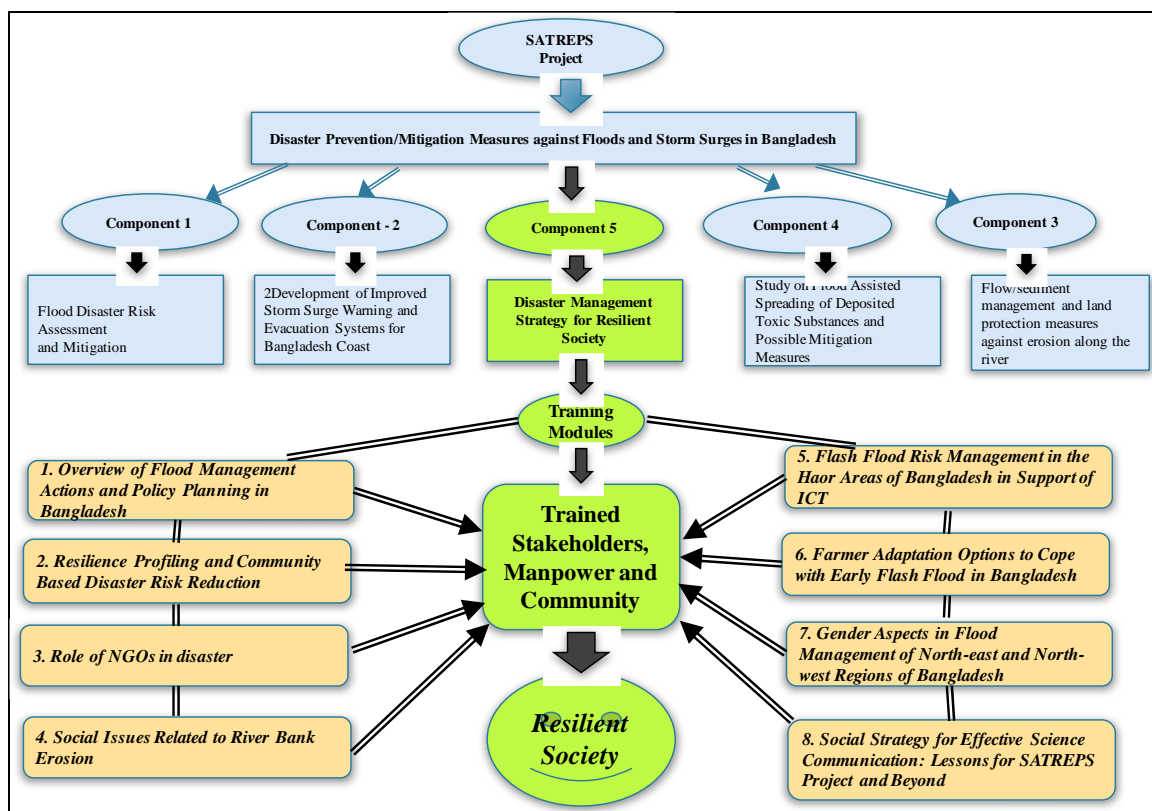


Fig. 1 Training Modules to have trained manpower and disaster resilient society

### 3. Conclusion

SATREPS Programs and projects are contribution in different development sectors in all over the world. Through partnership and collaborative research SATREPS projects are playing significant role in the development of

Bangladesh. Especially, some crucial sectors of Bangladesh, like disaster management is highly benefited by SATREPS projects. With the innovation of various engineering and non-engineering solutions, models, techniques and frameworks SATREPS project are shaping Bangladesh. However, long lasting of the benefits

and continuation of the achievements of such kind of important projects are always critical issues. Therefore, sustainability the benefits of these projects is needed to be prioritized. Realizing the importance of sustainability of the benefits of SATREPS project name `Disaster Prevention/Mitigation Measures against Floods and Storm Surges in Bangladesh` researchers have prioritized to develop training modules with their research outcomes. Since component 5 of this project is dealing with social matter and coordinating with all other components, it attempts to compose all outcomes and knowledge of this research project into different training modules. Through establishing University Network, it would encourage as well as engage different universities of Bangladesh to conduct these training to have trained manpower, stakeholders and local community. Thus, with this trained manpower it aims to have a disaster resilient society.

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