

## **Disaster Risk Management (DRM) / Climate Change Adaptation (CCA) information linked to Participatory Small Scale Water Resources Sector Project**

### **I. Background**

1. Local Government Engineering Department (LGED) implemented SSWR schemes as a component under different project since its inception. In 1995-96 LGED set its first step to the small scale water resources sector (<1000 ha) when Asian Development Bank (ADB) invested, with Dutch and IFAD, in the Small Scale Water Resources Development Sector Project (SSWRDSP), implemented from 1996 to 2002 and developed 280 subprojects in the western part of the country and the Second Small Scale Water Resources Development Sector Project (SSWRDSP-2), implemented from 2002 to 2010 and developed 300 subprojects in 61 of the 64 districts of Bangladesh. Participatory Small Scale Water Resources Sector Project (PSSWRSP), the third in the row, builds on lessons from previous ADB, Dutch and IFAD investments, started implementation with Project duration of 2010 to 2018 aiming at developing sustainable stakeholder-driven small-scale water resources management systems with special attention to the poorer section of the population with a view to supporting government's poverty reduction effort by increasing sustainable agricultural and fishery production. The Project has three outputs: (i) institutional strengthening of government agencies; (ii) participatory subprojects that will include poor and vulnerable groups and enable WMCAs to plan, implement, operate and maintain subprojects; and (iii) the construction and maintenance of up to 270 new SSWR subprojects and performance enhancement of up to 150 subprojects selected from SSW 1 and SSW 2 projects.

### **II. Preparing a subproject under PSSWRS Project**

2. Preparation and implementation of the subprojects under PSSWRS Project follow an established, time-honored subproject development process which is entirely participatory in nature. It essentially involves assessing social, technical and environmental feasibility, economic viability followed by establishing an institutional base for participation of subproject beneficiaries and other local stakeholders in all the stages of implementation and post-construction operation, maintenance and management of the subprojects. Local people identifies small scale water resources management interventions, such as flood, water logging in low lying areas, drainage congestion due to siltation in the drainage channels, and proposes PSSWRS Project through their elected representatives, the Union Parishad members. The subproject development process includes receiving proposals from field level, screening, social and techno-economic feasibility, preparing plans and designs of appropriate infrastructures, implementation, institutional, agricultural and O&M support. The local stakeholders are organized and institutionalized under the cooperative law and involved in all the stages of the subproject development process.

3. The water related and water originated problems, in the flood and disaster prone coastal zone and draught prone northern region of the country in particular, are mainly due to the reason of sea level rise and erratic behavior of climate change that increasingly affects the country. The issues associated with disaster risk and caused by climate change are properly addressed in PSSWRS Project. Subprojects are designed by taking appropriate risk management and adaptation measures in the Environmental study and Mitigation Plan of the feasibility study into due consideration during design of a particular subproject.

4. Environmental issues that may affect subproject implementation due to climate change are very critically considered during feasibility study and detailed design in the PSSWRS Project. Leading issues like flood regime enhancing tidal inflow, efficiency of pre and post monsoon drainage, fall and rise of ground water table, water quality, erosion and siltation, Soil characteristics and natural enrichment of soil, affect on wetland and aquatic habitat, natural and



cultured fish, biological diversity etc are properly examined to make the subproject design suitable for reducing disaster risk and adaptable to climate change related issues.

### **III. Disaster Risk Management and Climate Change Adaptation linked to Participatory Small Scale Water Resources Sector Project**

5. The PSSWRS Project has been designed aiming at developing sustainable stakeholder-driven small-scale water resources management systems with a view to supporting government's poverty reduction effort by increasing sustainable agricultural and fishery production. The infrastructures developed under the project focuses on enhancing rural income through agricultural development with significant concentration on climate resilience and adaptation of the climate change induced disaster affecting vulnerable people in the subproject area. The project intervention is therefore concentrating on climate resilient infrastructure development, agriculture, rural irrigation, food security and livelihood of the poor segment with the issue of water for agriculture in the central. Following disaster risk reduction and adaptation to climate change measures are associated in different types of subproject interventions under the Project:

#### **A. Flood Management Subproject**

Flood in the recent years has changed its nature of aggression in Bangladesh. Previously, in the past 20 years or so, there was a regular, expected and easily-predictable type flood occurred during monsoon and that was almost a regular practice. But the flood in 2017 behaved exceptionally unpredictably and erratically and retained for long. It is certainly because of the consequence of climate change.

The flood protection embankments, regulators and culverts constructed under PSSWRS Project very effectively protects disaster induced flood in the subproject area. It is really good to inform that the community people could harvest their produces protecting flood by the embankment and timely operating the regulator in about 17% subprojects implemented under PSSWRS Project in the northern region. The regulators also contribute to protect saline water intrusion in the subproject area in coastal zone. In addition, the flood affected people found their shelter on the embankment during serious flood.

#### **B. Drainage Improvement Subproject**

Coastal areas have a rich water conveyance system through khals, from the time immemorial, that is being used as a network for peoples household to trade and commerce purposes. But the khals, with a little or no maintenance, have been silted up now-a-days. Furthermore, the rise in sea level due to climate change badly impacts on this useful coastal network as the saline water increasingly intrudes through the khals gradually reducing agricultural land and forces thousands of people to migrate. Implementation of Drainage subprojects by PSSWRS Project in coastal as well as other areas improves drainage congestion, enhances cropped area through removing water logging from the subproject area and facilitates free flow through de-silting / re-excavating the khals;

#### **C. Water Conservation Subproject**

Farmers in the drought-prone areas are currently suffering from drought stress affecting the Aman rice planted in the monsoon and harvested pre-monsoon. Due to the affect of climate change rainfall has become irregular and erratic. As a consequence of the lack of irrigation Water in the crucial period of crop cycle, the productivity of Aman rice, vegetables, Rabi crops and Boro rice reduces alarmingly. To overcome the situation

sedimented khals have been re-excavated in the subproject area to serve the khals as a reservoir for storing water in the dry season in the worst affected northern areas of the country. The farmers use conserved water in the khals for supplementary irrigation during drought.

6 The farmers of the subproject areas are provided with training on agriculture designed to prepare their mindset to modify their current cropping systems changing to climate resilient cropping systems and cropping pattern associated water management suitable to different agro-climatic regions and sub-regions, seed production, extension mechanism and introduction of new technology for crop production in vulnerable areas. The farmers group are also trained on integrated crop management at farmers field school (FFS) throughout particular cropping season;

7. Climate change is likely to adversely affect fish spawning and growth of freshwater species and marine fisheries. In drought areas floodplain reduces and perennial beels dries up in consequence. Capacity building of the fishers through training on developing fish sanctuaries and culture and capture fish management and developing adaptive measures including pond fisheries and river/khal based cage aquaculture is done from the PSSWRS Project;

8. In the subprojects implemented under Participatory Small Scale Water Resources Sector Project (PSSWRSP) Disaster Risk Management and Climate Change Adaptation are very closely linked. Therefore, the technical and environmental issues of a subproject that are vulnerable to disaster and usually affected due to climate change are very critically examined and duly addressed in the feasibility study and detailed design. The subproject design is prepared accordingly with components that reduces disaster risk and ensure adaptation to climate change to provide the community people with a safer climate resilient existence.