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Ministry of Agriculture

Ministry of Fisheries & Livestock

Ministry of Local Government,  
Rural Development and Cooperatives

## **Government of the Netherlands**

Embassy of the  
Kingdom of the Netherlands  
Dhaka, Bangladesh



## **BLUE GOLD**

Program for Integrated Sustainable Economic  
Development by improving the Water and  
Productive Sectors in selected Polders

Program Document

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**Acronyms and Abbreviations**

ADB	- Asian Development Bank
ASPS	- Agriculture Sector Programme Support (Projects)
BADC	- Bangladesh Agricultural Development Corporation
BARI	- Bangladesh Agricultural Research Institute
BBS	- Bangladesh Bureau of Statistics
BRAC	- Bangladesh Rural Advancement Committee
BRRI	- Bangladesh Rice Research Institute
BWDB	- Bangladesh Water Development Board
CBO	- Community-Based Organisation
CDSP	- Char Development and Settlement Project
CEIP	- Coastal Embankment improvement Project
CGIAR	Consultative Group on International Agricultural Research
CIG	- Common Interest Group
CIMMYT	- International Maize and Wheat Improvement Centre
CBO	- Community-based Organisation
DAE	- Department of Agricultural Extension
DCRMA	- Disaster and Climate Risk Management in Agriculture (Project)
DoC	- Department of Cooperatives
DoF	- Department of Fisheries
DoLS	- Department of Livestock Services
DPP	- development project proposal
ECRRP	- Emergency Cyclone Recovery and Restoration Project
EKN	- Embassy of the Kingdom of the Netherlands
EUR	- Euro
FAO	- Food and Agriculture Organization of the United Nations
FBS	- Farmers Business School
FFS	- Farmers Field School
FY	- Financial Year
GDP	- gross domestic product
GPWM	- Guidelines for Participatory Water Management
GoB	- Government of Bangladesh
GoN	- Government of the Netherlands
Ha	- Hectare
HIES	- Household Income and Expenditure Survey
HH	- Household
HYV	- High Yielding Variety
IFAD	- International Fund for Agricultural Development
IFI	- International Financing Institutions
IPM	- integrated pest management
IPDM	- integrated pest and disease management
IPSWAM	- Integrated Planning for Sustainable Water Management
IRRI	- International Rice Research Institute
IWM	- Institute of Water Modelling
IWRM	- Integrated Water Resources Management

LCS	- Landless Contracting Society
LG	- Local Government
MASP	- Multi-Annual Strategic Plan 2012-15
MDG	- Millennium Development Goal
MoA	- Ministry of Agriculture
MoF&L	- Ministry of Fisheries and Livestock
MoU	- Memorandum of Understanding
NARS	- National Agricultural Research System
NATP	- National Agricultural Technology Project
NGO	- Non-Governmental Organisation
NMTPF	- National Medium-Term Priority Framework
O+M	- Operation and maintenance
PCD	- Project Coordination Director
PMC	- Program Management Coordination
PPP	- Public Private Partnership
PSC	- Programme Steering Committee
SAAO	- Sub-Assistant Agricultural Officer
SRHR	- Sexual Reproductive Health and Rights
SWAIWRPMP	- South-west Area Integrated Water Resources Planning and Management Project
SSWRDSP	- Small Scale Water Resources Development Sector Project
TA	- Technical Assistance
USAID	- United States Agency for International Development
WASH	Water, Sanitation and Hygiene education
WB	- World Bank
WMA	- Water Management Association
WMG	- Water Management Group
WMO	- Water Management Organisation (combined WMG and WMA)
WMIP	- Water Management Improvement Programme
WFC	- World Fish Centre

## Executive Summary

Since 2000, the Bangladesh and Netherlands Government are cooperating closely together in the coastal zone of Bangladesh to create an environment conducive for sustainable economic growth with close involvement of the local communities. The Blue Gold programme (Program) has been designed taking into account the lessons learnt over the past ten years, the new insights in how to deal with the challenges created by the very dynamic rivers of Bangladesh and the new communication technologies.

Water or “Blue Gold” is regarded here as the fundament for changing people’s life. Turning water from a foe into a friend is the trigger for the socio-economic development in the polders of Bangladesh. Once people can live in a safe – protected from flooding - and healthy - less diseases – environment and they acquire knowledge on managing the available resources in their area the path for a sustainable socio-economic development is open. Overcoming water problems and implementing good water management practices through the approach of community participation is seen as the basis for further improving food production and establishing business opportunities, from which the communities will significantly benefit.

Blue Gold will be operational in 2013 and extent over a 6 years period. Its operations will concentrate on the polders of three districts: Patuakhali, Khulna and Satkira. The Program will cover 160,000 ha (gross) where an estimated 150,000 household will have direct benefits from the Program.

To ascertain sustainability, the Program will put more attention on the cooperatives, as driver for economic development, and the productive sector as the main basis for the economic development envisaged. The improved water resources infrastructure will create an environment which is safer to live and work and allow optimal use of water as an input for the productive sector. The cooperatives will have to become organised and managed as private sector enterprises in order to create the maximum benefit for their members, being higher household income. Linkages with existing (inter)national private enterprises will be created but also small-scale enterprises will be established in the Program area as part of the development process. Innovative approaches and technologies will be introduced as an answer to the many challenges faced by the water and productive sectors.

### **Community mobilization (€ 9 mln)**

The entry point of Blue Gold is the participation of the rural communities to the extent that they take up the responsibilities, by organising themselves in primary societies (cooperatives), for stepping out of poverty. The active participation of the women and the hard-core poor will receive due attention. These cooperatives will plan together with the Government departments, the NGOs and the private sector the direction of the development and discuss together what each partner can contribute to create an environment so that the local producers can do better and increase their income. The Program will facilitate the mobilisation in each and every village in the selected polders and guide them through the process of registering a cooperative. Trainings will be provided to the members of the cooperatives on many different subjects: from operational aspects of a cooperative to drying

techniques for fish. Good governance will be also part of the training and will be applied in practice.

About 600 cooperatives will be newly established plus the existing 250 cooperatives in the IPSWAM polders: each cooperative will have an average of 250 members. The cooperatives will become the drivers of change towards a better life.

### **Water Resources Infrastructure Development (€ 23 mln of which € 16 mln for BWDB)**

Under Blue Gold, the BWDB will create effective protection in the polders against floods and an infrastructure for water management inside the polder (irrigation and drainage) so that it can be effectively used by the producers (crops, horticulture, fish, livestock, forest). A total area of 25,000 ha will be rehabilitated and 135,000 ha will have further fine-tuning their water distribution and drainage system. The BWDB will sign MoUs with the cooperatives on shared water operation and maintenance responsibilities. In already rehabilitated polders, further fine-tuning could be conducted as to adapt the water distribution system more to the wishes of the producers and the communities at large. The Bangladesh water knowledge centres (IWM and CEGIS) will cooperate with Dutch water institutes to develop and test sustainable solutions for the protection of the polders and other themes like erosion and salt intrusion.

### **Productive sectors (€ 10 mln)**

Once the water resources management is effectively rehabilitated, the producers can use this to increase their productivity and their production intensity. Arrangements will have been made between different types of water users (i.e. crop versus shrimps). The increase of productivity will only be possible if farmers are well informed about the improved varieties, crop husbandry practices, thus about the results of the research through effective research-extension linkages. The Farmers Field Schools will be the entry point for farmers to test inputs and husbandry practices. Introduction of (small-scale) mechanisation will alleviate labour work, in particular for land preparation and processing. Intensification will be by have two or three crops per year, whereby the sea water intrusion in the rivers will limit water intake during part of the year and thus planning among the producers is needed where to use the available (little) water.

Blue Gold will facilitate this process of information and train the FFS facilitators and provide some seed money for testing new inputs and technologies.

### **Business development (€ 3 mln)**

For the cooperatives to be sustainable, it is important that these entities will be organised and operated as private sector entities. Which roles can a cooperative play for their members: supplier of input and credit for their members, processing and storage of the products before these are sent off to the markets, marketing of the products. The producers will have to decide among themselves and then a based upon all this information from within one polder, a Business Plan will be developed. Value chain analysis will be made of a number of selected crops and private sector linkages established for well-defined services and all this information will be used as an input for this Plan. Through this process of business development, the cooperatives will be further professionalise and even diversify.

By the end of the Blue Gold at least 200 cooperatives will operate as an effective enterprise in full support of their member's objectives of higher income.

**Livelihood improvement (separate contracts) and cross-cutting themes**

The coverage of drinking water and sanitation facilities in the Unions in which the polders are located will increase to nearly 100% coverage. The EKN has signed a separate contract with a Dutch NGO to realise this coverage. The importance of balanced nutrition and of sexual reproductive health and rights has been included in this activity.

Blue Gold will provide a number of stipends for boys and girls to attend the training centres in the three Districts. Innovations, climate change and gender are the most important cross-cutting themes in the Program.

**Program management (€ 5 mln)**

A technical assistance team will be contracted by EKN and will be composed of international and national experts. The consultants listed under Program Management provide support to all Program components, also the support staff is listed herewith.

The main role of the TA team is to guide and facilitate the development within the polders. Village facilitators, subject matter specialists, and FFS facilitators will have to play a crucial role in achieving the objectives and will be trained and guided by the consultants. Innovative approaches and technologies will be introduced for the productive sectors, water infrastructure and business development. All these issues require a strong and capable TA-consultant.

The responsibility of the Program management, as such, is to entertain open communications with the stakeholders, for monitoring and evaluation, and reporting.



# Chapter 1: BACKGROUND

## 1.1 Introduction

The Government of the Netherlands (GoN) has supported water management projects in Bangladesh since 1975, usually as a partner of the Bangladesh Water Development Board (BWDB). The nature of the projects has evolved from projects focusing on engineering and construction to more integrated water resources development projects. Participatory approaches were successfully introduced since 2003, in line with the water resources development strategies of the Government of Bangladesh (GoB), in many projects co-funded by GoN. These projects are Integrated Planning for Sustainable Water Management (IPSWAM), the South West Area Integrated Water Resources Planning and Management Project (SWAIWRPMP or South-west), the Char Development and Settlement Projects (CDSP) and the Water Management Improvement Project (WMIP). The end date of IPSWAM was June 2011 and the GoB sent in early 2011 a proposal to the Embassy for a follow-up programme. Any new programme to be funded by the Embassy of the Kingdom of the Netherlands (EKN) had to be in line with its Multi-Annual Strategic Plan (MASP) 2012-15, which was approved in early 2012. The water sector remained the most important sector but also the food security sector was re-introduced and much emphasis is given to the private sector development. A team of experts (national and international) was fielded in February/March 2012 to prepare a Formulation report and this report constituted a major input for this Program Document. In this Program Document the food security has been more elaborated on the value chain approach, while business development has been introduced as a separate component and more attention has been given to the institutional framework. The WASH component will be a separate project to be undertaken in close co-operation with this Program.

The new Program underlines the importance both Governments attach to their development cooperation. The Program has been formulated against the background of changing the development cooperation principles. Bangladesh is supposed to become in the near future a mid-income country; therefore the paradigm change “from aid to trade” will be applicable to the Bangla-Dutch bilateral cooperation as from now onwards. Consequently, the development of polders will be seen much more than in the past from a business-like approach with the local producers/farmers as main actors. The private sector involvement is considered essential in the process towards sustainable polder development and therefore the cooperatives will have to be developed on and trained for a business-like approach for the benefit of their members in particular and for the economic development of the districts in general. The value chain analysis will provide the information for establishing effective linkage between the producers and the consumers, whenever needed.

Water or “Blue Gold” is regarded here as the fundament for changing people’s life. Turning water from a foe into a friend is the trigger for the socio-economic development in the polders of Bangladesh. Once people can live in a safe – protected from flooding - and healthy - less diseases – environment and they acquire knowledge on managing the available resources in their area the path for a sustainable socio-economic development is open. Overcoming water

problems and implementing good water management practices through the approach of community participation is seen as the basis for further improving food production and establishing business opportunities, from which the communities will significantly benefit.

Both the Governments of Bangladesh (GoB) and The Netherlands (GoN) consider the achievements of the past and on-going polder development projects (IPSWAM, South-west, CDSP and WMIP) valuable stepping stones to further participatory integrated water resources development for poverty alleviation in the coastal area (Khulna and Barisal Divisions). The rural communities will be the focal points of this Program: community mobilisation and further institutional strengthening are considered the key to operational sustainability. For the development of “their” polders as basis for increased household income, the Government has a major role to play, in particular by creating an enabling, healthy working and living environment for the people. The GoB considers integrated water resources development one of its priority activities as this will create the needed protection against flooding and allow communities to use the available water resources for productive and human consumption. The GoB provides many other “services” to establish an environment conducive for increased economic growth and aimed at poverty alleviation. The Program will cooperate closely with the related Ministries, the Local Government institutions, knowledge institutes and private sector including the NGOs. The overall approach is innovative and therefore whenever needed, the Program will strengthen the technical and strategic capacity of Government officers and their operational capacity in particular at local (Union and District) level.

Through a separate EKN funded WASH (“MAX value for WASH”) drinking water, sanitation and hygiene) project, the livelihood conditions will be improved: by awareness raising and applying the principles of balanced nutrition, of sexual reproductive health and rights (SRHR), on gender, on good governance and on climate change.

The Program will concentrate on polder development in three districts: Satkhira, Khulna and Patuakhali. A few reasons to select these Districts are (i) high percentage of hard-core poor, (ii) effective coordination with the local administration and private sector, (ii) the water-related challenges (sedimentation, salt water intrusion). In a limited number of polders (25,000 ha) rehabilitation of the water infrastructure will be done while the majority of polders (135,000 ha) only fine-tuning of the water infrastructure will be done as to ensure that water can be used more effectively for the productive sectors. In a later phase of the Program other districts could be included as to introduce the participatory integrated approach.

## **1.2 Structure of the report**

In this chapter the lessons learnt since 2001 are briefly presented. The policy context from the side of GoB, mainly related to poverty, water resources, productive sectors, cooperatives, and on development cooperation for GoN, is described. In chapter 2 the challenges for the water and the productive sectors are presented, the overall Program concept and approach are described, and the selection criteria for the polders given. The three Program components (i) community mobilisation and water resources management, (ii) food security

and business development and (iii) livelihood improvement and crosscutting issues are detailed respectively in chapters 3, 4 and 5.

Chapter 6 presents the Program management and organisation of this rather complex activity. The role of the TA team will be of utmost important to realise the expected outputs and outcome. The TA team should have an in-depth understanding and broad experiences on how to mobilise the polder communities effectively, on innovative approaches and technologies, understand the private sector and business-like approaches and finally be able to closely coordinate and cooperate with the Government at national and local levels and more general with all development partners. Chapter 7 summarises the resources required for implementation and the allocation of expenditures between the different partners. The final chapter summarises the expected benefits of the Program.

### 1.3 Lessons Learned

The Program has integrated the experiences from other projects on increased productivity in polders and on community participation. These main lessons are listed in Box 1.1.

#### Box 1.1: Lessons learned from implementation of projects

##### ***Development at polder level***

- BWDB is a strong supporter of participatory water resources management.
- Within three years fine-tuning of the water distribution system is needed after rehabilitation works.
- Water users can take over responsibility for operation and (partly) maintenance of FCD/I schemes.
- For sustainable development with the polders, improvement of the water resources infrastructure and increase productivity should be taken up simultaneously.
- Information and input supply are key factors towards increased productivity.
- Supply of drinking water and sanitation facilities are of high priority by most communities.

##### ***Project implementation***

- The active role of the communities, incl. women in the planning and development process.
- The focus on water management and directly related issues.
- Participation of WMG/WMA in planning, supervision of construction improved the quality of works.
- Involvement/supervision of the TA in the tendering process for water infrastructural works is needed.
- Overall participation of the communities (men and women alike) has increased the water use effectiveness.

##### ***Institutional development***

- The process of creating effective WMG should be done with care and not hastily and takes into account the roles and interests of existing informal groups and with active participation of women.
- Streamlining of internal procedures of BWDB for effective participatory planning and implementation.
- The Department of Cooperative will have to be more engaged in the process of community mobilisation.
- The role of NGOs and private sector is very important for the productive sectors as part of the value chain development.

In coastal areas effective water resources management is a pre-condition for agricultural production as the area has to be protected against river floods and tidal/storm surges. In view of the habitat conditions in polders, an integrated approach by the different responsible government institutions will increase the effectiveness of their actions. In the CDSP areas this integrated approach has proven its effectiveness. Sustainability of the investments in water infrastructure can only be realised when families, with a high percentage of hard-core

poor in the coastal zone, can raise their income. Increased productivity, cropping intensity and access to markets are the main ingredients to realise higher incomes in rural areas. The increased income will allow the households to pay for the operations and maintenance of the infrastructure provided under the Program and for the services needed to improve their production systems. The organisation of the communities in primary societies (cooperatives) has proven an effective instrument in creating the envisaged development.

IPSWAM and WMIP have developed and introduced a structured approach for participatory water resources management. Guidelines for participatory water management are adopted in the Bangladesh Water Development Board (BWDB) policy and used in the field by the BWDB staffs that have been trained on this subject. Water Management Groups (WMG) and their Associations (WMA), both cooperative structures, have proven to be effective partners in creating sustainable development and thereby reducing poverty.

In the South-west polders and in the CDSP (in close co-operation with DAE) area further development of the productive sectors and livelihoods in general was included as objectives from the start of the WMG formation process. This inclusion of the productive sectors and the livelihood improvements can now be considered as a positive development of the role of the WMG and increased their sustainability due to the economic development realised.

The implementation arrangements in IPSWAM, in particular on the role and responsibilities of the TA towards water infrastructural works (design and implementation) allowed for minimum delays and ensured acceptable standards of infrastructural works implemented under the responsibility of BWDB.

## **1.4 The challenges of the water and food security sectors in the coastal zone.**

### **1.4.1 Main challenges for Integrated Water Resources Management**

The coastal zone is at the tail end of the hydrological system where rivers and sea water meet. Sea level movements are dictated by moon settings and subsequent tidal movements are important phenomena which are based on monthly, yearly and on 20-25 years cycles. The monthly tidal effects can be expressed in meters along the coast while long-term variations increase these tidal movements further. Strong winds and cyclones, in particular, could create meters high waves which have devastating effects on the low-lying unprotected coastal areas. Sea water intrusion will limit the intake of water for irrigation and human consumption and affects groundwater quality as well. It has been predicted that due to climate change the rise of the mean sea level will be 2mm/year for the Bangladesh coast.

The river dynamics in Bangladesh are very strong, partly due to the fact that two of the world longest rivers (Ganges and Brahmaputra Rivers) together with the Meghna River form one river towards the sea. The river flows demonstrate great variations in their volumes: Padma discharges may vary between 10 cusec and 10,000 cusec for a 10 year probability period. In extreme years 60% of Bangladesh can be flooded; most flooding is caused by rain water that

cannot be drained. Changes in water use in the countries upstream and in the climate have great impact on the river flows in Bangladesh.

Sedimentation is one of the processes caused by the rivers and creates new land: the Char Development Project is the first step towards regulated and controlled use of accrued land: embankment. Without protection against floods (from river and sea water) no effective and sustainable development is possible. On most of the land in the low-lying coastal area of Bangladesh embankments have been constructed and a drainage system developed: thereby creating polders. In total about 145 polders have already been developed mostly in the 1960 and 1970s and cover presently 70% of the coastal area. The Sunderbans are part of the unprotected area.

Important challenges for the management of the water resources in the coastal area are the following:

- (i) Most of the embankments constructed in the 1960s and 70s have not been properly maintained. A great number have been heavily damaged by two major cyclones and have not been designed to cater for the present water levels due to climate change and changes in the river dynamics. In general embankments are too low for maximum water levels of more than one year probability of occurrence. Breaches in the embankments have not yet been repaired.
- (ii) The outlets for drainage water and intakes for irrigation purpose are often been silted up and are not designed for the present water levels.
- (iii) The water infrastructure within the polders is not apt for effective water use as it was initially designed for drainage mainly.
- (iv) The people using the land within the polders have insufficient knowledge to improve the water management and conflicting interests (crop versus fish production) are not conducive to effective water management.
- (v) Increasing saline levels of water in rivers and groundwater reduces its use for most productive sectors and human consumption.

#### **1.4.2 Main challenges for the productive sectors**

The polders provide a great potential for the primary productive sectors linked to land: crops, livestock, trees, and fish are the main components. The main challenges to achieve increased productivity and increased income for the producers are:

- (i) The water resources infrastructure (embankments and water distribution system) are inadequately developed for the productive sectors (fisheries, livestock, forestry, crops and horticulture).
- (ii) The salinity levels of water are often a limiting factor for increasing productivity.
- (iii) Lack of information among the producers to improve their production system and lack of control over inputs supply, unawareness of technology available, improper storage and no influence on the marketing of their product.

- (iv) Lack of cooperation amongst the producers: “together we stand strong” is not well appreciated. Producers are not aware of the profitable business opportunities their product, being the basis of the product chain, may offer.
- (v) The supportive infrastructure (enabling environment) for the productive sector, such as research and extension services, input supply, credit, processing technology, private sector involvement, is not well developed and not supportive for the producers.

### 1.4.3 Main challenges for the enabling environment

The Program will operate within three districts and will coordinate closely with the Local Government institutions: the District Commissioner and the Union chairperson and its council. Local Government is a main factor in creating the enabling environment, taking into account that the existing Government institutions are not very functional for many reasons: lack of funding and motivation, and the expectations of a supportive environment should not be too high. It is foreseen that in the near future the funding of the Local Government institutions will increase, which could change the situation.

Private sector, NGOs and knowledge institutes are part of the enabling environment, but because of the poor conditions of communication, these are often not represented at Union even at District level. Once the economic development gets started in these districts, increased representation from these organisations can be expected. The “enabling environment” will then become more supportive for the development process.

Transparency International has rated Bangladesh very low on good governance and in general, Integrity is at a low level of development and political influences on decisions could be very great; the role of the Member of Parliament could be supportive for the development but he/she could also influence this rather negatively by protecting other than general development interests for the rural people.

## 1.5 Policy Framework

### 1.5.1 Key characteristics of relevant GoB policies

Over the last decades, GoB has formulated several policies, strategies and plans directing the development of the country. Where applicable these will constitute the framework for the formulation of this Program. The relevant policy priorities and strategies are the listed herewith.

The ***National Water Policy (NWPo, 1999)*** lays down the broad principles of development of water resources. The policies for use of water are designed to ensure continued progress towards fulfilling the national goals of economic development, poverty alleviation, food security, public health and safety and protection of the natural environment. The NWPo clearly mentions that “stakeholder involvement should be an integral part of water resources management, at all stages of the project cycle” and assigns the responsibilities for water resources development at the side of the Government of Bangladesh. Following the NWPo,

the National Water Management Plan (NWMP - 2001) was prepared. The Plan includes 84 different programmes planned for the next 25 years.

The ***Guidelines for Participatory Water Management (GPWM, 2001)*** are built on the principles formulated in the NWPo and provide suggestions for the development of the institutional framework and capacity of the local stakeholders at sub-project level, to gradually establish ownership through participatory water management.

The ***National Agriculture Policy (1999)*** gives priority to irrigation from surface water, building of infrastructures for capturing surface water from khals, beels, and small rivers to increase availability of irrigation water, strengthening of region-specific research, training and technical assistance to farmers for reducing water loss.

The ***National Fisheries Policy (NFP, 1998)*** describes clearly the priorities for the fishery sector and the importance of this sector for poverty alleviation. The Policy emphasises the enhancement of the fisheries production, export of fish and the importance of ecological balance and biodiversity.

The ***National Land Use Policy (2001)*** focuses on “maximum utilisation of lands, preservation of ‘Khas Lands’ and helping in reducing the number of landless people in Bangladesh, plantation of trees along embankments and provision of drainage facility for embanked areas, cultivation of crops need to be done according to soil characteristics so that land is not overused and to reduce misuse of water....”

The goal of the ***National Food Policy (NFP - 2006)*** is to ensure a dependable food security system for all people at all times. The objectives of the Policy are – (1) to ensure adequate and stable supply of safe and nutritious food, (2) to enhance purchasing power of the people for increased food accessibility; and, (3) to ensure adequate nutrition for all (especially women and children). One of the strategies to reach objective (1) is to ensure efficient use of water resources; while, one of the strategies to achieve objective (3) is to ensure safe drinking water and improved sanitation.

The ***Country Investment Plan (CIP - 2011)*** has chalked out a road map towards investment in agriculture, food security and nutrition. The CIP proposes a special focus on the southern region of the country (coastal belt) and priority interventions to (1) improve water management in water distribution systems and at farm level; (2) improve and increase efficiency of surface water irrigation, in particular in the South; (3) reduce impact of saline water intrusion in the South; (4) enhance river water flow to the South.

The ***Second Poverty Reduction Strategy (PRS - 2009)*** acknowledges that – “hazards like floods, cyclones and droughts aggravate poverty”. This often leads to vulnerability to disasters, particularly to floods, riverbank erosion, coastal cyclones and tidal surge. So PRSP emphasizes flood protection and storm-water drainage measures, disaster management programmes, early warning and forecasting systems, water management for agriculture and fisheries and climate change adaptation.

The ***Bangladesh Climate Change Strategy and Action Plan (BCCSAP - 2009)*** is a 10-year programme (2009-2018) to strengthen resilience to face the challenges of climate

change. The BCCSAP has six main themes with a number of related programmes and objectives. The issues in the BCCSAP, relevant for Blue Gold are the livelihood system, water and sanitation programmes in climate vulnerable areas and repair and maintenance of existing flood embankments.

The coastal belt is exposed to natural hazards such as, floods, river erosion, cyclones, droughts, tornadoes, drainage congestion/waterlogging, arsenic contamination, salinity intrusion etc. The **National Plan for Disaster Management (2008-2015)** focuses on – (a) incorporation of disaster risk reduction measures in sector development planning, (b) hazard specific multi-sectorial disaster management plans, (c) cyclone and flood shelter management plan, (d) development of a rescue, relief and rehabilitation plan of action - based on comprehensive risk assessment, (e) accumulation of physical, technological and economic assets - to reduce hazards and vulnerability, (f) wider stakeholder involvement and participation.

The **Sixth Five Year Plan (FY2011-FY2015)** of Bangladesh has identified poverty as the single most important socio-economic policy challenge for Bangladesh. It aims to bring down poverty level to 15 % and ensure housing for all by 2015. It considers “Access to safe drinking water and sanitary latrines particularly in the rural areas as an aspect where greater attention is required”. The Plan recognizes the “Coastal Belt”, where Blue Gold is located, as one of the pockets of poverty that are lagging far behind with respect to the national averages and where the benefits of MDGs attainment need to be specifically reached. The Sixth Five Year Plan of Bangladesh (FY2011-FY2015) sets a target to increase the proportion of rural population with access to safe drinking water to 96.5% and proportion of rural population with access to sanitary latrines to 90%.

In recognition of the substantial development challenges, recently the Government has embarked on a perspective plan covering FY11 to FY21. The **Outline Perspective Plan** projected an image of Bangladesh for 2021 to establish an economically inclusive and politically accountable society. The Perspective Plan strategies include among others pursuing Integrated Water Resource Management (IWRM), encouraging research and better technology management and greater use of surface water and rain water. The broad development goals underlying the Perspective Plan include:

- achieving food security
- making available adequate infrastructure
- pursuing environmental friendly development.

The coastal region is prioritised in the **Millennium Development Goals** (MDGs), as an area of “high vulnerability to natural disasters and persistence in severe poverty and hardship; and, as pocket where “livelihood options are limited”. The MDG target for the proportion of rural population with access to safe drinking water by 2015 is 96.5% and that with access to sanitary latrines is 55.5%.

Finally, a MoU between the ministers of GoB and GoN on cooperation in the development of the **Bangladesh Delta Plan 2100** is signed in May 2012. Dutch experts will cooperate with their Bangladeshi counterparts to develop this Delta Plan 2100 which will analyse the



consequences of the climate change for Bangladesh in a holistic manner. The Delta Plan 2100 will be used by this Program to reassess the design criteria for the water infrastructural works and the consequences for the productive sectors.

### **1.5.2 Decentralisation**

As part of the decentralisation policy much of the implementation responsibilities have already been transferred to lower administrative levels: District and Upazila. This process will continue in the coming years. The most important entry point at District level will be the Commissioners and the Council members and the same applies for Upazila and Union Chairperson. District and Upazila have their own allocation of funds for activities according to their Plans.

The Member of Parliament of a district has an important position in linking the development at local (Upazila) level with the national level and demanding attention and support for on-going and new developments.

### **1.5.3 EKN Bilateral Cooperation Strategy**

Being a bilateral programme, it is considered informative to present herewith some background on related GoN strategies. The strategy of the Dutch development cooperation is presented in the EKN Multi-Annual Strategic Plan 2012 – 2015 (MASP). The focus is on three sectors: water, food security, and sexual and reproductive health and rights. The strategy explicitly states that future development cooperation interventions must take into account the lessons learned from past experiences. In the MASP 2012-15 five strategic goals have been defined:

1. To create a healthy living environment for sustainable economic development by improving water management related to rivers, reclaimed land and food production, by ensuring access to drinking water and sanitation facilities, through strengthening water related institutions in partnership with their Dutch counterparts.
2. Contribute to the implementation of Bangladesh's new Health Population Nutrition Sector Development Plan, in particular those aspects which impact family planning and adolescent's reproductive health with the aim to reduce maternal mortality.
3. Increase food security for the most food insecure households by enabling them to get access to sufficient and balanced food throughout the year on the basis of strengthened livelihoods.
4. Strengthen commercial ties between the Netherlands and Bangladesh in a responsible manner and supporting the improvement of the Bangladeshi business environment with a spill-over effect that improves the lives of the poor.
5. Strengthen the Government's capacity to engage with other actors and stimulate, facilitate and co-ordinate development at both the national and local levels, increasing the effectiveness of the public sector in delivering public services and improving transparency and accountability in governance.

More than in the past the strategy emphasises cooperation with a variety of partners. In addition to the IFIs, such as the WB and the ADB, more emphasis will be given to intensify the linkages with knowledge centres, NGOs and the private sector. In this context partnering between Dutch and Bangladesh organisations will be stimulated.

## Chapter 2: Program: Concept and Approach

### 2.1 Program Principles

The lessons learned from past experiences have contributed to the formulation of a set of basic principles that determine the modus operandi of this Program:

1. The Program has a clear focus on the improvement of the livelihood conditions for the benefit of communities living in polders. The “entry point” is improved water resources management, leading to enhanced productivity in the Program areas, and to efficient product/value chains.
2. The cooperatives will be the legal entity to organise the communities so that they can become an effective partner in the development process of the polders and increase their income. The creation of Water Management Groups (WMG), being primary societies covering all aspects towards production improvement, will be at the basis of this process. Government institutions, such as the BWDB, the extension services of agriculture (DAE), fisheries (DoF), livestock (DoL) and forestry (DoFor) mainly, and Local Government institutions, will work closely with the WMG and the cooperative associations. Knowledge institutions, NGOs and the private sector will have to become important stakeholders in the development process in particular for the productive sectors. The further strengthening of the capacity of the WMO for the development of the polders and creating an effective institutional framework will be a very important component of the Program. The proposed role and responsibilities of the communities will increase the sustainability of the efforts undertaken by the Program. The lessons learnt by other projects will be used for further strengthening of related strategies.
3. The Program applies a demand driven approach: the developmental needs of the people in the polders are the key to guide its activities. Effective participation of communities is therefore of vital importance and in the process of community mobilisation all these issues will be part of the discussions. Program staff and staff of cooperating (public) development agencies must be close to the beneficiaries, and be in continuous and direct contact with communities. All activities will be agreed upon by the communities and be implemented with the explicit consent of the communities and their effective participation in, and where possible contribution to, implementation.
4. To gain and maintain the trust of the communities in the Program areas, transparency in management and organisation of the WMO and in decision making process as well as good quality of the infrastructure and services provided by or through the Program are of vital importance.
5. The Program strategy is to work as much as possible through existing development agencies, primarily the Government institutions. The Program seeks to facilitate their contribution to the development of the communities concerned. Support for, and coordination of, the contributions of different stakeholders is the principal strategy of the Program. The Program will seek and develop effective linkages between the

WMG and NGOs, knowledge centres and private sector, in particular for the productive sectors.

6. For the Program implementation use is made of approaches that have proven their effectiveness in IPSWAM, CDSP, WMIP, SWAIWRPMP projects.
7. The challenges to realise sustainable development within the polders are technically complex and institutionally demanding. Dutch knowledge institutes and private companies in the water and productive sectors will introduce innovative approaches and technologies to find appropriate solutions in close coordination and cooperation with Bangladeshi partners.

## 2.2 Overall Program Objective and Strategies

Poverty reduction has a high priority for both the GoB and GoN; both Governments are committed to achieve the Millennium Development Goals (MDG) adopted at the Millennium Summit in 2000. MDG1 is, 'to eradicate extreme poverty and hunger, and has two targets:

- Halve, between 1990 and 2015, the proportion of people with income <US\$ 1/ day.
- Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

The coastal area is known for its harsh living conditions and high percentage of hard-core poor; high percentages of 50% poor and 20% hard core are common in the coastal districts, partly so due to poor infrastructure.

The overall objective of the Program is:

To reduce poverty in the coastal area by enhancing the livelihood of the rural population, through more efficient water resources management and increased productivity of mainly crops, fishery and livestock in the polders and by empowering the communities to be the driving force.

The aim is to address both the immediate development needs, as well as the longer term requirements for a continuing sustained development process, of the people in the coastal area of Barisal and Khulna Divisions. The Program is conceived as an up-dated concept, based on past experiences, for an innovative and sustainable polder development with a 20 year time horizon consisting of a partnership between the producers, Government, NGO, knowledge centres and private sector. The TA-consultant will have to lay the basis for this enabling environment in such a way that it will strongly support economic growth for the area and higher net farm income and engage international organisations whenever needed in particular for innovative solutions.

A Logical Framework is presented in Annex 3 specifying the expected outputs and activities.

The specific objectives of the Program are:

1. Increased sustainability of the development of the polders through effective community participation. The community organisations (primary societies and their associations) will become the driving force for the natural resources based development (agriculture,

fisheries and livestock), whereby environment, gender and good governance are effectively addressed in their operations.

2. Effective use of the water resources and protection against flooding. Embankments will be rehabilitated and an effective water distribution system established with close participation of the users.
3. Increased farmers' income and strengthened livelihoods through improved farm productivity: production system, harvesting, processing, storage and marketing. Improved production and access to markets will be the two entry points and for each polder a Business Plan will be developed with the value chain analysis for matchmaking as important stepping stones.
4. The living environment will be improved and nearly 100% coverage for drinking water and sanitation will be realised and sexual reproductive health rights (SRHR), balanced nutrition, and good governance issues are well understood and applied. This will be implemented by a separate project (Max-value for WASH).

To achieve its objectives the Program will implement a holistic and participatory planning process, rehabilitation of water resources infrastructure and effective O+M of the water resources for the benefit of the productive sectors, and delivery of services (information and inputs) to address locally identified constraints on agriculture, fishery and livelihood development. Up-front at the pre-construction phase, a process of mobilisation will start aimed at the creation of viable water management groups (WMG) and their associations (WMA). These cooperatives will take on key roles in all program delivery decisions and sustainable O+M related to the water and the productive (crop including horticulture, fisheries, livestock and forestry) sectors.

The Program targets at rehabilitating and/or fine-tuning the water infrastructure for 160,000 ha of polders, which area includes 45,000 ha (gross) of the IPSWAM polders. Development of the productive sectors will cover the 160,000 ha of polder land. The Program will benefit about 1.0 million rural people, the majority of whom are poor. Linkages with the development stakeholders (LG-institutions, knowledge institutions, NGOs and private sector) will be developed and further strengthened. Good governance and gender are main cross-cutting themes and will be embedded in the day-to-day operations and climate change will be addressed through adaptive measures mainly and innovative solutions will be applied to create a more effective water resources management but this applies also for the productive sector. Finally, sustainability of the investments and the development process started will be at the core of the Program.

## 2.3 Program Components to achieve the outcome

The Program covers many aspects of polder development which concentrate around three components: community mobilisation and water resources management, food security and business development, and livelihood and cross-cutting issues. The main entry points for these three components will be shortly presented herewith.

### 2.3.1 Community Mobilization and institutional strengthening

The community participation which was undertaken to ensure that the community would be at the driver's seat for the development of its area has significantly increased the sustainability of the past projects and will be a key element of the Program. The community participation has proven its value for the water sector as the WMGs/WMAs participate actively in the design and planning of the water resources infrastructure and even in its implementation by labour contracts and also monitoring. Moreover, the WMGs will take over part of the O+M (operation and maintenance) for the water related infrastructure. Water is an important input for the productive sectors and should be used effectively; other inputs and information are required for the expected increase in production per hectare which is needed to increase the household income drastically. The WMG will play a key role in this process of improving the farming operations.

The functions of the cooperatives can be distinguished in three phases:

1. Mobilisation, planning and registration phase during 1 and 2 years from start Program:
  - Establishment of the so-called Water Management Groups (primary cooperative societies) and cooperatives associations for well selected themes (i.e.: water management, input supply, credit, transformation).
  - Ensure the active participation of the communities in the establishment of their polder development plan and collective actions plans and capacitate them to participate effectively in the implementation of these plans.
2. Production orientation phase as after one year from start Program:
  - Creation of Farmers Field School for different subjects for each of the productive sector whenever considered effective by the cooperative members.
  - Establishment of linkages with information, input providers and markets.
3. Business development as after three years of start Program:
  - Cooperatives are organised like private enterprises and create much added value for their members.
  - Cooperatives associations fill in on gaps in the enabling environment.

- Small-scale enterprises are created in the Districts to support the development process.

After the initial phase of community mobilisation further institutional strengthening and development will be required and the main elements of such a strengthening process are:

1. Ensure the professionalization of the cooperatives, and cooperative associations will be developed for specific tasks or needs: such as water management at polder level, productive sector input supply, processing, marketing, credit.
2. The related Government institutions understand, accept the WMG as development partner and act upon this effectively.
3. Linkages established between the WMG/WMA and the NGOs plus private sector, in particular for further development of the product chain.

The community mobilisation will be conducted as first step in all polders with exception of the IPSWAM polders where this has already been conducted. Government partners for supporting this activity will be the Division of Rural Development and Cooperatives, BWDB, and the extension services of the Ministry of Agriculture and of the Ministry of Fisheries and Livestock. The Guidelines as developed for the community mobilisation by BWDB will be followed; gender issues are well included. This component is elaborated in section 3.1.

### **2.3.2 Integrated Water Resources Management**

The water resources management component includes two sub-components:

1. Rehabilitation of water resources management infrastructure in selected polders. Erosion and sedimentation, increased salinization of groundwater, cyclone surges and climate change are major challenges for an effective water resources management. Whenever applicable innovative solutions will be applied to increase sustainability of the infrastructure. Optimisation of the water use for the productive sectors, often overcoming conflicting interests, will have to be ensured.
2. Capacity building of the BWDB district officers in particular in: participatory water resources development with the community as well with other stakeholders, high quality standards of design and implementation, introduction of innovative concepts and technical solutions.

The main partner of this component will be the Bangladesh Water and Development Board (BWDB), in addition the Ministries of Agriculture and of Fisheries and Livestock should be closely involved as water is an important input for their sectors. This component is further elaborated in section 3.2.

### **2.3.3 Productive sectors**

The productive sector component includes the following sub-components:

1. Improvement of production system of crops and horticulture, of fish, livestock, etc. based upon improved water resources management.

2. Improvement of harvesting, processing and storage thereby introducing innovative technologies.
3. Based upon the product chain approach, the institutional setting for the main products will be strengthened, aiming at optimal conditions for each stage in the product chain: from land preparation to the market/consumer. Partnerships will be created between the operators in the product chains: the WMG will be at the starting point of the chain.

The main partners for this component will be the Department of Agriculture Extension, the Department of Fisheries and the Department of Livestock Services while BWDB will act as advisor on water related issues. This component will be further developed in section 4.1.

#### **2.3.4 Business development**

In the Vision for this Program the initiated polder development will follow a business-like approach in particular for the productive actors. The main sub-components to achieve are;

1. A Business Plan is developed for each polder based upon the economic potential as defined by its producers and upon an inventory of potential buyers, investors and market research.
2. The potentials meet (local, national, international) market demand through matchmaking and adaptation of production system to ensure the inclusiveness of the demand specifications.
3. Strengthened institutional setting to realise the Business Plan for attracting investments.
4. Transition from subsistence level to the creation of business will be closely monitored.

This component will transform the producers into entrepreneurs and the Department of Cooperatives will be the Government partner; see for details section 4.2.

#### **2.3.5 Cross-cutting themes**

In each of the above components, the Program will include a number of cross-cutting themes and with special attention for: gender, good governance (integrity in particular), climate change, vocational training. In section 5.2 these themes are elaborated upon in more detail.

### **2.4 Program area**

The Program will operate in three districts: Patuakhali, Khulna and Satkhira which are part of the South-west and South-central hydrological zones (see map). The limited number of districts will allow for an effective collaboration with the public and private development partners. Whenever possible all polders in these districts will participate in the Program, however, the polders under rehabilitation by WMIP will not be included.

The total land area of the three districts is 11,463 km<sup>2</sup> and the total population is 5.6 million people. This gives an average population density of 493 people per square kilometre and an average household size of 4.3 persons (Table 2.1).



**Table 2.1: Area and Population of the Districts in the Blue Gold Program Area**

District	Area (km <sup>2</sup> )	Household (HH)	Population	HH Size	Population Density (/km <sup>2</sup> )
Patuakhali	3,220	347,000	1,517,000	4.4	471
Khulna	4,395	546,000	2,294,000	4.2	522
Satkhira	3,858	419,000	1,843,000	4.4	477
<b>Total</b>	<b>11,463</b>	<b>1,312,000</b>	<b>5,654,000</b>	<b>4.3</b>	<b>493</b>

According to the Bangladesh Bureau of Statistics' (BBS) Household Income and Expenditure Survey of 2005 and Population Census of 2001, 27% of the population of Barisal Division and 15 per cent of the population of Khulna Division are living in "extreme poverty" and 12% and 17% respectively in "absolute poverty". The total proportion of the poor population, with a minimum dietary energy consumption of 2,122 kcal/capita/day, is 39 and 32% respectively. In the 24 Upazilas in Patuakhali, Khulna and Satkhira districts one-third of the population is below the lower poverty line (of extreme poverty), and more than one-half are below the upper poverty line (of absolute poverty).

In Annex 2 the polders from which a selection can be made for Blue Gold are presented. The TA-consultant together with the BWDB will make the final selection of the polders. Three types of polders, depending on their development phase, will be distinguished:

- The rehabilitated polders of IPSWAM, where the WMGs already exist. In these polders some fine tuning of the water distribution system will be done and the food security, business development and livelihood improvement will be introduced.
- The rehabilitated polders where community mobilisation has to be introduced as well food security, business development and livelihood improvement. Fine-tuning of the water infrastructure will be designed and implemented in full participation of the WMG. It has been agreed that the polders under the on-going programmes of Coastal Embankment Improvement Project (CEIP) and of Emergency Coastal Polder Rehabilitation Project (ECRRP) could be included in Blue Gold.
- Polders which have not been rehabilitated yet and where the communities are not organised.

In the IPSWAM polders the scope of the already existing WMG will be broadened by including the productive sectors, this process can start immediately. After selection of the of polders to be included in the Program, the process of community mobilisation will start and within two years the first WMG will be registered while community action plans are already be started before. The to-be-rehabilitated polders require a longer lead time, starting with community mobilization, followed by water resources infrastructure and productive sector improvements and further institutional strengthening. The livelihood component can start whenever the polders are selected.

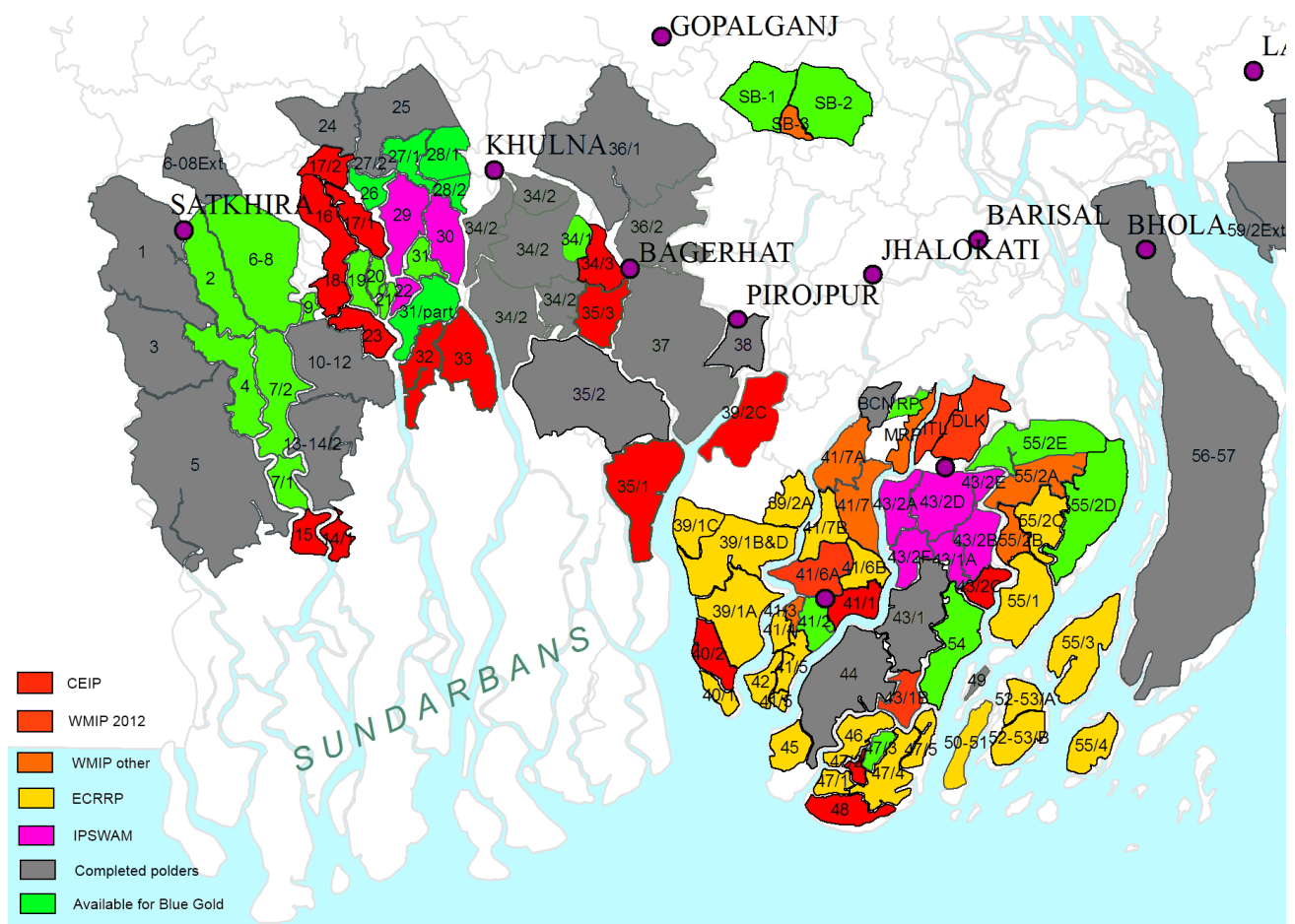
The clustering of the polders within three districts will allow:

- (i) High operational efficiency.

- (ii) Addressing technical challenges of water resources (i.e. siltation of polder intakes, insufficient embankment levels) which exceed the geographical extend of one polder.
- (iii) Effective collaboration with the local administration: union, upazila and district and with private sector actors and NGOs.

The final selection of the polders depends on the cost of achieving the objectives and the timing of the rehabilitation works. The rehabilitation works and further fine tuning of water resources management will be the most expensive. An important reason to cluster polders is that technological innovations can be introduced, such as building with nature concepts.

A programmatic approach will be followed for the selection of the polders this will ensure that the total cost will be within the financial envelope of the Program. During the second review mission a decision will be taken whether the Program will introduce the participatory polder development process outside the three districts. Map 1 is produced by the Formulation mission, based upon discussions with the BWDB a list has been made (Annex 2) of the polders from which a final selection can be made which is different from the green coloured polders in this Map.



**Map 1: Overview of the status of polders and their on-going programmes**

## 2.5 Implementation Approach

An effective participatory and demand driven approach is the key of the Program. This implies that the activities to be implemented related to the water and productive sectors can, as yet, not be defined in detail. Maintaining flexibility during the Program implementation is vital to allow meaningful participation of water users and other beneficiaries. Most polders to be included in this Program are not yet selected, and thus the interventions on rehabilitation of the water infrastructure and fine tuning are not yet known.

This Program document defines an overall framework, outlining components and presents indicative activities that are envisaged, as well as the institutional infrastructure that will be required for Program implementation. Budgets for the various components and activities are determined on the basis of experiences with the implementation of similar projects and activities. Flexibility in budget allocation to the different components, sub-components and activities to be included in the Program will be possible. The two intermediate reviews: in year 2 and in year 4 are appropriate moments to decide, if deemed necessary to reallocate resources. In years 1, 3 and 5 standard annual reviews are planned.

The following specific reports will be prepared by the TA-consultant:

- Baseline survey for each polder to be included and in one polder per District not included in the Program. Every two year such surveys will be repeated to assess the changes in economic development and underlying principles.
- Pre-feasibility study per polder to be used as input for the delineation of the WMGs and WMAs and as input for the Polder Development Plan.
- Polder Development Plan which will be developed in very close participation of the communities and representatives of the technical departments and even other stakeholders.
- Development of so-called Community Action Plans for the rehabilitation or fine-tuning of the water infrastructure and related to the productive sectors as a first step.
- A Business Plan for each polder and specifying the way to turn the cooperatives into business units.

The quality of the participatory process is the key to achievement of the Program objectives rushing the establishment and strengthening of WMOs results in ineffective organisations and also their initial absorptive capacity has their limitations. The phasing of activities is important and presented in Table 2.2.

**Table 2.2: Summary of the Program development cycle**

Community mobilisation +institutional strengthening	Water resources management	Productive sectors (crops, fisheries and livestock mainly)
Preparatory studies incl. WMG delineation + baseline		
Formation of WMG and associations	Participatory planning & design. Innovations Concepts developed	Participatory Planning in each productive sector and for the polder in total
Professionalization of cooperatives	Fine-tuning water infrastructure, mainly inside the polders.	FFS in each subsector; Pilot interventions; Value chain development
Institutional strengthening of related government institutions at district and union levels	Rehabilitation embankments and water distribution works with involvement of WMG/WMA	Production system improvement incl. pilot interventions through FFS
Training of DoCoop staff	Innovative approaches	Product chain developed, linkages with private sector established

Effective capacity building in the directly involved institutions and in particular the WMOs is the key factor for a successful Program. Effective linkages between international and national knowledge institutes, NGOs, private sector and government institutions will be stimulated and in particular the involvement of Dutch organisations will be stimulated.

The following table presents the overall activity schedule of the work in the sub-projects for the 6 years' duration of the Program.

**Table 2.3: Overall schedule of activities**

Batch of polders	1	2	3	4	5	6
IPSWAM polders (45,000 ha)						
4 polders						
5 polders						
Already rehabilitated polders (90,000 ha)						
30,000 ha of rehabilitated polders						
30,000 ha of rehabilitated polders						
30,000 ha of rehabilitated polders						
To-be-rehabilitated polder (25,000 ha)						
10,000 ha of polders						
15,000 ha of polders						

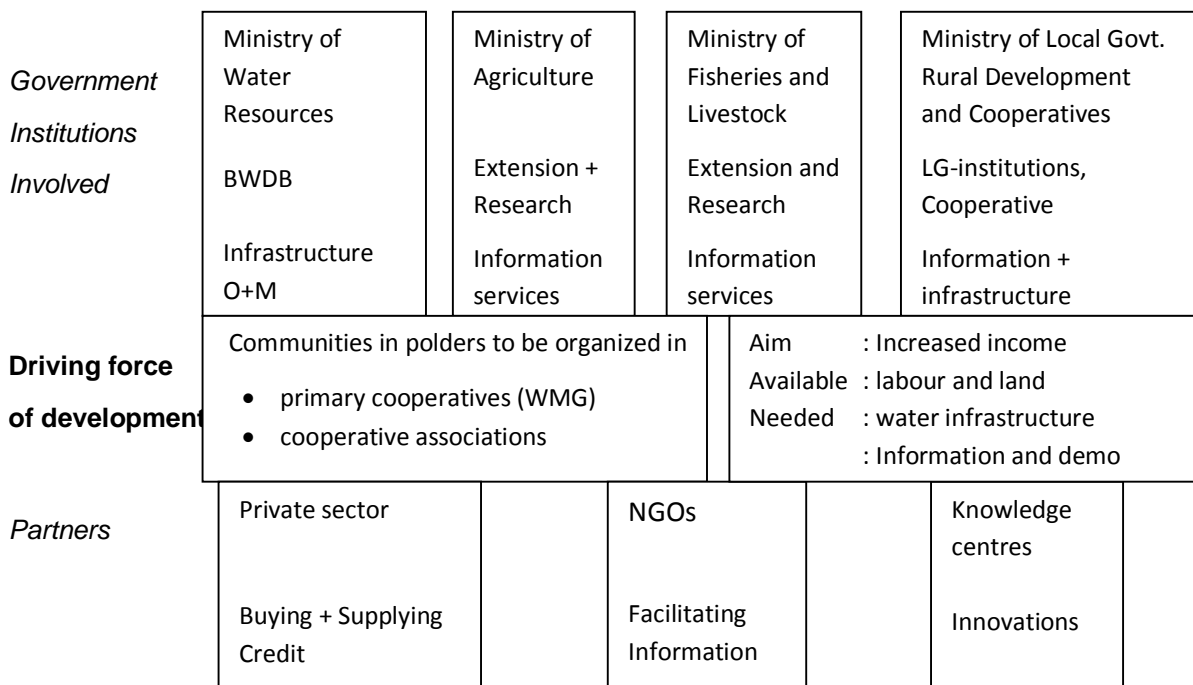
	Water management interventions
	Productive sector interventions
	Business development interventions

## Chapter 3 Program Component 1: Community Participation and Water Resources Management

### 3.1 Community mobilisation and Institutional strengthening

The effectiveness of the community participation will to a great extent determine the sustainability level of the Program interventions. The people within the rural communities have most interest in the socio-economic development of the polder in which they live and work. By organising the people from the communities, they can become an effective partner, and even the driving force behind the development, as experiences from other projects concluded; IPSWAM and Southwest projects have proven the effectiveness of this approach.

The primary cooperative has been selected as the most appropriate legal institutional basis for the organisation of the producers from rural communities. First experience with this form of producers' organisations for the polder development was for the water resources infrastructure rehabilitation projects of BWDB. Consequently these primary societies have been called: Water Management Organisations (WMO) being the Water Management Groups (WMG) at the basis and Water Management Association (WMA) at polder level. Experiences learnt that water resources management is insufficient for the sustainability of the cooperatives and to keep their members motivated and active. Therefore it was decided to have the WMG involved with the productive sectors and livelihood conditions which should result in higher income for its members and thus membership fees could be charged for the services provided by the cooperatives to their members.



The government institutions directly involved in polder development have a number of well-defined responsibilities, such as development and O+M of infrastructure and providing information in particular on the productive sectors. BWDB has the IPSWARM guidelines on how to deal with community participation, while Farmers Field Schools are accepted approaches within DEA for the productive sectors.

Other important partners in the development process are the knowledge institutes, NGOs and the private sector. It is essential that these partners are linked up to the organised communities and develop synergy in their objectives where possible. The TA-consultant component includes budget allocation to facilitate and/or create these linkages.

### 3.1.1 Objectives and Approach

The specific objectives of the community mobilisation are:

- A. *The establishment and/or strengthening of Water Management Groups (primary societies) in the selected polders.*
- B. *Create cooperative associations of the WMG whenever the private sector or Government cannot provide the services or in particular the inputs required such as for inputs supply, processing, marketing, credit, etc.) The responsibilities of the Water Management Association (WMA) will be defined in more detail and these will be strengthened to fulfil these responsibilities.*
- C. *The WMGs and their associations have established effective partnerships with government institutions, knowledge centres, NGOs and the private sector whenever needed for sustainable socio-economic development in the polders.*
- D. *Stimulate and introduce professionalization of the WMGs and their associations.*

The proposed approach is to have the process of WMO formation and development combined with the process of participatory preparation of the Development Plan mainly for the water infrastructure and productive sectors. The WMO formation refers to the initial formalities for creating and registration of a cooperative and the development of WMG concern the organisational strengthening and capacity building to enable them to manage the Collective Action Plans or interventions like O+M of water infrastructure, agriculture, fisheries, livestock and other livelihood activities. The direct involvement of the WMO in the overall and sector planning is important and part of the WMO development process.

The process of establishing Water Management Groups (WMG) aims to create effective and as transparent membership organisations and assuming responsibilities towards sustainable water resources management, for the modernisation of the productive sectors and by playing a dynamic role in development of local communities. Throughout this process special attention is given to the women as to ensure that they will become effective members of these WMG. The Water Management Associations will concentrate on the (water) infrastructure development in (sub) polders and as such the main counterpart of the BWDB.

Key concepts for the WMO development:

- WMO is for all members and based on the concept of social capital/collective actions.
- WMO is the driving factor for the implementation of the Polder Development Plan.

It is important that the Government institutions with a responsibility in the polder development process, fully understand the participatory process through community participation and creation of WMG and WMA. The BWDB has been involved with community participation for water resources management over the past 10 years and has internalised this approach; nevertheless further training is needed to ensure that the approved guidelines on Participatory Water Management are understood and applied. For the productive sector departments the community participation as introduced in the polders for water management (through the WMO) is rather new and thus will require further discussions and operationalization of this model for the Departments.

### 3.1.2 Activities and Results

The activities concentrate on the institutional strengthening directed in first instance towards the primary cooperatives and the cooperative associations as to ensure an enabling and supportive environment in particular for the water and productive sectors. The selected polders will be similar in hydrological characteristics as the IPSWAM polders; therefore the same ratio of area per WMG has been used. It has been estimated that 600 WMG and WMA (water associations) will have to be established on the 115,000 ha of polders for rehabilitation and fine-tuning; on the 45,000 ha of IPSWAM polders 250 WMGs/As have already been established.

The private sector and knowledge institutions will also be part of the development of the institutional setting. Presently, the non-organised producers are at the mercy of the suppliers of input and the buyers of the products for processing and marketing. The public sector is an important player: mainly through investments into infrastructure development and the extension services. By organising the producers into primary multi-purpose cooperative, they create a better leverage towards the other partners.

#### The WMO development process

- The TA team prepares a map of the polder with hydraulic contours and land classification and villages. This map is to be used for defining the boundaries of WMG.
- Based on this map the Program community organisers will contact the communities and explain the objectives of the Program and the importance of community participation. The proposed delineation of the WMG will be discussed and agreed upon and other topics to be discussed:
  - a. WMG formation: composition, gender, selection leaders, subcommittees. The registration of the WMG is the first objective which will be followed by further professionalization of the WMG.
  - b. Integrated and participatory planning and management covering the infrastructure and its O+M, agriculture, fisheries, livestock and other livelihood resulting in a

Polder Development Plan and collective actions. The overall planning process and expected implementation cycle.

These two topics will be further developed simultaneously and require different types of support from the Program.

Formation process:

- Formation of the WMG foundation committee, meetings at and clearance from Union level required, formulating the rules and regulations and start the registration process.
- Formation of a Planning Committee at WMG and WMA levels.
- Election of representatives for WMG + WMA by the members: executive committee of the WMG with at least 30% women and two representatives (m+f) for the WMA council. The WMA council will elect their executive committee of 12 members
- Registration of WMG and WMA with the Department of Cooperatives
- Further institutional development and professionalization of the WMO.

Development process:

- Identification of present situation and possible solutions, and stakeholders at village level and attention points will be prioritised. Subject matter specialists will be involved in this process. All this information will be accumulated at sub-polder or polder level depending on the size of the polder. The Polder Development Plan will be drafted with options if required and used for final discussion with the WMG and at WMA level the Polder Development Plan will be finalised. This final Plan will then be used by the WMG for discussing the collective actions at WMG level and for BWDB for starting detailed designing of the infrastructural works.
- The members for WMG will be mobilised in an early stage for simple but quick yielding collective actions: organised group visit to polders with registered WMG, linking producers with public services providers, visit a (shrimp) processing factory, etc. The final Polder Development Plan will provide more direction for their collective actions.
- Development of effective linkage with services providers and further development of the institutional framework based upon the analysed requirements (value chain analysis).
- For 250 WMG a block of 60 - 70 m<sup>2</sup> will be constructed for storage and office. The WMG will be selected using transparent criteria and be considered as a stimulant for WMG to become an effective private sector organisation in support of its members.
- Cooperatives will become organised and operated as an private sector enterprise as to create more added value for their members and thus higher income without taking too much risks.

Important is that this process is done in line with the absorption capacity of the communities. The data collection will be done together with interested beneficiaries; walkthroughs, participatory appraisals, focus group discussions are all examples to strengthen the participation. Once the Planning Committees are elected, they will become directly involved in the development of the polder. Interventions will be identified as well as action plan



formulated and implementation responsibilities defined and finally performance monitoring defined. The final Polder Development Plan will be presented to the members of the WMG and then WMG can decide on collective actions at their level which then need approval of a majority of at least 75%. The TA team will ensure that gender and environmental management are properly taken care of in the final Plan and that the Strategic Environment Monitoring Plan will be approved.

### Facilitators

Community mobilisation and capacity building towards effective community participation is at the centre of this Program. Facilitators, trainers, oversees, community organisers, etc. will have a crucial role in this Program as their input will determine to a large extent the success of this Program: the establishment of strong multi-purpose primary societies or cooperatives. This responsibility will be given to the TA team. Based upon experiences of SWAIWRPMP and IPSWAM, the following information has been used to estimate the facilitation input.

- One Community Organiser can support the creation of 3 WMG covering about 500 ha during the first 4 months.
- During the next 6 months one community organiser can deal with six WMG and one senior subject matter will be attached.
- At sub-polder level the extension overseer (BWDB) and the sub Assistant Agriculture Officer (SAAO) of DoA will assist. The Departments of Fisheries and Livestock Services are not well represented at district level; the TA-consultant will ensure that expertise is provided in the discussions about options for solving the observed problems.
- In months 10-14 one subject-matter specialist and community organiser can finalise the process of the Polder Development Plan respectively registration of 6 WMGs.

During the community mobilisation, the WMG/A formation process and the initial development phase, facilitators and subject matter specialists from the Program TA will provide support and guidance. The facilitators will have to be aware of the main features of the polder setting, the cultural background of the population, including the role of men and women. Experience in other participatory polder rehabilitation projects has shown that women can be intensively engaged in discussion (after empowerment training) and have clear opinions in particular on matters that affect them such as the availability of usable water for domestic, household and horticultural needs.

It is estimated that for the mobilization and formation phase of the 600 new WMG and water associations, 75 facilitators will be needed during a 4 year period. These facilitators will be supported by 12 subject-matter specialist mostly related to the productive sectors.

The institutional strengthening of the WMG/A will not be finished upon registration of the WMOs. It will be a continuous process throughout the Program period. The WMG are supposed to take the lead in many aspects of the polder development and develop capacity when and where required in the interest of their members. At a certain moment in time the role and tasks of a WMG are too demanding for elected members and professional could be

contracted by the WMG to take over the day-to-day operations: professionalization of the cooperatives. The TA team will guide and advise the WMG in this process.

The need for institutional development will be assessed and discussed by the TA team. Much depends on the present suppliers of services and inputs and the question whether a cooperative established by a number of WMG can effectively fill the observed gaps. Such discussions and analyse will most likely include subjects as credit provision (a cooperative bank), as input supply and storage, processing, etc. The TA team will also assess the role and responsibilities of the existing WMA in detail and advise the WMG hereupon.

### Partnerships

The LG-institutions and the zonal BWDB offices will be closely involved in the process of the initial analysis, planning and designing and implementation of the Polder Development Plan and will participate in many of the WMO meetings.

The Department of Cooperatives (DoC) is responsible for the registration, support and auditing of cooperatives in Bangladesh. Therefore DoC has establishments at the District and Upazila levels. Staffing levels of these establishments are more or less uniform across the country. The following table presents the staffing at District and Upazila levels.

Table 3.2: Department of Cooperatives' representation at District and Upazila levels

District level	Upazila level
District Cooperative Officer Deputy District Cooperative Officer 5-7 Inspectors (depending on the size of the District) 1-2 Instructors Office Clark + Cashier Support Staff	Cooperative Officer 2 Assistant Inspectors Computer Operator 1 Support staff

DoC is currently setting-up with support from the ADB/LGED 3<sup>rd</sup> SS project, a Water Management Cooperative Monitoring Cell at its headquarters in Dhaka. If considered necessary, the Program will provide assistance to the DoC after the ADB/LGED project by the end of 2014. Under the Program 10 motorbikes will be purchased for the DoC staff so that the inspectors can visit the newly established cooperatives.

Because of the relatively high number of cooperatives to be formed in the three districts, extra capacity will be required to execute the mandatory annual audits. In the Rules of Business of the DoC the opportunity is provided to outsource the auditing of the accounts of cooperatives. Under the Program the annual audits will be outsourced to sufficiently qualified and experienced auditors contracted by the WMO. Criteria for the required qualifications and experience will be determined in agreement with DoC. In the TA contract the costs of the annual audit are included for the first three years of a WMG and WMA. The WMGs should use their own resources to pay for those services as from year 3 after their registration.

For BWDB the most important discussion partner will be the WMA while the interactions with the WMG will concentrate on the planning of the water resources management inside the

polder. Presently the use of the water resources often results in conflicts between the different water users (crop production versus shrimp production). It is important to design a water distribution system that, if technically possible, can fulfil demand from the WMG members.

The BWDB will be closely involved in the initial phase of the WMO development in particular with the planning water resources infrastructure for the Polder Development and to advice on effective use of the available resources for the different productive sectors and during the discussions on technical water related issues. Once the Polder Development Plans are finalised and implementation actions agreed upon, detailed designs are made by the BWDB zonal offices, and after approved by the Design Directorate of BWDB implemented. The infrastructure improvements are implemented in accordance with the Plan by contractors (structures) and LCSs (earthwork). The LCSs are supposed to be members of the WMG and will receive training so that they can be engaged for the construction of minor structures and repair of main structures.

The WMA will be involved in monitoring of the implementation, ensuring full transparency of contract execution and supervision.

For the O+M of the water infrastructure BWDB and WMA, the roles and responsibilities of each will be discussed and once agreed upon a MoU will be signed. The main elements are:

- Responsibility for operation of the water management infrastructure (embankments, sluices, channels etc.) will be assigned to the WMOs.
- The WMOs will take the responsibility for the regular, routine maintenance of this infrastructure, for which it may use labour or cash contributions of its members and or establish contacts with LGIs for fund allocation.
- The BWDB will make available water management infrastructure i.e. slopes of embankments, borrow pits, khals and *khas* land next to the embankments and main canals, to the WMOs, so that it can be managed properly and any income which can be generated from this infrastructure (through rent, fishing leases, tree plantation etc.) can be used by the WMOs for routine maintenance of this infrastructure.
- The BWDB will remain responsible for major periodic maintenance and emergency works (e.g. replacement and repair of major hydraulic structures, breach repair or retirement of embankments) as well as issues related to the drainage channels outside the sub-project.
- The BWDB and WMOs will jointly assess the annual maintenance requirements and the work carried out will be jointly monitored, on the basis of an agreed procedure. Also the functioning and operation of sluice gates and regulators will be jointly inspected and corrective action agreed. Information on all operation and maintenance activities, whether implemented by WMOs or BWDB will be communicated to WMO members and the general public in a fully transparent manner.

The Department of Agriculture Extension: throughout the process of WMG formation the Sub Assistant Agriculture Officers (SAAO) are directly involved and will have to advice the crop

farmers on how best the agriculture production systems can be improved through intensification and diversification. The supply of water will be an important factor in determining the options. Together with the producers they will analyse the potential services providers and if so required will create linkages with such providers. The Sub Assistant Agriculture Officers will advise the TA-consultant on the creation and further development of FFS.

The Department of Fisheries and of Livestock Services: their officers at District and Union level will be closely involved during the WMO formation process as advisors for the members of the WMG. Whenever possible, they will participate actively during the process of the discussions towards the Polder Development Plan. The extension staff will advise the TA-consultant on the creation of FFS in particular on fish and livestock.

LG-institutions: The WMG and WMA have to coordinate very closely with the local administrations at Union, Upazila and District level. The same applies to the local offices of the technical ministries concerned. The Program will contact the Union Commissioner in a very early stage of the Program and explain the objectives and main strategies. The Commissioner could be invited a chair some of the meetings with the representatives of the WMGs. The Polder Development Plans will be worked out in close cooperation with the local administration and technical departments. Since the Program concentrates on water infrastructure and increased productivity, other demands needed for the Polder Development will not be catered for (in particular road and market infrastructure) and could be provided by the Local Government. An effective linkage with the local administration could be useful to remind central ministries about their obligations towards their part of the Polder Plan. The partnership as developed under the Char Development & Settlement Project (CDSP) provides an example of effective cooperation. In the field of extension services such partnerships with DAE and the Departments of Fisheries and Livestock Services are important for improving the production system and applying high quality standards of operations.

Private sector and NGOs: Based upon the analysis of the product chain the members of the WMG will have to decide which role and responsibilities they want be taken towards further intensification of the product chain and issues like: input supply, processing, credit, etc. During this phase the linkages with knowledge institutions and private sector will be further intensified, in particular for innovative technologies respectively for improved access to the markets.

The entry point of the community participation for the new polders will be different for the nine IPSWAM polders and the other polders. In the IPSWAM polders WMG/A have been established for the development and O+M of the water infrastructure. Blue Gold will ensure that also the productive sectors and the livelihood conditions will be taken up by the WMG and Implementation Plans and Community Actions will be developed as well as partnerships identified and established. The other polders will go through the whole process of WMO development as described above.

### 3.2 Sustainable Integrated Water Resources Development

The National Water Policy states that, “all necessary means and measures will be taken to manage the water resources of the country in a comprehensive, integrated and equitable manner”. The National Water Policy formulates a number of basic principles. For the water management under the Program the following principles are relevant:

- Planning and Management of Water Resources
- Public and Private Involvement
- Water and Agriculture
- Water and Fisheries and Wildlife
- Water for the Environment
- Stakeholder Participation

Without effective functioning of the water resources infrastructures (i.e. polders), the living and working environment in the coastal zone will not be secured and the productive sectors will have difficulties in improving their production system.

The polders in the three districts which could be included in this Program are presented in Annex 2. The polders to be included in the Program have been developed in the 1960s and 70s. Due to poor periodic maintenance practices and cyclone damages, major rehabilitation works are needed. The total area of the still to-be-rehabilitated polders amount to about 85,000 ha. The Program will select 25,000 ha of polders for rehabilitation of the water resources infrastructure. On these 85,000 ha and the 25,000 ha WMG/As will have to be organised. The Guidelines for Integrated Planning for Sustainable Water Resources Management (IPSWARM) operationalize these principles and are approved by BWDB in September 2008 for use in existing medium-sized Flood Control and Drainage Projects.

For a number of polders the rehabilitation works have already been or are being implemented (on-going ECRRP and CEIP projects and earlier completed polders). However, most of the works are limited to the embankments and its control structures. The total area for fine-tuning of the water infrastructure to be taken up under this Program amounts to 115,000 ha; the total area of this type of polders in the three districts amounts to about 200,000 ha (see Annex 2). In the ECRRP, the CEIP and earlier completed polders the community participation and thus the formation of WMG/WMA will be introduced. In the IPSWAM polders (45,000 ha gross) the productive sector will have to be involved in the participatory process and further fine-tuning of the water infrastructure is needed. The priority of this Program will be on already rehabilitated polder in which further fine tuning of the water infrastructure is needed. The selection of the polders will be done in close coordination with BWDB and the district administration.

**Table 3.3: Total area of polders from where the polders can be selected**

Type of works In polders	Total area In ha	Number of polders	Average area (ha)	Nr of polders in Program (est.)	Total area in Program
Rehabilitation	85,292	17	5,000	5	25,000
Fine-tuning	156,524	21	7,500	12	90,000
Fine tuning IPSWAM	42,164	9	4,650	9	42,164

Based on the data provided in Annex 2 a summary has been prepared (table 3.3). It is estimated that 26 polders will be part of the Program to make up the 160,000 ha. The final selection will be made during the Program implementation.

### 3.2.1 Objectives and approach

The specific objectives of this component:

- A. *Certain flood protection in polders with maximum gross area of 25,000 ha in total by rehabilitation of the embankments and water intakes and outlets and an improved water distribution and drainage system.*
- B. *Optimal use of the water resources (rainfall, rivers and groundwater) for the productive sectors through the fine-tuning of the drainage and water distribution system for 45,000 ha of IPSWAM polders and 90,000 ha already rehabilitated polders, mainly by the ECRRP and CEIP projects*
- C. *The partnership between BWDB and WMG/WMA is effectively operational resulting in continuous and high standard O+M works and effective water management adapted to the requirements of the WMG/WMA.*
- D. *BWDB zonal offices covering the three districts are applying the IPSWARM guidelines; the planning, design, tendering, and construction are conducted following the highest standards of quality. BWDB at national level is well informed about and able to introduce new approaches to solve the water sector challenges.*

The following approaches will be used for the water infrastructure works and organisation.

#### Embankments plus intakes and outlets

During the participatory inventory phase the present status of the water infrastructure and its functioning will be inventoried. The embankment will have to provide protection for a one in 50 years flood event. Together with the communities the main functions of the embankments will have to be discussed: protection, road, housing area, etc. and a final agreement reached. From a hydrological perspective for the design of the embankment most important consideration will be given to its protective function against river floods in combination with the tidal movements of the sea water and the storm surges. The consequences of climate change and upstream river developments will be taken into account when defining the design parameters. Erosion and sedimentation is a process which needs proper analyses as this process has major consequences for the embankment and the location of the inlet and outlet structures; even actions might be proposed to reduce erosion. Dutch expertise is well-known for its design of “smart” dikes which could cater effectively for the observed challenges.

### Optimal and effective water use for productive sectors

For the rehabilitation and fine-tuning of the water infrastructure inside the polders but including the intake and outlet structures, the community participation through the WMG and WMA is essential to ensure effective use of the water resources. Water use differs between the productive sectors: crop and fish production systems, but also between type of crops (permanent irrigation for rice versus intermittent watering of vegetables, soybeans) and also fish (saline and fresh water), and should be taken care of in designing the water distribution system and clear arrangements between the different users should be made. If such clear agreements are not made at the start of the rehabilitation, conflicts between water users will be unavoidable. Possibilities of optimizing and prolonged water use will be discussed: water storage for dry season in canals and “keels”, drainage of fish ponds, and whenever agreed upon included in the design. Accepting that most farmers will not be able yet to have a clear view on the crops they will select and on other choices they will have to make in relation to water use. Therefore flexibility will be built into the water distribution; however water availability is limited during certain periods in the year and limits the flexibility of the system. For that reason it is important that the WMG members discuss on a regular basis the sharing of the available resources.

### Partnership between WMG/WMA and BWDB

The WMA will be involved during the final design, tendering and implementation of all water infrastructural works; this will ensure that in the final designs the recommendations from the water users are respected. During the implementation the WMG members through their Labour Contracting Societies (LCS) will obtain contracts for labour work. The WMA selects from among its members a monitoring committee who will observe the quality of work and report on the implementation to the WMA/G and the Divisional Office (XEN).

Once the construction is completed the WMG/A will become involved in and partly responsible for the O+M the water infrastructure. Memoranda of Understanding will be signed in which the responsibilities of each of the partners are defined inclusive financial arrangements for the cost of the O+M operations. In general, the WMO will have the responsibility for operation and routine maintenance and the BWDB will carry out periodic and emergency maintenance works. Further BWDB will assist the WMO in (i) acquiring resources (borrow-pits, land along embankment, khals and other water bodies) for operation and routine maintenance to generate income, and (ii) in identification of maintenance needs and assessment of operation and the routine maintenance works carried out. BWDB will train the WMO to organise and implement the O&M process.

### Capacity building

The Guidelines for Participatory Water Management (GPWM) provides the basis for the community participation in water resources management. Whenever considered necessary these Guidelines could be adapted and the TA team will provide the necessary inputs for such changes. The TA team will ensure that all partners understand clearly their role in the process towards rehabilitation and O+M of the water resources infrastructure.

The TA team will provide all required backstopping for the BWDB to ensure that the proposed and designed embankment fulfils the design criteria effectively and advise the BWDB on the tendering and will assist BWDB in supervising the implementation of works by contractors. Following GPWM at least 25% of the earthwork is to be carried out through Landless Contracting Societies (LCS), so that employment and income generating activities are provided to the poor sections of the community. At least, either 30% of the LCS groups or 30% of the LCS members should be women. The Local Contracting Societies will obtain vocational training as to ensure that they will be able to execute the work according to design standards.

Innovative water resources management solutions will be introduced and tested by specialised national (i.e. IWM, CEGIS, etc.) and international institutes (i.e. Deltares) and firms. This partnership between BWDB and these knowledge centres will also contribute to the capacity building of the BWDB design team.

### **3.2.2 Activities and results**

In view of the different status of the polder development a distinction is made for the water management related activities.

#### *New and partially rehabilitated polders without WMO formation*

Based upon the initial Polder Development Plan, the Community Action Plan for the polder rehabilitation works, embankments and/or water infrastructures inside the polders will be developed. Then detailed designs and cost estimates for each sub-project using the Standard Schedule of Rates are made by the zonal BWDB offices. Upon approval by the Design Directorate of BWDB, the zonal office starts the preparation of the implementation by preparing the necessary documents for tendering contracting. The infrastructure works are implemented in accordance with the plan by contractors (structures) and LCSs (earthwork).

The WMA will be involved in monitoring of the implementation, ensuring full transparency of contract execution and supervision so that the works are in accordance with the technical design. Care will be taken to ensure that all WMOs have full women's representation and active participation, and the participation of women in the discussion and planning of sub-projects will be facilitated through the WMGs and the WMAs as envisaged in the GPWM. Women have already been found to be enthusiastic in committing for more work and earning more, and their roles and contributions to the process generally received positive appreciation from the community. This will be continued and developed further.

The earth work done by women through the LCSs will addressing their practical needs women (even if on a though short-term basis) while their regular participation in the discussions in meetings will continue to raise their social position and develop decision making authority by them to eventually address their strategic needs. The quota system has been found to be particularly helpful and was a much needed additional support to rectify the existing gender imbalance. These are in line with the BWDB Gender Strategy (2006-2011) and the GPWM.



The issue of women's participation in the LCS has been described by the members of WMOs (both men and women) as igniting the dormant ability of the women to become an earning member and allowing assertion of "local authority". The role of women in monitoring the work of the contractors has been felt to be "empowering" by the women members of the WMOs who otherwise exercise very little authority in any matter, domestic or external. All of this will be extended and strengthened in the Program.

Optimisation of water use to start with in the nine IPSWAM polders

For these nine polders the Polder Development Plan will be updated as to ensure that the productive sectors and livelihood issues are well integrated in this Plan. The Community Action Plan for the water resources infrastructure will require some further updating in light of the proposed developments of the productive sectors and the related livelihood development. Infrastructure problems have emerged recently and will be included in the Community Action Plan as to allow for further fine-tuning of the water management infrastructure in these polders. The infrastructural works already identified by the IPSWAM team are:

- In polder 43/2A the construction of a set-back embankment where bank erosion has taken away the original dyke.
- In polder 30 the reconstruction/relocation of several sluices on the west side where siltation in the estuarine river between the polders has made drainage no longer possible; these costs will probably be quite large.
- In other IPSWAM polders improvements of internal drainage channels, bunds separating high from low land (elevation difference < 0.5m), fresh water (paddy cultivation) from brackish water (shrimp – *Machrobrachium*) cultivation is required.

Based upon the updated Community Action Plan, BWDB zonal offices will prepare detailed design and upon approval by headquarters, the activities can be budgeted for and tender documents will be prepared. Upon budget approval, tendering can start and upon conclusion on the tendering, the implementation can start. Monitoring of the works will be done by BWDB and WMG/WMA.

Partnering and capacity building

Support for efforts to increase the ability of BWDB to meet its own (periodic and emergency) maintenance obligations as specified in the polder O&M contracts.

In the nine IPSWAM sub-projects agreements have been concluded between the WMA and BWDB. Many WMAs have assumed their responsibilities for maintenance as defined in that agreement, in a number of cases even exceeded it. BWDB, however, generally has been slow to take up its responsibility. The estimated cost, calculated according to standard BWDB assumptions, very significantly exceed the funds generally made available by BWDB for this purpose. Investigations into this matter have revealed that there is a need for updating the standard assumption for periodic maintenance in particular for the earth works.

This analysis should start with an investigation on the (routine, periodic and emergency) works in average situations required for O&M and compared these with the present

standards. The actual budget process will have to be included in the analysis: standards for estimates and the process of approval and releasing funds at divisional and national levels.

The Program will realise its institutional strengthening objectives by implementing the following activities:

- The Program office in DP-III is responsible for approving the proposed planning, detailed designs and cost estimates for the water resources infrastructure to be implemented. Once approved this team will have to include the cost in the budget and ensure that the funds will become available as planned. The central planning team will also have a role in the monitoring and evaluation of the rehabilitation works once completed and operational. Some (limited) TA will be provided by the Program to assist the BDWD central planning team.
- Two zonal planning cells in the South-western and South-central zones will be responsible for the day-to-day operations for the rehabilitation works and the O+M practices in the polders.
- BWDB has requested that experts from the TA team are positioned at the Planning units to further enhance the capacity of the BWDB staff. The TA experts will provide technical inputs in the conceptual design phase thereby introducing innovative and sustainable solutions to cater for the challenges of the water resources. The TA experts will apply high standards in design and implementation, strengthen monitoring post construction review and analyse O+M cost for realistic unit rates.

**Table 3.4: Planning Team in DP-III and at zonal level**

<b>BWDB staff at Central Planning team</b>	<b>Technical Assistance (22 person-months per year)</b>
1 Executive Engineer (XEN) 1 Hydraulic Engineer/SDE 1 Civil Engineer/SDE 1 Irrigation/drainage expert 1 Environmentalist 1 Socio-Economist 1 Computer Specialist Support staff	1 Water Resources Mgt Specialist 1 Environmental Expert 1 Socio-economist 1 Monitoring + Account's expert Short term specialists Support Staff
<b>BWDB staff at zonal level</b>	<b>Technical Assistance per zonal office (55 person-months per year)</b>
1 Executive Engineer 1 Hydraulic engineer 1 Civil Engineer 1 Socio-economist 2 Quality control engineer 3 Support Staff	1 Hydraulic engineer 1 Irrigation engineer 1 Socio-economist 2 Quality Control Engineers Short term experts Support staff

- Community participation will be further strengthened. Continued dissemination of the integrated, sustainable and participatory approach to water resource management in BWDB, following the IPSWARM Guidelines; this will focus especially on the younger professionals in the BWDB. A Training Toolkit has been prepared including manuals, training material, general background documentation and a DVD for distribution among all levels of BWDB staff but also the BWDB partners. As the safety level of polder embankments offers only security against flooding to a certain level; preparedness and ability of the polder inhabitants to react effectively if possible inundation occurs through Disaster Management Knowledge and Disaster Management Training modules for the WMGs, WMAs and Union local government have to be developed and included in Blue Gold under the Water Management Innovation Fund.
- Participatory water management was started more than 10 years ago and will require continuous monitoring and assessment and solutions for newly developed challenges.
- Technical innovation will have to be continuously introduced for further improvement of the water resources management. An example from the recent past is the improved design of sluice slide-gates and flap-gates by the CDSP II project and its introduction in the IPSWAM polders. These improved gates massively increase its working life and reduce maintenance problems and need further introduction.
- The sedimentation process in the tidal rivers in the South-west hydrological zone poses major problems for the inlet and outlet structures. In-depth analysis is required to come up with sustainable and innovative solutions.
- Disaster management of extreme events (cyclonic surges) is another topic which requires new inputs in order to establish effective disaster preparedness for WMOs, BWDB and other GoB institutions.

The Program will create linkages with internationally renowned institutes to allow innovative solutions to be introduced and implemented in the coastal zone of Bangladesh. The TA-consultant has a separate budget line which will allow such linkages to become operational.

## Chapter 4. Component 2: Food security and Business development

### 4.1 Food security and Agricultural production

Food security is defined as a situation in which people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life (World Food Summit, 1996). Food security is therefore built on three pillars: *food availability*: sufficient quantities of food available on a consistent basis; *food access*: people having sufficient resources to obtain appropriate foods for a nutritious and varied diet; *food use*: people make appropriate use of food based on knowledge of basic nutrition and care as well as adequate water and sanitation.

Despite rapid growth of its population, from an estimated 90 million people in 1980 to 160 million people today, Bangladesh has achieved impressive progress in food production and has become self-sufficient in rice production as a result. At the same time the country has experienced rapid substantial economic growth lifting many people out of extreme poverty. Notwithstanding these favourable developments, food insecurity and undernourishment have remained at unacceptably high levels for a large part of the population.

The low purchasing power of households with low and unstable sources of income is one of the main reasons why households lack access to food. Rural households with irregular incomes are the most food insecure households in Bangladesh. Members of these households have poor and unbalanced diets. Particularly women and children are most affected by food insecurity. The southern delta of Bangladesh has one of the highest poverty levels and lowest food security levels in the country.

Increased and more diverse agricultural production (crops, fish, livestock, etc.) made possible by improved water management in polders will help poor rural households to improve their food security in various ways: by increasing their own food production, by increasing their income from the sale of their produce and by generating new employment opportunities through agricultural development. At the same time the increased availability of food products at local retail markets may improve the access of poor rural households to more and nutritious food at lower prices.

#### 4.1.1 Challenges for agricultural development in the Southern delta

In Bangladesh self-sufficiency in rice was largely achieved by intensifying production in areas with assured irrigation, with high yielding crop varieties (HYV), intensive use of fertilisers and pesticides. However, crop yields have not increased significantly for more than a decade. The difference between farmers' yields and potential yields by using available technology (*i.e. the "yield gap"*) is significant: for rice and also for wheat it is between 1 to 2 tonnes/ha and for maize between 2 and 5 tonnes/ha. Buffaloes, duck, and sheep are important livestock in particular for the hard-core poor; in general production level and thus income are low and rearing practices are very extensive.

In Sakhira district shrimp production in/outside the polder embankment is very important for the rural communities; part of this product is for export. The discussions and sometimes fights between shrimp farmers and crop producers are very intense; the shrimp farmers use saline water which cannot be mixed with the irrigation water for crops. The most common result of such disputes between fishery men and crop producers is that one of the two parties suffers and cannot produce.

Water for irrigation is becoming scarce and due to climate changes the supply less reliable. In general, the water distribution systems are inefficient and on-farm water management practices poor. In the coastal zone, increased sea water intrusion, saline groundwater, inadequate protection of the low-lying land against river floods and storm surge pose additional challenges for the use of water for the productive sectors.

To improve the provision of water for agricultural production irrigation and drainage infrastructure needs to be redesigned, repaired, or even newly constructed. It is important that water management responsibilities to be decentralised, in principle to the WMGs and the WMAs. The water infrastructure works should be designed for optimal utilisation of water for the different producers (cereals, vegetables, fish, livestock, etc.) and should result in efficient polder and on-farm water management systems. Research has demonstrated that the productivity of crops and fish in the coastal polders could be doubled profitably by introducing new crop varieties and/or fingerlings and new technologies for land preparation and processing if water is effectively managed.

Apart from improved water management, there is still great potential to increase farm yields through the proper application of inputs and the use of appropriate technologies, post-harvest practices also have much scope for improvement. Considerable quantities of perishable and high value agricultural products produced in the coastal zone go to waste because of improper agricultural practices and post-harvest operations: for fruit and vegetable this is 20 to 45 %, for cereals 15 %, and 12% of fish and milk products go to waste. The main reasons for the high losses are lack of knowledge and motivation on the part of value chain actors, poor technologies and practices and weak value chain structures.

When agricultural production increases and becomes more diverse, interventions will be equally necessary to develop input supply, collection, storage and processing services and infrastructure that are all needed for producing and marketing the various agricultural produce. This will also create additional employment in the area.

The main challenges for improving the performance of the productive sectors in the coastal zone are therefore (i) agreement within the community on water use, (ii) improving water resources management, (iii) boosting extension services: i.e. the research-extension-farmer linkages, (iv) improving input supply, and (v) strengthening processing and handling operations and developing links with markets.

#### 4.1.2 Objectives and approach

The main thrust of the Food Security component is fully in line with the Government of Bangladesh's Sixth Five-Year Plan, National Agricultural Policy, National Fisheries Policy, the Country Investment Plan for agricultural development, food security and nutrition, and the Master Plan for Agricultural Development in the Southern Region. The component is therefore expected to contribute towards achieving MDG1 on the eradication of extreme poverty and hunger, towards MDG3 on promoting gender equality and empowerment of women, and towards MDG7 on ensuring environmental sustainability. In EKN's MASP 2012-15, connecting food security interventions to the water sector is regarded as one of the two principal entry points for tackling food security, the other entry point is private sector development and trade.

The specific objectives of the Food Security component in this Program are:

- A. *Agricultural production systems (including field crop production, horticulture, animal husbandry, aquaculture and fisheries) based on the effective use of high quality inputs and the application of effective and sustainable husbandry practices and harvesting techniques are developed and have increased income for at least 150,000 farming households*
- B. *WMGs are developed as multi-purpose cooperatives providing supportive functions to the member producers, in particular the landless, marginal and small-scale farmers.*
- C. *Efficient and effective participatory field-level research is conducted and information linkages are established with producers.*
- D. *Effective service provision for input supply and for marketing and processing of agricultural produce is established, with a strong role for the private sector.*
- E. *Employment is created in agricultural services provision for households with few resources, and in particular for women.*
- F. *The supply of nutritious foods at lower prices has improved at local retail markets.*
- G. *Food security, including better food use (nutrition) due to greater awareness and behavioural change will be achieved for all members of the polder communities.*

The approach of the food security component will be two-fold. It aims at increasing, intensifying and diversifying agricultural production in the Program area. Simultaneously, it will strengthen the services and facilities needed for commercialised agricultural production; the value chain analysis will provide the insights on what is needed to facilitate the marketing of agricultural products in a profitable, sustainable and fair manner. Explicit consideration will be given to improving food access and food use for the local people, in particular for women.

Key elements of the approach are:

- Training of the WMGs as primary cooperatives supporting their members in increasing production, farm income and improving nutrition.
- Optimisation of on-farm water use efficiency and water distribution between users and different uses within polders.

- Demand-led, adaptive agricultural research on farm production in the rehabilitated polder areas. Testing will take place at producers' level using participatory learning approaches through Farmers Field Schools (FFS). New sustainable technology options will be piloted and validated through FFSs and up-scaled at WMG level. FFS will be established on crop, horticulture, fisheries and livestock, the producers will make their choices.
- Transfer of assets to the WMG or the producers, prioritising the landless, women-headed households and youth e.g. leasing of farm machinery and equipment, revolving funds for inputs etc.
- Effective organisation of timely supply of high quality inputs and the introduction of improved post-harvest technologies and management practices for high-value agriculture products by promoting farmer-market linkages, as part of the development of selected local value chains.
- Capacity development of the involved government agencies, NGOs and private sector actors and facilitation of coordination and linkages between producers, government institutes and private sector, including the promotion of public-private partnerships in strengthening value linkages.

The remainder of this chapter will focus on supporting the agricultural production system. The strengthening of market links and value chain development will be presented in more detail in the chapter on business development and strengthening of the private sector. Food use will be dealt with more extensively in the section 5.2 on cross-cutting issues.

### 4.1.3 Activities and results

#### Support to the WMG to strengthen their role for increased production

During the community mobilisation phase: in village meetings and other participative tools, the communities together with the subject matter specialists of the water and productive sectors in particular will provide essential inputs on which the Polder Development Plan can be prepared. In this stage it is important that an agreement is reached on water use and distribution within the polders between different types of users. This requires internal negotiations between the water users which will be conducted in a democratic, fair and transparent fashion. Decisions on water management and even on rehabilitation measures should be taken in view of the type of agreed agricultural development that is envisaged by the WMG as a whole and their members.

In relation to the productive sectors, the Program will engage upon a discussion with each primary society on the possible role of the WMG in supporting their members to realise the increased productivity and higher farming income. The topics of discussion could be very divers and depends also on the local environment, two examples of such topics:

1. Input supply including credit.

The Program will analyse the supply of inputs and make proposals for improvements to ensure timely supply and of high quality standards. It will look at possibilities in the public sector the private sector, and from there it will help define role WMGs or their

associations will have to play in input supply to their members. This analysis will be part of or at least closely connected with value chain studies that will be conducted for specific products (aquaculture, horticulture, and fisheries). See 'Business development'. The TA-consultant in close consultation with the value chains analysis team of CARE and Solidaridad will make recommendations on credit provision for inputs and will establish linkages with credit institutes and banks.

2. Post-harvest management, marketing and value chain development.

There is a great potential for producers to improve post-harvest management of their produce. FFS and producer groups will be trained and get inputs for this from the concerned government agencies and where possible also from the private sector. Infrastructure for marketing also need to improvement. This requires collaboration from private sector and also local government. For improving and exploring marketing links see 'Business development'.

Once a decision is taken on the roles of the WMG and the newly formed associations the Program will provide necessary support to these entities to take this responsibility. In order to give shape to their aspirations in agricultural development each WMG should be able to draft Business Plans. It will be the outcome of a planning and internal negotiation process among the members of the WMO of a particular polder, taking into accounts both the water management possibilities and marketing opportunities. The Business Plan spells out the business objectives, means and operations to achieve the objectives of the plan. The concept of business plans and their operationalization will be further elaborated upon in the chapter on business development and on strengthening the private sector.

*Establishment and support to Farmers Field Schools*

The Farmers Field Schools (FFS) approach is much tested in Bangladesh, in particular in the crop sectors. The FFS will be the prime vehicle for trials, learning and adoption of improved farm technologies and management in the Program area and will be the basis for further dissemination. These groups will be organised in each WMG depending also on the interest of the producers (crops, fish and livestock). The WMG will serve as platform for dissemination of the experience of these FFS among the other WMG members. Some specific points about the FFS approach and the support from the Program:

- The FFS will develop effective linkages with the research stations and other knowledge institutes on crops, fish and livestock. This will be a source of information on best practices and inputs for each product. The FFS should specify the problems they face in the field, which could then become subject for further research. In this manner, the research institutes and the FFS will truly communicate two ways.
- Where relevant and possible, the private sector will also play in the trial and extension nexus, in particular with a view to ensuring quality standards of products that have to be met for the market.
- The Program will support the research-extension development process by providing guidance through trained facilitators and information and by introducing machinery and equipment for demonstration and testing purposes.



- The Program needs to develop a results-based participatory monitoring and evaluation system to assess the social, economic and environmental viability of the new and improved agriculture technologies and practices. The monitoring and evaluation will continue on into the replication and up-scaling phase.
- Two divisional level “farmers’ congresses” for FFS leaders and six district-level “graduation ceremonies” for FFS members will be organised every year. The aim of these events is to review progress and lessons learned from the implementation of FFSs and reward the participants, encouraging them to “federate” into “producers’ organisations” with the support of sub-component no. 3.

### Capacity development for supporting agencies

While the Program facilitates and brings in special expertise, it is the local government institutions, local NGOs and the private sector that are supposed to be the service providers for the cooperatives. Such services includes information about all aspects of the production systems (extension services), input supply, harvesting, processing, marketing, credit being the traditional type of services. Presently, information can be obtained about weather forecast, market prices by using mobile phones. The purpose of all these services is that the producer is well informed and can make choices, receives the needed inputs in time and of expected quality, the market prices are as expected so that he is ensured of a good farm income for all his days of works. As to analyse whether all services providers are capable to deliver their services and in the quality expected, the Program will

- The institutional capacity of key government and private sector agricultural support service providers operating in the coastal polder areas (and beyond if necessary) will be assessed. This assessment would also include a training needs assessment, on the basis of which a training programme will be developed, as well as a plan for developing/re-orienting curricula at the extension training and development institutes of the DAE, DoF and DoLS.
- The Program will support the organisational management and capacity development of DAE, DoF and DoLS at District/Upazila level and/or other extension providers (NGO and private sector) to improve the technical and communication skills of the extension services. The sub-component will build synergies, share experiences and work with other projects.
- Linkages with Wageningen University & Research Centre, on agricultural development in coastal polder areas, and with the University of the Philippines in Los Baños, on modern participatory extension methodologies and rural communication services, in order to provide technical support, backstopping and exchanges of knowledge, including short overseas training courses for selected extension staff working in the coastal polder areas. The Bangladesh Agricultural University, Mymensingh will be included as a partner university in this linkage.
- The following training interventions are proposed but will be developed further during Program implementation :

- Curriculum development and training for agricultural support service providers (from Khulna and Barisal Divisions) on development strategies in coastal polders.
- Curriculum development and training of subject matter specialists for agricultural support service providers in new and improved technologies and techniques.
- Curriculum development and training modules for On Farm Water Management, *rabi* cultivation of high-value crops, integrated homestead gardening and food safety and food quality control for use by Master Trainers and FFS Facilitators.
- Training of “new” FFS Facilitators and “lead” farmers and follow-up and refresher training of facilitators from other projects.
- Training and equipping of the Farmers Information and Advisory Centre established by the National Agriculture Technology Project.
- Training and equipping 43 community-based animal health services following the FAO-supported pilot project in Gopalganj District
- In addition, training materials and technical papers on new and improved agricultural technologies for coastal polders will be prepared, documented and published, in close coordination with the extension staff and other projects.

## 4.2 Business development and Private Sector involvement

The private sector has a major role to play in the development process of the coastal zone and of the polders in particular. This role is not only confined to agricultural development as such, but can be found throughout the Program. Most of the structural rehabilitation works are done by contractors and the labour work by Landless Contracting Societies (LCS). Small-scale private enterprises at Union level are expected to start as demand for products and services will increase. Training will be provided to ensure that such enterprises have a well prepared start.

The involvement of the private sector in agricultural development will be broad and essential for achieving sustainable increased productivity. To improve their production system, the producers very much depends on the private sector for inputs and machinery/equipment but also for processing and getting their products on the markets. Conversely, the food processing industry depends on the local producers for the production of commodities that are in demand, their volume and their quality and is interested to guide and support the producers. Buyers of farm products in the area have already indicated their interest to assist and even invest in the development of a value chain so as to ensure that the market demand for that product can be met. Well-established linkages with buyers will enable producers to benefit from a secure market with transparent price setting mechanisms. This component will deal with establishing these linkages. When properly developed, these will greatly increase the sustainability of the program's development interventions and the sustainability of the WMGs as a cooperative which relevant to its membership, producers, in particular.

#### 4.2.1 Objectives and approach

This component will contribute directly to specific objectives D, E and F of the Food Security component and through those to the other specific objectives under Food Security as well. The reason for considering business development and strengthening the private sector as a separate component in the Program is to highlight its role in making the economic development triggered by the Program self-sustained, and to build in mechanisms to drive this development further after the Program has ended. The experience gained in this Program may eventually serve as a model that could be replicated elsewhere. The central approach that will be used to engage the private sector in agricultural development will be value chain development.

##### Value Chain approach

Value chain development may be defined as interlinked value-adding activities that convert inputs into outputs which, in turn, produce benefits to all actors involved and help create competitive advantage. A value chain is the sequential set of primary and support activities that are performed to turn inputs into value-added outputs for its end customers. It is a connected series of organizations, resources, and knowledge streams involved in the creation and delivery of value to end customers. It essentially starts with the determination of customer needs through product/service development, production/operations and distribution, including (as appropriate) first-, second-, and third-tier suppliers. The objective of value chain development is to position organizations in the supply chain to achieve the highest levels of customer satisfaction and value while effectively exploiting the competencies of all actors in the value chain. Box 4.1 shows the steps that have to be essentially followed in value chain development.

##### **Box 4.1: steps of the product or value chain approach**

- Step 1: selection of value chains for key commodities.
- Step 2: mapping of the value chain – in a graphical form all the major actors of the respective value chains are described.
- Step 3: governance of the value chain, i.e. the interaction between the actors in a particular value chain.
- Step 4: linkages and trust building among the value chain actors, to identify the reasons for those linkages and whether the linkages are beneficial or not.
- Step 5: upgrading of business development services, i.e. knowledge, skills and technologies used and constraints faced by actors at different levels of the respective value chain are identified through in-depth interview of the relevant actors.
- Step 6: analysis of costs and margins of the respective value chain.
- Step 7: an understanding of income distribution in a particular value chain and how income is distributed amongst the value chain actors and determination of opportunities for income generation, particularly for the primary producers.
- Step 8: analysis of employment distribution along a particular value chain.
- Step 9: identification and selection of facilitation activities (by “catalysts”).

An important way for WMGs to help their members embed themselves in value chains would be the preparation and implementation of a Business Plan for their polder. Business Plans

would substantially reduce investment risks for entrepreneurs. On the basis of these Plans contracts can be signed between producers (WMG) and the private sector, through which producers can avail themselves of inputs, processing and/or marketing services as well as advisory services,

The TA team will facilitate the process of linking up producers to value chains, some of which may already exist, while other will have to be developed from a start.

#### **4.2.2 Activities and results**

##### Selection of products and value chain analysis

Value chain development focuses on selected commodities. This selection has to be in line with the priorities indicated in the Business Plans. For the aquaculture, horticulture and livestock products an initial value chain analysis will be conducted. Some reconnaissance work on existing business conditions, marketing outlets and potential interest in the private sector will be needed to help producers make their selection of products. Essentially, the selection of products will result from a matching process between what producers regard to be as suitable products to grow and what the private sector considers to be attractive opportunities for investments.

Value chain development for the following products appears to be most promising: chillies, maize, pulses, sunflower, vegetables and water melon. It should be noted that chillies and vegetables would be very relevant for women as these can be grown neat the homestead. Prawns and shrimps are an important product in the Satkhira district and also gaining importance in other districts. Meat production and marketing would not be supported in the initial stages of the component because of a lack of nutritious fodder under existing cropping systems, but it will be considered when the availability of fodder has increased.

Once commodities for value chain development have been prioritised, a more in-depth analysis of value chains for these crops can be undertaken to identify institutional, organisational and technological obstacles as well as opportunities in developing the value chain. The analysis will have to be conducted by an experienced organisation. For the aquaculture, horticulture and livestock the value chain analysis will be conducted by CARE and Solidaridad under a separate contract with EKN and in close coordination and consultation with the TA-consultant. The TA-consultant will apply these value chain analyses for crop products if this is considered important. These value chain analysis will provide an insight in the different stakeholders are essential all “links” in the chain taken care of and is that done in an effective way and do the products delivered fulfil the requirements of the consumer markets. The TA-consultant will advise the producers and their cooperatives how the chain can be reinforced and becoming more effective also for the benefit of the producers. The cooperatives as the representative entity of the producers will have to play a crucial role in strengthening of the product and value chains; this could be by taking responsibilities for the weak links in the chain. By doing this and depending on the number of products, the cooperatives can become an important player in these chains and have to act more and more as private enterprises.

### Support for Business Plan preparation

A Business Plan for the polder will help the WMG to formulate clear and attainable goals for agricultural development in the polder and provide it with a framework to assess costs and benefits and for internal deliberation and negotiation about water use within the polder between different water users. It will also serve as basis for programming activities and assigning responsibilities. The Business Plan will be an internally negotiated planning document on which the entire WMG membership should agree upon.

The preparation of a Business Plan should start at an early stage, ideally, before rehabilitation of water infrastructure is actually undertaken as options for agricultural development may have consequences for the preferred type of rehabilitation. However, at the time of rehabilitation WMGs may not yet have clear ideas about what combination of agricultural development they would like to pursue as market and value chain studies are not yet available, but even at this stage the document could still serve as an instrument for orientation.

A Business Plan may contain the following elements:

- A selection of products, their estimated volume and quality as well as the time of harvesting that will be produced in the polder within a given time span.
- The production systems that producers would use to produce the products. Here the plan will have to be fully aligned with the WMO's water management plan specifying/allocating water use and water distribution among different users.
- The linkages and contracts with other stakeholders (buyers, suppliers, etc.) which will have to be established or maintained to ensure the (timely) supply of inputs and the marketing of produce.
- Infrastructural investments needed to improve accessibility for which funding may be secured, for instance from local government or private sector.
- An assessment of climatic risks involved in carrying out the plan.
- Reference to and alignment with local development plans formulated by local government institutes.
- A financial cost-benefit analysis of the plan. Sources of funding for various activities; the Netherlands Government has developed special support funds (PSI, Matchmaking Facility, ORIO, Partners for Water) which stimulate Dutch enterprises to develop cooperation with private sector organisations in countries like Bangladesh.
- Role and responsibilities of WMGs and other sub-organisations (FFS).
- Any other condition or consideration that is relevant for the successful implementation of the plan.

It is not very likely that WMG can tackle with all these elements with a high level of investigation. Business Plans may initially be very simple and they could become more elaborate and complex as capacities are built. A special team of government staff, NGO staff

and representatives of the private sector, facilitated by the TA will assist the WMGs at polder level in preparing their Business Plans.

### Value chain development

Value chain development has two basic ingredients: (1) capacity development of the individual actors involved in the value chain and (2) linkages between the actors (producers, local agri-business, support service providers, government agencies etc.). The two ingredients are closely connected, for example, producers need to be organised (*capacity development*) in order to be a match for buyers (*linkage*), and, where the private sector is hesitant to invest in a plant for processing local produce (*linkage*), producers may get together and start their own (*capacity development*). As stated earlier, local conditions must be taken into account in order to decide in which combination the two should be pursued, and what the role of the WMG and its sub-organisation would be.

One important question is whether WMGs will operate as full-fledged cooperatives or can farmers also make individual contracts with the private sector. If the WMG as producers' organisation would buy their members' produce and collectively sold it directly to intermediary or wholesale traders, this would have the advantage of not only being able to offer better prices to its member-producers, but also of making profits for the organisation. A part of those profits could go to the organisation for its operation and maintenance as well as for re-investment to cover any expansion and growth in the longer term. In this context, the sub-component would provide the necessary capacity building required to sustain the operations of the cooperatives beyond the Program, i.e. institutional support, initial asset transfer of post-harvest technology inputs on, for example, a matching grant or lease-purchase basis, and technical training.

At the same time marketing constraints must be dealt with to reduce costs could also overcome through collection and trading that use combinations of cooperative collection centres, grower-operated supply routes, independent collectors and contract-managed collection round. Also post-harvest management would benefit from the cooperative organisation in some form.

The following capacity building activities to support the cooperatives and other players in the value chain are envisaged:

- Specialised staff will organise participatory meetings between the producers and government extension staff, input suppliers, collectors and traders, representative from local government and civil society, and CBOs and local NGOs to discuss issues in value chain development.
- A training needs assessment of male and female members of WMG and its sub-organisations (i.e. leaders, managers, technicians, etc.) will be conducted.
- Support for preparing specific business development plans for operations such as processing, storage, marketing and transportation of the viable products by the WMG.
- Set up trials with various forms of collection and trading systems and the provision of small infrastructure to the cooperatives/collection points. The trading trail would be

undertaken by selected cooperatives in partnership with private organisations and companies who are active in promoting safe and quality food (e.g. Milk Vita, BRAC and PRAN). Private organisations and companies may have their own ideas and preferences about cooperatives. Early consultation with them will be required.

- Train leaders, managers and technicians of cooperatives in various marketing and commercial skills, with particular attention to women. The training of members of the WMG will be undertaken by specialist service providers, using recognised participatory and group-based extension techniques (e.g. through farmers business schools (FBSs)).
- Provision of training, technical advice and post-harvest equipment. These post-harvest management packages would be transferred to WMG on the basis of grants and cost-sharing arrangements.
- Establishment of revolving funds and group-based saving and loans schemes within WMG or their credit association from membership fees and profits. Where appropriate, organisations would be guided towards and linked to existing micro-finance services and credit institutions.
- Support to service providers (chambers of commerce, farm, livestock and fisheries input suppliers, traders, agro-processors, wholesalers, etc.) to improve service delivery to WMG.
- Strengthening of market information systems for the selected commodities.
- Development and operationalization of an appropriate market information system that responds to the needs of WMGs and their members and buyers. The market information system will be implemented by public and private sector stakeholders of the respective value chains. This activity will include assistance for the establishment of appropriate ICT facilities (e.g. applications to mobile telephone networks) for WMGs, collectors, transporters, retailers, wholesalers etc., so that all actors within the value chains could obtain day to day production and market information about their respective commodities. The supply of nutritious foods at local markets at lower prices at local retail markers will be closely monitored in the Program.

### Attracting Businesses

Potential buyers need to be identified. Negotiations between the cooperatives (WMGs) and buyers need to be facilitated and linkages with the private investors need to be established as part of long-term value chain development. Initially this activity would be undertaken by a specialist private sector business development firm in collaboration with the Department of Agricultural Marketing of MoA with support from the sub-component. This activity would provide assistance to primary producers and buyers to identify and develop sustainable partnerships that are outside of the traditional marketing systems. Such buyers would include organised retailers and wholesalers.

## Chapter 5: Component 3 - Livelihood improvement and Cross-cutting issues

### 5.1 Water, Sanitation and Hygiene education (WASH)

Most WMG expressed a high priority to improve their access to safe drinking water and sanitation. Salinity and in some locations contamination with arsenic and other elements force the people to collect water from distant places, and in some localities drinking water must be brought in by barge or tanker.

The WASH activities will not be part of this Program but implemented under a separate contract between EKN and Max Foundation (MF): "MAX Value for WASH", MF is a Dutch NGO cooperating closely with local NGOs. Since WASH is an essential element of the livelihood improvement, the main elements of this Max value for WASH project will be presented herewith.

EKN will also fund UNICEF for a number of WASH related specific activities in Satkirha and Khulna district. The BRAC WASH II is funded by EKN and also operational in Khulna.

#### 5.1.1 Objectives and strategies

The specific objectives of the WASH component are:

- A. *to improve the access to safe drinking water for 400,000 people in selected Unions within the Program area.*
- B. *Latrines installed for 800,000 people who apply the standard hygiene practices.*
- C. *The communities maintain the water supply system effectively and the households their latrines.*
- D. *Establishment of at least one sani-mart per Union.*
- E. *Raise awareness about sexual reproductive health and rights, balanced nutrition and food safety.*
- F. *Contribute to achieving the MDG7 targets.*

#### 5.1.2 Activities and results

Since this component is not part of Blue Gold, the activities will not be mentioned here. For the TA-consultant it is important to be linked to the organisations implementing these WASH projects so that they reinforce each other on issues such as nutrition and sexual reproductive health. The creation of a healthy living environment is central in all these projects and their activities have to be effectively integrated. It is important that the TA-consultant in its contacts with the communities strengthen the awareness about all the cross-cutting themes, whether sanitation, sexual reproductive health or good governance.



## 5.2 Cross-cutting themes

### 5.2.1 Good governance

Strengthening of the principles of good governance is the most important cross-cutting theme for this Program. The objective of this Program is to create sustainable development in a great number of selected polders through improved water resources management and agricultural production. The community will be the driving force for this development and their effective participation in this development is crucial. The path towards development is full of good intentions but in reality the implementation is hindered by many obstacles: outside interferences, own interests, poor accountability, bureaucracy, etc.

The communities will be organised in cooperatives: primary societies (WVG) and during the mobilisation and formation phases of these WVG much attention will be paid to many aspects of governance within the primary societies and their associations: explanation of the cooperative laws and regulations, leadership training, financial administration, gender related issues, etc. Once the cooperatives are registered, the process of strengthening these organisations will be started which will be directed on internal processes but in particular on the external linkages. These cooperatives are at the basis of the institutional pyramid and have to find their way in developing effective linkages with government offices and institutions, private sector and other development partners.

The Program will introduce and adapt existing methodologies and tools for integrity and governance risk assessments and monitoring. These assessments will be conducted during the initial phase of the Program to establish a base line. Multi-stakeholder approaches will be applied in analysing the risks at all levels of the implementation of the Program.

The good governance and integrity risks assessment for water resources management will provide the basis for an action plan to be validated by the various stakeholders and various levels so as to reduce the risks and enhance integrity.

The TA team will make use of and adapt water integrity tools promoted by the Water Integrity Network (WIN). One of these tools is the Annotated Water Integrity Scan (AWIS). The AWIS is a diagnostic tool for multi-stakeholder workshops that has three main objectives:

- Establish an overview of the integrity of different sub-sectors of the water sector to highlight areas which are vulnerable to corruption.
- Identify priority areas for action to enhance water integrity.
- Increase awareness about the water integrity in a specific sub-sector and stimulate improvement.

### 5.2.2 Gender

The Program aims at a gender balance in the distribution of benefits and of an improved socio-economic position and status for women in the polder areas.

The National Women Development Policy 2011 includes rights to and incorporation of the following Program related subjects:

- Recognition of women work in household and agricultural activities,
- Making of food, poverty reduction, etc. allowances for destitute women,
- Improvement of working skill of poor women by organizing, training and creating alternative economic and social opportunities,
- Development of gender responsive budget and disaggregated data base,
- Incorporation of women friendly technology,
- Recognition of work, roles, contribution, participation and opportunities in food security,
- Recognition in agriculture labour, climate change mitigation needs and in agricultural materials/products, such as, seeds, fertilizer, loan, firm registration,
- Water and sanitation needs,
- Encouragement and equal participation/opportunities in environmental conservation, pollution control, livestock, fisheries, etc.,
- Disaster risks management and other activities; which are of direct interests to the population.

Priority issues identified that are of direct relevance for the Program are leadership and women's political power, women's economic self-reliance, women's role in food security/water/energy/climate and women's freedom with regard to SRHR<sup>1</sup>. Those topics will be dealt with in training sessions for the members of the WMG which will be organised by the Program. Gender will be mainstreamed in the activities of the Program; the gender aspects in the three Program components are consolidated and presented herewith.

#### Community mobilisation and water resources management component

In the IPSWAM polders women have leading positions in the executive committee of WMOs, in addition to having the scope to be elected in other positions. All the WMO committees have more than one-third women representatives. Recently more than 50% of the work for the Landless Contracting Societies (LCS) is allocated to women groups. The women members of the WMOs expressed their need for appropriate mechanisms to have access to funding for group investment in food security, livestock, WASH and other livelihood activities.

Women members of WMO will continue to be trained, notably in leadership roles. The promotion of women to leading roles in the WMO will be encouraged. At the level of BWDB, the execution of activities described in the gender strategy will be advocated.

#### Food security and Business development

Under the food security component specific attention is given to activities that are relevant to enhance women's role to achieve food security and in income generation from food

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<sup>1</sup> These issues are described in the letter to Parliament of the Minister for International Cooperation of 15 November 2011.

production, marketing and processing. This includes an emphasis on homestead gardening, cultivation of non-rice rabi crops, food storage and processing, poultry production and non-farm activities.

Through the vocational training activities (outsourced to UCEP) women will be trained in specific trades that will constitute the basis for entrepreneurship, notably food processing and marketing. This will be supported by access to micro-credit and /or cooperative savings and loan schemes. There are many examples in Bangladesh of female entrepreneurs. The polder development provides an excellent platform for women to start a business directly related to the productive sectors. The Program will provide specific support for the creation of women run enterprises: as an individual or as group.

### Livelihood environment

Women will take a leadership role in the WASH sub-committees and will receive training by the Program to take this leadership role effectively. There is a distinct (cultural) difference in roles and responsibilities regarding sanitation as well as water supply and require gender specific approaches as to ensure permanent behaviour changes.

Nutrition is the subject whereby the roles and responsibility are very gender specific and when introducing the subject of balanced nutrition the Program will cater for these specific circumstances.

For each polder a Gender Action Plan will be drafted during the community mobilisation and as part of the Polder Development Plan. The aim of this plan is to make the stakeholders in the polder area more gender sensitive and ensure women participation in the institutions instigated by the Program as much as possible in the given circumstance. The (effective) women participation will be part of the annual monitoring process.

### **5.2.3 Sexual Reproductive Health and Rights (SRHR)**

SRHR is one of the priority sectors of EKN policy. Under the Program linkages will be established with some NGOs that provide SRHR related services, Mary Stopes (coordinating NGO), BAPS and Shushilan. These NGOs will be funded separately by EKN, but they will operate in the three Districts where the Program intervenes, and wherever possible they will use the WMG as the entry point for awareness raising and information campaigns.

Apart from this linkage with the three NGOs, SRHR is an integral part of the awareness raising and information campaigns that will be undertaken in the context of the WASH component (see section 5.1) and in the gender component (see section 5.2.2).

### **5.2.4 Climate change**

Climate change has consequences for disaster management, river hydrology and the sea level during storm surges and thus affects the design of polder protection infrastructures. Rainfall pattern will change and thus the drainage requirements from within the polders. Irrigation possibility using water from the river will change with the changing water levels and the intrusion of saline water. The Bangladesh and Dutch governments will cooperate to develop the Bangladesh Delta Plan 2100 by 2014 and will present the consequences of

climate change for the delta area in particular. BWDB will include the long-term consequences of climate changes in the design parameters of the water infrastructure. Modules for WMGs, WMAs and Union local government on Disaster Management Knowledge and Disaster Management Training are developed and included in the Program.

Food security is mostly affected by man-made changes to the environment. This includes increased salinity and sedimentation caused by the reduced flow in the rivers in the coastal area (as a result of more intensive irrigation upstream) and pollution resulting from increased population densities. Changing weather patterns (notably more erratic rainfall) affects food security, but its incidence is as yet not well known. Continued adaptive research will be conducted to further develop agricultural technologies adapted to the changing environmental conditions.

For the WASH component increased salinity of drinking water sources is the main problem resulting from changing environmental conditions. To adjust to this situation specific technologies will be piloted (rainwater harvesting, desalinisation). Also for sanitation some innovative technologies will be tested.

### **5.2.5 Innovations**

#### Technical

The Program will promote the introduction and application of innovations, both technological as well as conceptual innovations, as long as they are of clear relevance for the beneficiaries of the Program and the concerned implementing agencies in Bangladesh. Such innovations can be found in other projects and organisations working in Bangladesh, but also specifically with Dutch knowledge institutions and private sector enterprises<sup>2</sup>. A list of possible innovations to be tested is presented in Annex 4.

In order to facilitate the adoption of such innovations resources are included in the Program to identify and test the relevance and effectiveness of these innovations and scale-up their application. For this purpose both funding and expertise is required. The type of expertise needed depends mostly on the nature of the innovations identified and will be mobilised on a short term basis. The necessary resources to allow the identification, testing and scaling-up of innovations can be drawn from funding for the specific purpose of innovation included in the budgets of each of the components.

#### Management and organisation

The Nyenrode Business School will facilitate the involvement of Dutch institutes and enterprises in Bangladesh. This includes identifying potentially relevant knowledge and innovative technologies in the Netherlands and facilitating contacts between Dutch institutes and enterprises with relevant Bangladeshi institutes and enterprises. The contact person of this School at EKN will liaise with the Program management to identify relevant needs of the WMO and the implementing organisations.

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<sup>2</sup> In its new multi-annual plan for development cooperation, one of the strategies to be promoted is to broaden the number stakeholders in development cooperation, specifically to include Dutch knowledge centers and private sector enterprises

Contributions to innovation may emerge from a wide variety of knowledge centres and enterprises. The Program will scan relevant institutions and enterprises for emerging opportunities in specific technical fields in close coordination with the Nyenrode staff member posted at EKN, Water Mondiaal, the National Water Partnership and Partners for Water and the Steering Committee of the Program.

For the selection of innovative approaches and technologies the following criteria apply:

- Relevance for the beneficiaries in the Program area and/or for the implementing organisations.
- Relevance for the Dutch private sector to promote their state-of-the art technology.
- Prospect of broader relevance for the development of Bangladesh.
- Prospect of establishing a sustainable support base for the innovation concerned (transfer of knowledge, establishment of a maintenance and support structure).

During the formulation of the Program a number of interesting opportunities for relevant contributions of expertise and innovative technologies in particular from The Netherlands has been identified. These are briefly mentioned in Box 5.2. These opportunities must be followed-up by the TA-consultant once the Program has started.

#### **Box 5.2: Two examples of potential innovations**

##### **Water management component**

##### ***Study of siltation in the coastal area (Deltares and IWM)***

To devise solutions or adaptations to this situation, the dynamics of rivers in the coastal area need to be studied. This study will be undertaken jointly by Deltares and the IWM. The outline of the study will be developed jointly by Blue Gold management and both institutes.

##### **Food security component**

##### ***Support to strengthen extension services (Wageningen University)***

Strengthening extension services and developing options for diversification is the core of the food security component. Wageningen University has expertise in both fields. This expertise will be mobilised under Blue Gold to conduct training and support field testing of production options.

#### **5.2.6 Vocational training**

In the IPSWAM polders the access to vocational training will be enhanced. The Program will facilitate access of members of the WMG to these services provided by organisations already supported by EKN.

This applies specifically to vocational training programmes offered by UCEP. Another partner of the education programme of EKN, the Friends in Village Development Bangladesh offers support to group motivation, livelihood training and educational facilities including adult literacy. This NGO could play a role in support to group motivation and livelihood training. UCEP offers a combination of 2-4 years education (to achieve A-level) and vocational training across the entire country. The aim of the vocational training is to have disadvantaged youth, often primary school drop-outs, trained employed by private sector enterprises.

Currently UCEP focuses on urban areas, because most private sector employment is located there. UCEP intends to increase coverage of rural areas, especially serving construction, agro-processing and mechanised agriculture. UCEP has its own educational establishments and in the Program area they are located in Barisal and Khulna divisions.

The Program will provide stipends for disadvantaged children of families in the WMG for education and vocational training at UCEP. It is envisaged that 100 children will receive stipends every year, a total of 500 children, at an average cost of €1,000 per stipend for an education/training of on average 3 years. The TA-consultant will draft a detailed programme jointly with UCEP, resulting in a framework agreement between the Program and UCEP.

## Chapter 6: Program Management and Organisation

### 6.1 Program stakeholders

#### 6.1.1 Government

The Program includes activities covering many sectors and involves a great number of organisations and agencies that could play a role during implementation. Table 6.1 presents an overview of (groups of) actors possibly being involved, as well as their role in or expected contributions to the Program and the nature of their relationship with the Program. The diversity of involved partners and of activities to be developed, guided and monitored will require a strong (government) Steering Committee and a coherent management structure.

The Program will require an effective institutional linkage with the Ministries of Water Resources, of Agriculture, of Fisheries and Livestock and of Local Government Rural Development and Cooperatives. Representatives from these ministries will form a Steering Committee to discuss regularly the progress towards achieving the objectives and the implementation constraints observed for further reflexion and advice. The most involved departments are the Bangladesh Water and Development Board, the Department of Agriculture Extension, the Department of Fisheries, the Department of Livestock Services and the Department of Cooperatives.

For the Ministry of Water Resources and the for Ministry of Agriculture a Development Project Pro-forma (DPP) have to be prepared. Probably MoUs have to be signed with the Department of Livestock and the Department of Fisheries. Such MoUs exist already at the agency level<sup>3</sup>. These MoUs will specify the responsibilities and expected contributions of the agencies involved. The Department of Agriculture Extension (DAE) will sign MoU's with relevant institutes of NARS and if needed with IRRIBD.

The main financial contribution to GoB will be for the water infrastructure works for which BWDB will be the implementing agency. For the activities relating to Farmer Field Schools DAE will have an important implementing role. Therefore both departments have to prepare a DPP for the Blue Gold Program. The Program will support the offices of the four ministries at decentralised levels: a number of motor bicycles and operating cost have been included in the budget for the three extension Departments and the Cooperative Division. The TA-consultant will provide material input for the productive sectors through the cooperatives, whenever applicable this will be done in close consultation with the representatives of the different governmental departments.

The Program will concentrate its activities in three districts: Patuakhali, Khulna and Satkhira. Effective coordination between the different ministries' representatives at district, upazila and union level will be essential for a successful implementation of this Program. Therefore Joint Management Committees will be established at each district for which also representatives of NGO and private sector will be member.

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<sup>3</sup> Overall MoU's exist already between BWDB and DAE and other development service providers such as for example the Departments of Fisheries, Livestock, Cooperatives, LGED and research establishments.

DAE comprises seven Wings i.e. Field Service, Plant Protection, Cash Crop, Food Crop, Training, Planning and Evaluation, and Administration and Personnel. The Field Service Wing operates ten regional, 64 District and 484 Upazila Agricultural Offices as well as 12,832 field extension units (“blocks”). The Training Wing operates a Central Extension Resource Development Institute and 12 Agricultural Extension Training Institutes. The Department employs about 24,000 staff with a field force of about 13,600 block-level Sub-Assistant Agricultural Officers (SAAOs). The Program will cooperate closely with the Field Service Wing. Other services of DAE, notably the training institutes in the three districts will cooperate in the implementation of the Program. The agreement to implement Blue Gold also represents a commitment from the management of DAE to make available the contribution of the various DAE services.

The earlier mentioned strong link between DAE and IRRIBD leads to a role of IRRIBD of mainly to expand the crop diversification experiences obtained in IPSWAM Polder-30 in the polders to be taken up by the Program. This initiative includes land development including internal drainage systems of the demonstration plots, efficient use of available water in the dry season and transfer of knowledge on rice/other crop farming techniques including input supply. The crops which are field tested are sunflower, maize, sesame, pulses, etc.

The work in the sub-projects will be done as much as possible through the existing organisational structures and with the normal procedures of BWDB and DAE. Construction work will be sub-contracted to Landless Contracting Societies (LCS) or private contractors. Available staff, however, will not be sufficient for all the work in the sub-projects, especially activities such as group formation and facilitation, training, conducting trials, awareness raising and participatory monitoring. Field staff will therefore be complemented by national TA and capacity contracted from national or local NGOs.

### **6.1.2 Knowledge and research centres**

The development challenges of the polders in the three coastal zone districts are complex, partly due to a continuous changing river hydrology. In the MoU on the Bangladesh Delta Plan 2100, the governments of Bangladesh and The Netherlands agree to cooperate closely in finding sustainable responses to these challenges through applying innovative solutions and approaches.

Examples of such cooperation are:

- Analysing major technical challenges related to river hydrology (such as on sedimentation dynamics and salt intrusion) in the programme area and the development of the most sustainable solution. Deltares and IWM and CEGIS would be the most likely partners in such a cooperation.
- Strengthening of the water management organisations, in particular the associations (WMA) by the Union of Dutch Water Board Authorities.
- Involvement of the Wageningen and the Los Bãnos universities together with Bangladeshi universities on agricultural development in polder areas, participatory extension and rural communication services.



The Program TA will analyse the main field for such international cooperation and, once agreed upon by the IMSC sign agreements and supervise and monitor these contracts. The results of these activities could be used to adapt existing concepts and strategies for the Program implementation.

### **6.1.3 Private sector and NGOs**

The business development aims at creating an environment which will be most conducive for the local agricultural products to reach the consumer markets. Based on the product/value chain analysis, business-to-business linkages will be facilitated with international (Dutch) and national agricultural-based companies operating in the rural areas of Bangladesh to enhance the development of value chains in the coastal polder. The Program management will play an active role in facilitating this linkages and thus being well aware of the potential involvement of the private sector in particular the international organisations.

NGOs in Bangladesh are well embedded in the institutional framework for development and play a very important role. In particular, NGOs are a strong player in community facilitation and awareness raising and have developed tools to better equip the communities towards improved livelihood conditions but also to increase household income. The Program management will engage with NGO whenever considered effective for the implementation of this Program.

Experiences with contracting of NGOs for the implementation of projects have been mixed. Careful selection of NGOs is necessary, as well as initial training of NGO staff before they engage in the fieldwork and close supervision to guarantee the quality of their work. The task of contracting and capacity building and supervision of NGO staff will be assigned to the TA-consultant. To facilitate the coordination of the activities of field agents, one NGO will be contracted per group of polders. Because the diversity of the activities included in the Program is considerable the number of suitable NGOs is probably very limited, mainly large national NGOs. An alternative could be that suitable local NGOs form a coalition with one large NGO to execute the field activities. It is to be avoided that for each type of activities a separate contract is made with different NGOs.

### **6.1.4 Donors and International Development Agencies**

This Program has been discussed with the World Bank and Asian Development Bank as they finance major polder development plans (WMIP respectively South-west). Lessons learnt from their programmes have been included in this Program. It is important that the lessons learnt from this Program will be shared regularly with these development partners. Moreover, ADB and IFAD are interested to provide funds to support activities not foreseen in this Program on rural infrastructure such as roads and markets, electrification, etc.

The Swiss embassy has demonstrated interest to strengthen good governance in the three districts of this Program. This was much welcomed by EKN, because of their broad experiences in Bangladesh on this theme. The Swiss cooperation coordinates the Katalist programme which support private sector and has expressed interest that Katalist will include the districts of this Program.

Table 6.1: Overview of actors in the Program

(Type of) organisation		Role in/contribution to the Program	Type of relationship
1	EKN	Programme approval, monitoring and supervision. Initiation/approval of innovations.	Donor, program supervision
<b>GoB agencies: national level</b>			
2	Planning Commission/ERD	Programme approval, monitoring and supervision	Donor, program supervision
3	Inter-Ministerial Steering Committee	Coordination of the contributions of involved GoB agencies at national level.	Program coordination and supervision
4	BWDB	Overall management, implementation of Water management component. Most concerned units are DP-III and the zonal offices in the SW and SC zones	Member Steering Cie and implementing agency for water infrastructure and man agent
5	Dept. of Agriculture Extension	Supporting the Food security component through the Union offices in Satkhira, Khulna and Patuakhali and the coordination at district level	Member Steering Cie and services provider
6	Min of LG RuralD and Cooperatives; LGED	registration of the WMO under Cooperative Law and training and supervision of annual audits. Coordination of Construction and maintenance work	Member Steering Cie and services provider
7	Dept. of Fisheries; Dept. of Livestock Services	Supporting the Food security component through the Union offices in Satkhira, Khulna and Patuakhali and the coordination at district level	Member Steering Cie and services provider
8	National Agricultural Research System	Obtaining information on potentially relevant agricultural production practices for on farm trials.	MoU between DAE and NARS
9	WMIP/ SWAIWRPMP/ CDSP/ CEIP	Exchange of experiences and harmonisation of approaches	Coordination/liaison
<b>Local Government Institutions</b>			
10	DDCC	Coordination of BG interventions with District level development agencies. Participation of BG representatives in coordination meetings	Coordination/Liaison
11	UDCC	Coordination of BG interventions with Upazila level development agencies.	Coordination/Liaison
12	Union Parishad	Coordination of interventions. Participation of BG representatives in coordination meetings	Coordination/Liaison
<b>Other institutions/organisations in Bangladesh</b>			
15	IWM	Innovations in water sector	Contractual
16	CEGIS	Studies, community participation,	Contractual
17	IFI	In particular ADB, WB	Coordination/Liaison
18	Technical UN agencies	Similar activities in area and thus exchange of information	Coordination/Liaison
19	Other donors	Swiss embassy for good governance	Coordination
20	Universities: BUET, BAU	In particular for the innovations and for water and productive sectors	Contractual relationship with WMG/ Program
21	Private sector	In particular linked to the productive sectors	Contracts with WMG
22	IRRI, CGIAR and World Fish, , BANCID	Research	Contractual relationship with WMG/Program
<b>Institutions/organisations abroad</b>			
25	Delft Hydraulics	Study of sedimentation dynamics	Contractual
26	Universities of Los Bãnos + Wageningen	Support to extension services	Contractual
27	Dutch private enterprises	Piloting and demonstration of innovative technologies	Coordination/liaison, possibly contractual relationship

## 6.2 Coordination Mechanisms

In the overall GoB institutional structure, coordination mechanisms exist at various levels, as is presented in Box 6.2. The Program will make use of the existing coordination mechanisms to cooperate with relevant Departments.

As the Program is directed towards “rural” development in three Districts the first operational linkage for coordination will be with the District Development Coordination Committee,

chaired by the Deputy Commissioner and the Upazila Development Coordination Committee, chaired by the Upazila Chairman. The Union chairman and their council will be more involved in the implementation of the Program, in particular to strengthen the sustainability of the activities. Day-to-day coordination between the various agencies involved in the Program will be done at Union level on basis of direct contacts. For the development of water resources infrastructure a close operational coordination with BWDB at national level is also required.

### Box 6.2: Overview of Coordination mechanisms

#### National Level

Cabinet headed by the Prime Minister, whose meetings are attended by the ministers and the Secretaries to the Government in charge of different ministries, is the highest government level, where inter sector co-ordination takes place. Usually, this meeting is held once every week.

#### Divisional Level

Co-ordination meeting is held at Divisional with Divisional Commissioner in the Chair, which is attended by the Deputy Commissioners within the jurisdiction of the Division. This meeting is held once a month and discusses matters of administrative interest.

#### District level

Development Coordination Committees are established to co-ordinate the activities of various government departments and agencies and to ensure that these reinforce each other, or at least do not compete with each other. In the meeting of the District Development Co-ordination Committee (DDCC), under the chairmanship of the Deputy Commissioner, all the line departments provide detailed information on their on-going projects and activities and discuss the problems where harmonization is necessary. The Executive Engineer (XEN) or his representative attends these meetings. As there is no elected body at the district level, one designated member of the cabinet participates in the DDCC meetings regularly. This should help to get local issues elevated at the national level.

#### Upazila level

Co-ordination at the Upazila level takes place in the Upazila Parishad, headed by the Upazila Chairman. The Upazila Nirbahi Officer (Executive Officer) heads the Upazila civil administration: 13 national line agencies have representatives at that level. There is an Upazila Development Coordination Committee (UDCC) for coordination at the Upazila levels. The Parishad also consists of other UP Chairmen, three nominated women UP members, the UNO (as Member Secretary) and the line agencies representatives. UDCC is a platform where the Union Parishad Chairmen interface with the line agencies.

#### Union Level

Co-ordination at the Union level takes place in the Union Parishad, which consists of 12 elected members – one from each of the nine Wards in a Union - and a directly elected Chairman. Of the 12 elected members, three women are elected against seats reserved for them – one from every three Wards.

#### Gram Sarkar.

This is the lowest level of local government administration and co-ordination. Gram Sarkar (village government) exists in each of the nine Wards of every Union Parishad. The Union Parishad member of the concerned Ward is ex-officio head of the Gram Sarkar ; while 12 members are nominated on the basis of consensus of the voters of the concerned Ward.

To ensure the formal link with the national level an Inter-Ministerial Steering Committee will be formed. Instead of creating a separate Steering Committee it is proposed to use the same steering committee as for the Delta Plan. The tasks of this Steering Committee are (a) to ensure a smooth implementation of the Program from the national level perspective; (b) ensuring harmonisation of the different sector policies (c) follow the process of polder development as lessons to be learnt for future developments; (d) facilitate actions required by other ministries/departments/ agencies at national level. The Steering Committee will meet to discuss the two intermediary reviews, scheduled for the beginning of year 3 and the end of year 5 of the Program. An external evaluation is scheduled at the end of year 6.

#### Cooperation between Ministries of Water Resources and Agriculture

The Program area is a focus area for agricultural growth. The vision of future agricultural growth and business development in Bangladesh anticipates immense possibilities in the South-west and South central region, which (particularly the greater Barisal area) was once called the “granary of Bengal” - provided a number of conditions are met. This has repeatedly

been stressed on different occasions by the Minister of Agriculture. This vision has led to the Delta Master Plan, which is under preparation under the auspices of MoA. The conditions to be met to operationalize this vision are - (a) introduction of salt tolerant varieties of crops - particularly rice (a direct link between DAE and IRRIBD is expected in Blue Gold); (b) provision of surface water for irrigation; and (c) construction of water-related infrastructures to protect crops from damage due to natural water borne hazards like floods, storm surge, saline water intrusion etc., which are to be provided by the Ministry of Water Resources. Thus, the interventions of the Ministry of Water Resources create conditions which facilitate the Ministry of Agriculture to support the production of crops in favourable and safe conditions. It is therefore obvious that the two ministries need to co-ordinate policies and activities and co-operate to harmonize and synergise the effectiveness of their activities.

The Project Director of the BWDB component will be designated as Project Coordinating Director (PCD). He/she will chair the Project Management Committee (PMC) in which also the representatives of the three ministries (Agriculture, Fisheries and Livestock, and Local Government) will be participating members as well as the responsible of the different Program components. The TA program manager will act as secretary to the PMC with the office of the PCD serving as the secretariat of the PMC.

The DAE of MoA is the primary government counterpart agency responsible for supervising the Food Security Component in Blue Gold. It will designate a senior officer from DAE as Project Director, who will be at the same time responsible for the supervision and coordination of the Food Security component implemented through DAE and acts as member PMC and replacement for PCD. The PD will be assisted in the Program by a Deputy National Component Director and a number of Technical Co-ordinators as well as staff of the District and Upazila Agriculture Offices of the Districts in the Program area. A component implementation cell (CIC), co-lead by PD and the Deputy Team Leader (Food Security component) will be established within the Field Service Wing of DAE. At the DAE's Divisional Agriculture Offices located in Barisal and Khulna implementation teams will be formed, consisting of DAE staff and TA staff.

#### Donor coordination

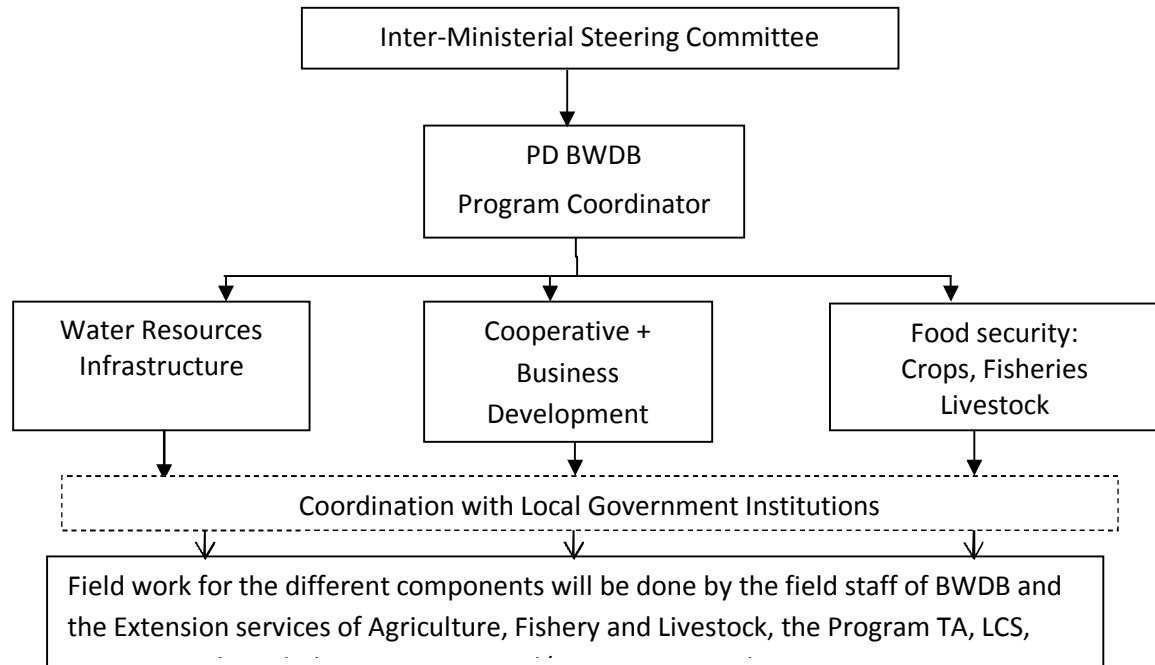
Many donors are actively involved in "rural" development and donor coordination platforms exist for a number of specific sectors. The Program will be funded by GoB and EKN. Other funding organisations, notably ADB and IFAD have shown interest to consider contributing to the Program after 2015. According to their rules and regulations these donors have to fulfil their own procedures concerning the planning, approval, supervision and evaluation of their contributions to the programme. As future donors to be involved and their contribution are as yet unknown, it is proposed that pragmatic donor coordination mechanisms will be defined as and when other funding organisations get effectively involved.

#### Program supervision and evaluation

The lead partner of the winning tender bid for the TA-component will have a contractual obligation with EKN. Therefore, EKN will have the prime responsibility for the supervision and monitoring of the Program implementation and the operations of the TA team. In the Steering

Committee the progress and challenges will be analysed and discussed and if needed the implementation redirected.

**Figure 6.3: GoB linkage with the Program.**



### 6.3 Program Implementation Considerations

To successfully implement the Program the following must be taken into consideration.

- The Program involves a substantial number of actors and stakeholders. Coordination, management and supervision of the actions and contributions of the different actors and stakeholders require a strong and coherent management structure. This implies:
  - This requires a strong TA component which will be tendered through EU-open tender procedures. The full TA component will be contracted to one bidder only.
  - For the rehabilitation works and other infrastructural works to be prepared and tendered by BWDB and for the support towards the Farmers Field Schools (FFS) by the Department of Agriculture Extension (DAE) a (separate) Administrative Arrangement will be signed with the Economic Relations Division of the Ministry of Finance. The TA-consultant will provide technical support during the design and tender document preparation, whenever needed and will provide supervision during the tendering and execution of the works and will advise EKN on disbursement. A percentage of the works to be carried out by BWDB, will be fixed for the so-called overhead, from which amount BWDB will be able to cater for its office and other cost. DDPs will have to be prepared for the activities to be implemented by BWDB and DAE for the Program.

- All interventions/contributions by actors and stakeholders mentioned in this report will be planned and coordinated by the TA-consultant, where these interventions concern the Government institutions this will be done in close coordination with the concerned Government Departments and Local Government institutions.
- The Program will not take over the responsibility of the Government institutions and will not pay for Government staff replacements. If and where needed the Program will provide (on-the-job) training for Government staff as to further reinforce their capacity.
- The basic steering principle of the Program is that the WMG will be the drivers of the polder development and to realise this development they will have to cooperate with the Government, private sector, NGOs, knowledge institutions, etc. In case Government agencies are not capable of providing the services, the WMG/A will look for alternatives. An exception is the water resources infrastructure works for which BWDB will have the final responsibility.
- Flexibility during Program implementation is essential to achieve its objectives. This implies that EKN and GoB should cooperate, to the extent possible, with proposed adjustments when they occur. Both EKN and GoB commit themselves to accommodate these adjustments to the extent possible. The two midterm reviews in year 2 and year 4 will accommodate for this.

## **6.4 Program Management**

The Program will be implemented by the Technical Assistance team (TA-consultant), composed of international and national experts. The main objective of the TA-consultant is to create community participation through creating cooperatives which will be in the drivers' seat for the economic development. Further, the TA-consultant will facilitate the creation of an enabling environment supportive towards these cooperatives and sustainable development and thereby realising increased rural income and thus poverty alleviation.

### **6.4.1 Operational arrangements at national level (Dhaka)**

The Team Leader will be the first responsible for the operations of the TA team and for the contacts with the different Ministries at national level. He/she will inform the Steering Committee and EKN about the process and discuss the challenges and to ensure that solutions will be decided upon, so that the Program will continue in the right direction towards achieving its objectives. For that purpose the Progress reports on and Annual work plans for Blue Gold will be prepared by the TA-consultant and will be presented to the Steering Committee and EKN for discussions and final approval will be given by EKN.

The TA-consultant will have their office at the premises of the BWDB in Dhaka. This will facilitate the coordination between the Coordinating Project Director and the TA-consultant for all aspects of Blue Gold implementation. Through this liaison office at BWDB the TA team will be in a position to exchange information with other projects applying participative approaches: SWAIWRPMP, CDSP, WMIP and CEIP. The aim is to learn from each other's experiences and further harmonise approaches. Harmonisation of approaches is primarily

the responsibility of the BWDB, but engagement of the main development partners in the water sector (EKN, ADB, WB and IFAD) is also required.

This office will be used by the TA-consultant who will work with the BWDB team at national level. More specifications on these operational arrangements are provided in section 6.4.3.

The Program Director of the lead implementing organisation will regularly visit Bangladesh for discussions on progress and outstanding implementation issues.

#### **6.4.2 Operational arrangements with Department of Cooperatives**

Major emphasis of the Program will be on the creation of cooperatives: the WMGs and their associated cooperatives so as to shape the participatory process, aiming at WMGs becoming strong development partners. The communities will be at the basis of the development needed to increase rural income and thus creating sustainable economic growth in the three districts.

The process of the community mobilisation and formation of WMG is well-defined by previous programmes: mainly facilitation and training. Community facilitators and subject matter specialist will be engaged by the TA-consultant for the mobilisation and training of the community members on the different aspects of the cooperatives' organisation. The TA-consultant will assist the communities in developing and writing the plans for directing the development direction and priorities of each polder. The TA-consultant will support the WMGs on the design and execution of action plans and will ensure that these activities will be geared towards the overall Program objective. Training and piloting of new technologies and approaches will be major entry point for the Program towards the economic development. A provision has been included in the budget for the construction of 250 buildings for cooperatives. The TA-consultant will have to follow tender procedures to hire contractors.

The Department of Cooperative has been involved in dealing with Water Management Groups and their Water Management Associations since late 1990s. The responsibility of the Dept. of Cooperatives related to the Program is on mobilisation, registration, auditing and monitoring. These functions will be taken care off by the District and Upazila offices of the Department. The TA-consultant will supply a number of motor cycles and their operating cost so that the cooperative officers will be able to visit the cooperatives and participate in the mobilisation process. For the annual auditing of the Cooperatives some financial provisions have been included in the TA-consultant budget so that these can be done by Cooperative Inspectors and/or contracted auditors. A provision has been made in the TA-consultant budget to assistance to the Cooperative Monitoring Cell at its headquarters in Dhaka, once the ADB support has come to an end. Training of the Cooperative Officers is foreseen, most training will be conducted within the District and some at national level. In the annual work plans the details of these activities will be given.

#### **6.4.3 Operational arrangements with BWDB**

The Water Management component of the Program will be integrated in the BWDB organisation. The BWDB staff will be directly responsible for the overall implementation

process: from planning to approve the completed works and the O+M of the main infrastructure. Technical assistance will be mainly deployed in fields where BWDB's capabilities are not sufficiently developed.

The Community Mobilisation and the Water Resources Management component will resort under the Planning Directorate III of BWDB. The Director DP-III with some assistance from the Program will supervise this component. For the execution of the activities related to the water resources infrastructure in the sub-projects, the Program will work together with the Zonal Offices of the Chief Engineers in the South-Central and South-West Zones and this applies also for the water management with the O&M Circles and Divisional offices concerned. At BWDB Headquarters co-operation will be established with the Design Office, the Chief Staff Development and Training and the Chief Engineer O&M. BWDB management undertakes to assure that effective co-operation will be established between DP-III and the BWDB offices mentioned in this Program document. The rehabilitation plan and design shall be finalised by the Design Directorates on advice of the TA consultant and consultation with beneficiaries. The Zonal office shall prepare and submit the draft rehabilitation plan through DP-III for approval and implementation. BWDB will ensure that the Zonal Offices are properly staffed for their tasks (see section 3.2.2 and Table 3.3) and the TA team will provide capacity building if needed. The BWDB field staff will actively participate in the mobilisation phase of the cooperatives.

Under the Programme this harmonisation process will continue to be supported through training of BWDB and programme staff.

#### **6.4.4 Operational arrangements with Departments of Agriculture Extension, Fisheries and Livestock Services**

The support from the TA-consultant for the productive sectors will concentrate on increased productivity. The already much tested approach of Farmers Field Schools (FFS) will be introduced as an effective tool of the DAE extension services. The FFS will also be introduced for fish farmers and livestock owners, when the producers consider this an effective tool for information gathering, testing and spreading. The TA-consultant will create linkages between the cooperatives and services' providers as to ensure that the producers will receive up-to-date information on how their productivity and cropping intensity levels can increase and they can obtain the highest price for their products. The TA-consultant has a budget line of approximately € 1.9 million for procuring innovative approaches and techniques so that the producers can assess these solutions before applying at large-scale. Under a separate contract with EKN, value chain analysis will be conducted for a number of selected crops, fish and livestock products. These analyses will be used by the TA-consultant to further improve the products and the enabling environment for the productive sectors in general. Marketing, credit supply, processing and input supply are examples of the topics which will be assessed in relation to the productive sectors.

The TA-consultant will cooperate closely with the extension officers of the three departments at District, Upazila and/or Union levels. These officers will be much involved during the mobilisation phase of the cooperatives, when their members discuss the possibilities to increase their production and related to this their income. The TA-consultant in combination



and co-operation with DAE will contract and if needed train the facilitators for the creation of the FFS and will procure the inputs and machinery needed for demonstration purpose by the FFS and same applies for linkages with other services providers. This will be done in close consultation with the extension officers who are also expected to participate in this process of extension towards higher production levels and ensuring the use of high quality inputs and equipment.

One such a linkage will be with the Universities of Wageningen (Netherlands), Los Baños (Philippines) and from Bangladesh.

To facilitate the extension officers the TA-consultant will supply a number of motor cycles and pay for their operating cost so that the extension officers will be able to visit the cooperatives and participate in the mobilisation process. In close consultation with the Ministries concerned, a training program will be designed and presented in detail in the Annual Works Plans as from 01 July 2013.

#### **6.4.5 Operational arrangements for the Private Sector involvement**

Based upon the value chain analysis in particular, the TA-consultant will have consultations with representatives of the private sector and the NGO communities on their possible involvement in the product/value chain development. This could be regarding many aspects of the product chain: input supply, farm machinery, processing, credit and access to consumer markets. The various Chambers of Commerce could advise the TA-consultant on potential partners. Also the Department of Cooperatives will be involved, in particular regarding to cooperative associations and existing cooperatives structures (i.e. the marketing cooperative).

The private sector is an important stakeholder for the construction work. The water infrastructure works will be sub-contracted to Landless Contracting Societies (LCS) and private contractors. An important task of the TA-consultant is to ensure that these contractors are aware of the required quality standards and if not training can be provided during which the importance of sustainable production system will be emphasized.

It is expected that this Program will create great opportunities for people to start small-scale enterprises. The TA-consultant will stimulate this development and whenever needed provide training so that such enterprises will be effectively managed.

#### **6.4.6 Operational arrangements at District, Upazila and Union levels**

Blue Gold will be implemented in the Patuakhali, Khulna and Satkirha districts. In view of the importance of the Program, the District Commissioners, and the elected chairpersons of the Upazila and Union will be regularly be informed about the progress. Blue Gold will have their Program offices in each of the three districts. For the implementation the TA-consultant will call upon the Union chairman/council, for example to actively participate during the mobilisation phase of the cooperatives. Whenever needed, the TA-consultant will facilitate this active participation, being essential to create sustainability of the activities developed.

This Program concentrates on improvements of water resources infrastructure and productive sectors and does not include provisions (for example) for roads or market places.

The discussions at Union level could look into solutions for these constraints towards sustainable development.

#### **6.4.7 Operational arrangements for the TA-consultant**

The TA-consultant will be contracted by EKN through EU open tender procedures which will follow the same procedures as for previous EKN funded programmes, such as IPSWAM and CDSP. The four Ministries will be invited to appoint their representative for the tender selection committee.

The Program is innovative in many aspects of its design. It will consider different solutions for the water resources infrastructure in particular in view of the climate change adaptation. The value chain approach has already been introduced in Bangladesh but not on the scale as proposed for Blue Gold. The Program includes large amounts of funds to ensure that innovative approaches and techniques can be procured and introduced for testing. Linkages with national institutes but also international institutes are an important element of the Program, partly to find solution but also to build capacity at national level. The business approach is new in development cooperation programmes and requires a paradigm change towards the rural communities: are they capable to organise themselves and become an entrepreneur? The creation of cooperatives as primary societies and of FFS requires to contract many facilitators and subject matter specialists, who have to be trained and organised. The TA-consultant will make its own decision whether organisations (NGOs, consultants firms) will be contracted or individual persons or a mix thereof.

The TA-consultant will be responsible for contracting the so-called services providers under the Water Innovation Fund of approximately € 2.4 million and the Productive Sectors Innovation Fund of approximately € 2 million; this could be knowledge institutes research centres, input suppliers, etc. An amount of € 2 million has been earmarked for offices/storage blocks for WMG and will have to be contracted by the TA-consultant. Training is an important element in this Program and the TA-consultant will contract organisations which can provide the training required. The TA-consultant will have to develop the tender documents for all these activities and after tender selection contract the selected organisation.

For the WASH project and the value chain analysis, EKN will engage directly with the respective international NGOs. However, it is important that the TA-consultant is closely involved in these activities. It is expected that the TA-consultant will reinforce in all its operations the specific cross-cutting themes and thus ensuring that these themes will become operational.

Monitoring of progress towards the goals will be a task of the TA-consultant, at the start of the Program a baseline survey will be conducted per polder as to define clearly the status then of the households and of the physical and socio-economic environment. The monitoring will be done at an annual basis. The monitoring will have to be done by an independent organisation and will report directly to the members of the Steering Committee and EKN.

Reporting will be done on half yearly basis and on progress made in comparison with the Program outputs to be realised. Comments will be given on delays in achieving the outputs and changes in strategies will be mentioned and explained.

The set objectives are indeed very challenging and require a capable and effective TA-consultant, but also more consultants than under the previous EKN funded programmes. The number of international experts is relatively high but is proposed as to ensure the highest quality of outputs and the outcomes for the longer-term perspective.

The expert for community organisation, the water resources expert and the agronomist will be international consultants for the entire duration of the Program. A number of international experts will be engaged for short term missions, subjects for such missions are: institutional development, private sector, processing, extension services and environment. In particular the short term expert will strengthen the capacity of the national consultants of the Program. Cooperation between international and national knowledge institutions will be integral part of the Program.

## **6.5 Visibility of the GoN/GoB Cooperation Efforts**

Visibility of the GoN/GoB cooperation efforts in the water sector and of related activities is considered to be an important contribution to the general support for a continued relationship in the future. It is therefore in the interest of both parties to demonstrate the efforts that are being made and the results that are obtained.

The efforts to enhance the visibility of GoN/GoB cooperation will continue. For this purpose a budget of € 10,000 per year is included under the heading programme management. These funds will be used to produce videos, leaflets, maintain a website invite Bangladeshi and Dutch journalists and facilitate their work.

One national TA is included in the Program to assure daily monitoring and coordination of implementation, notably the phasing of activities in relation to other interventions at the level of the WMO.

## Chapter 7: Financial Resources

### 7.1 Overall Program budget

The Program aims at setting up strong entrepreneurial cooperatives which will be the driving force for the economic growth in their area. The Program will develop improved protection against floods and water management within the polders. The Program will ensure that the producers are well informed about all aspects of their production system and have the possibility to test an number of important elements of the product chain. Through effective linkage with the private sector, it is expected that the producers will have better access to the markets of their products and that they can obtain a fair price.

The expected main outputs are

- 50,000 household have left the “poor” status and the numbers of hard-core households are less than 10%.
- a multiple of analysis/reports per polder (baseline survey, pre-feasibility study, Polder Development Plan, Cooperative Action Plans, and a Polder Business Plan. Will be prepared for each polder.
- 850 cooperatives established and effectively organised and managed, in this number 250 WMG are already established under IPSWAM. For the best performing 250 cooperatives office/storage building will be constructed.
- Productivity and production intensity increased.

To achieve these outputs many innovative solutions and approaches have to be introduced. The communities at the drivers’ seat of the development and for the services to be delivered upon their request; the communities organised in cooperatives. Technical innovations are expected to offer effective solutions to the many challenges the producers but also the Government organisations face. To realise the proposed changes, and in particular to established well organised and managed cooperatives, many experts are needed to guide the development and support the communities.

In Table 7.1 a summary of the Program budget is presented and a liquidity planning for each year. The total amount of GoN grant is € 49,851,000, of which € 22,931,000 for improvement of the water infrastructure. For the EKN contribution of € 15,750,000 to the water infrastructure works, an Administrative Arrangement will be signed with the ERD of the Ministry of Finance. The BWDB budget provision for this Program is € 7,539,000 of which € 5.3 million is for infrastructural works and the rest to cover directly linked organisation cost: BWDB staff and operation cost at Headquarters and at the two zonal offices small investments and VAT. The DAE budget provision for this Program is € 840,000 plus the EKN contribution of € 995,000. In the Administrative Arrangement also the contribution for DAE will be included.

The Program duration is set at 6 years which is short when considering past performance of the polder rehabilitation projects since 2000. The bureaucratic procedures of to obtain the required budget allocation for the water infrastructure works were the main reasons for these

delays. It is expected that the three-year rolling budget procedures which applies for BWDB will reduce the procedures. Most of the works will be related to fine-tuning for which more standardised works can be used.

**Table 7.1 Consolidated budget and the liquidity planning (in € x 1,000)**

Description	Comm Mob	Water RM	Food Security	Business D	Program Man	Total
International consultants	1,728	1,680	1,680	945	336	6,369
National consultants	1,280	2,085	1,753	1,234	1,075	7,426
National support staff	1,235	191	630	27	694	2,778
Equipment	156	66	435	54	442	1,152
Contracting by BWDB	0	15,750	0	0	0	15,750
Contracting by DAE	0	0	995	0	0	995
Contracting by Program	3,365	2,610	3,963	700	1,204	11,842
Training	1,040	527	240	550	165	2,522
Operational cost	53	23	202	2	738	1.018
<b>Total GoN contribution</b>	<b>8,857</b>	<b>22,931</b>	<b>9,898</b>	<b>3,512</b>	<b>4,653</b>	<b>49,851</b>
<b>GoB contribution DEA +BWDB incl. rehab cost</b>		<b>7,539</b>	<b>840</b>			

Liquidity Planning	2013	2014	2015	2016	2017	2018	TOTAL
Comm Mobilisation	1,375	1,870	1,795	1,556	1,212	1,049	8,857
Water Management	944	3,954	5,266	5,293	4,676	2,798	22,931
Food security	1,351	1,926	1,990	1,907	1,621	1,103	9,898
Business develop	176	638	688	783	713	515	3,512
Program Management	981	798	681	698	698	798	4,653
<b>Total per year EKN</b>	<b>4,826</b>	<b>9,185</b>	<b>10,421</b>	<b>10,237</b>	<b>8,920</b>	<b>6,262</b>	<b>49,851</b>
<b>Total per year DAE</b>	<b>100</b>	<b>120</b>	<b>140</b>	<b>150</b>	<b>160</b>	<b>170</b>	<b>840</b>
<b>Total per year BWDB</b>	<b>329</b>	<b>1,309</b>	<b>1,754</b>	<b>1,744</b>	<b>1,504</b>	<b>899</b>	<b>7,539</b>
<b>Total budget Blue Gold</b>	<b>5,255</b>	<b>10,614</b>	<b>12,315</b>	<b>12,131</b>	<b>10,584</b>	<b>7,331</b>	<b>58,230</b>

## 7.2 The Program budget and its underlying principles

### 7.2.1 General

To prepare the budget for this Program a number of assumptions had to be made. For the most important components some basic information is given on how the (unit) costs have been calculated. This new Program will be in-line with the actual vision on the bilateral

development cooperation between Bangladesh and The Netherlands: “from aid to trade”. This change in strategy has to be set-off against the rapid economic growth observed over the past ten years in Bangladesh and Bangladesh has nearly reached the status of middle income country.

The main consequences of this changed political and economic setting are that The Government of the Kingdom of The Netherlands will concentrate its efforts

- on capacity building and limited payment for operation cost of government agencies
- on stimulating a broader cooperation not only between governments but also including Dutch and Bangladeshi NGOs, private sector and knowledge centres. The textile and shipbuilding industries are good examples thereof.
- on introducing innovative solutions: technical as well as conceptual.
- on creating an environment for private sector investment.

A more business-like approach will be introduced throughout the Program and also the contribution from GoB for the water infrastructure works will increase compared to IPSWAM. Most of the activities and thus the cost will be directed towards the communities: the creation of cooperatives as private sector enterprises, the improvement of the productivity per unit of land too ascertain higher household incomes and to organise (producers) demand driven service providers. Many elements of this Program are considered innovative: technical as well as approaches. The most important change is that the communities will be in the drivers' seat to realise the expected economic growth. Consequently, the technical assistance component is higher than in programmes concentrating on water infrastructure mainly and amounts to about 25% of the total Program costs.

### **7.2.2 Water infrastructure works**

The planned works for the rehabilitation of polders will include repair of the embankments, the water control structures in these embankments and the water distribution system (canals and water control structures) within the polders. The fine-tuning works will concentrate on the adaptation of the water infrastructure as to optimise the water use for the productive sectors and if possible the sedimentation challenges will be addressed.

The selection of the polders for rehabilitation and fine-tuning in addition to the IPSWAM polder, will be done using the polders listed in the Annex 2. Final selection will be prepared by BWDB in consultation with the other Departments concerned and the TA-consultant and then submitted to the Steering Committee for their approval.

For budgeting purpose the of the water resources infrastructure unit rates per hectare are used, the present exchange rate is € 1 = 100 Taka.

- € 300 for rehabilitation cost at actual price
- € 100 for fine-tuning in the already rehabilitated areas.

Whenever possible, design and construction of the polder water infrastructure works will be climate proof. The activities will have to be planned in line with the budget regulations and

integrated in the budget process of Bangladesh. As it will take one year at least for the rehabilitated polder before detailed plans are ready for tendering, the first works will be tendered during the 2013/14 budget year. For the fine-tuning works, it is planned that the works can start during the 2013/2014 as well. The first polders to be selected for fine-tuning will have minimal adaptation needs and works can be done relatively fast.

### **7.2.3 Capacity building**

This Program is about capacity building in particular for the community members to be organised in WMG/As and towards professionalization of the cooperatives. During the mobilisation phase and shortly thereafter these trainings will concentrate on the functioning of the WMG/WMA. In this phase village facilitators and subject matter specialists will conduct the basic training mainly at village and polder level. Specific trainings will be organised for the leaders of the cooperatives. In the next phase trainings will be more directed to ensure that the cooperatives become an effective supporter for their members in improving their productive sectors. This will require more technical oriented trainings and most likely a first step towards professionalization of the cooperatives, by contracting staff. In the final phase the cooperatives will have to develop capacity to be organised and managed as a private sector enterprise. As much as possible existing facilities will be used for this training and located within the districts.

For developing the technical capacity of the producers, linkages with research institutes will be of great importance. In addition to the national universities and the (inter) national research centres, linkages with the agricultural universities of Wageningen (The Netherlands) and Los Bãnos (Philippines) will be established to support the Program in its endeavour to increase productivity and create effective cooperatives.

It is expected that the organisational capacity of the product chains will have to be improved and expanded as to cater for the increased demand for such services. The funds required to set-up new organisations will not be provided from the Program, which will restrict itself to technical advice. The same applies for the small-scale enterprises which will certainly be created as a follow-up of the economic development initiated by this Program.

## **7.3 The EKN grant contribution**

The GoN grant for the water infrastructure works will be used as follows:

- The total cost for the rehabilitation on 25,000 ha will be € 7,500,000 or € 300/ha. The EKN contribution is calculated using a rate of €225/ha and totalling to €5,625,000.
- The fine-tuning of water infrastructure in IPSWAM and other rehabilitated polders: covering 135,000 ha will cost in total € 13,500,000 and will be financed by the EKN for € 10,125,000 and the rest will be from the GoB budget.

It has been agreed that BWDB can use 1% of the total amount of the grant, being € 210,000 as a contribution to its operational cost. These operating costs will be directly linked with the planning, design, tendering and monitoring of the water infrastructure works under the Program.

The GoN grant will be used to contract the TA-consultant after EU-open tendering procedures. The following main items will be included:

- Technical Assistance, including both international and national consultants for the facilitation process for the creation of strong WMOs and capacity building related to the other stakeholders and as TA input for the design and monitoring of the infrastructural works.
- Hiring of offices, purchase office equipment and material and vehicles, motorbikes for the operations of the TA-team.
- Purchase of motorcycles and equipment for district level (public) organisations
- Construction of office/storage blocks for cooperatives, purchase of inputs and, equipment for demonstration purpose for the FFS/WMO for selected WMG.
- Contracting services from various service providers including NGOs and private sector.
- Training courses for Program implementers, for the members of the WMG/A, for Government staff on the subjects directly related to the Program. Most of these trainings will be given in Bangladesh, where possible existing training facilities and courses will be used. A limited amount is available for overseas training.
- The TA budget includes an unspecified allocation of € 4.4 million for innovative research and applications. The TA-consultant will have to contract these services in close coordination with the PCD and EKN.

The TA-consultant will support the BWDB during the process of design, contracting and will monitoring the construction of the works. Upon completion of the works, BWDB will submit their request for payment to EKN, after the invoices have been verified by the TA-consultant. In fact, the same procedures as under IPSWAM will be followed.

The Technical Assistance (TA) component will be tendered by EKN. The TA-consultant budget includes funding for their operational costs; purchase of vehicles, (office) equipment, and for contracts to be concluded for a great range of activities. The budget as presented in Annex 1 is specified for the four Program themes: community mobilisation and institutional strengthening, water resources management, food security and business development. For the Program Management a separate budget is presented. Provisions for transport (motorcycles) have been included in the budget to ensure that the staff from the extension and cooperative departments at decentralised levels can participate actively in the process of community mobilisation and to provide the information required by the producers. In needed, MoUs can be signed between these departments and the TA-consultant and/or cooperatives for the services and inputs. The same applies for the use of training facilities belonging to the departments.



## 7.4 Contribution of Stakeholders

Contributions of the stakeholders in the O&M cannot be quantified as yet. The contribution of local bodies to O&M through levies, leases, etc. will take place from the third year of implementation on wards (not quantifiable as yet).

Important private sector investment is not envisaged till 2015.

## 7.5 Disbursement and reimbursement procedures

The following procedures will be followed for the disbursement of EKN funds under the Financial Assistance component with BWDB for the water infrastructural works:

- Tendering and other activities related to implementation can only start after the formal approval by EKN.
- All standing procedures on payments, certification of bills and disbursement to contractors will be followed of BWDB.
- The TA-consultant will be ultimately responsible for checking the bills about the items, tender document, ADP provision and arithmetic calculation. After clearing and if the claimed amount is within the contracted amount, he will forward it to the Directorate of Finance of BWDB, advising him to request for reimbursement from EKN.
- Any increase over the total contractual amount has to be justified to EKN.
- TA-consultant will certify completion of works for the final bill, after the WMA concerned have approved these works/activities.
- Requests to EKN for reimbursement of rehabilitation and fine-tuning are the responsibility for the Director Finance BWDB. The TA-consultant sends all relevant certified documents to the Director Finance, with copies to Director DP-III and EKN.
- Financial and quality control of reimbursement on behalf of EKN will take place under the responsibility of the TA-consultant.
- An annual external auditing of the Financial Assistance expenditures is to be agreed upon by GoB and EKN. This auditing will be executed by an outside auditing firm approved by the EKN and financed from the TA budget.

The Technical Assistance budget falls under the responsibility of the TA consultants. Disbursement procedures will be according to the contract to be signed between EKN and the TA-consultant firm, which will be selected after an EU-open tender procedure. The TA-consultant will have to obtain approval from EKN for activities to be tendered by the TA-consultant.

## 7.6 Budget control mechanisms

In addition to and supported by the monitoring and control mechanisms of BWDB the donor budget control mechanisms will include the following steps:

- Approval of design and implementation schedule for rehabilitation of each of the sub-projects.
- Approval of the annual work plan for all activities.
- Quality control of physical structures.
- Certification of bills of contractors and service providers for reimbursement after due satisfaction of the quality of works by all parties (including stakeholders)
- Verification of LCS involvement including the 50% rule on earth work through LCS is implemented as agreed upon.
- To implement the financial control mechanisms the Team Leader will employ an engineer, an accountant, a financial controller

For the monitoring of the disbursement progress towards the development goals, outcomes and outputs, the TA will design a system which will allow yearly monitoring of progress. Local NGO will be hired for this monitoring of the Program in all three districts.

## Chapter 8: Expected Benefits

The Program has evolved into an integrated programme with a substantial diversity of interventions including water management, agricultural production and value chain development, vocational training and promotion of private sector involvement.

Some of these interventions will generate direct financial benefits for the members of the WMGs, for other benefits measurement in financial terms includes considerable uncertainties. Moreover, information on present situation in the target area is incomplete and unreliable.

In the following sections an attempt is made to describe the benefits that can be expected of the implementation of the Program.

### 8.1 Employment generating and increased income for rural communities

The rehabilitation of water management infrastructure will involve considerable employment for the rural poor in different polders during the programme period. By channelling as much work as possible to Landless Contracting Societies (LCSs) of both women and men, incomes will be approximately double those of labourers working for contractors.

Measures taken up by WMOs to generate funds for infrastructure maintenance and to improve the environment, such as embankment tree plantation, will be carried out in such a way as to generate employment and income for poorer members of the community.

LCS members will be encouraged to save, and training will be provided to support them in using these savings for micro-credit and income generating activities. If appropriate, links will be developed with local NGOs able and willing to cooperate with these groups after programme completion. These specific activities are targeted on the poorest sections of the sub-project populations.

WMOs will be encouraged to develop links with other relevant development projects and government departments, to gain access to a range of development initiatives to improve incomes and living conditions, which will also have a positive impact on poverty reduction. It is also expected that improved farmer – market linkages enhance the possibilities for employment in commercial activities, including the processing of agricultural produce for selected commodities.

### 8.2 Water infrastructure development

In total 160,000 ha will be protected against floods and the design of the embankment will ensure a certain level of climate proofing. The polders will have a more effective water distribution so that optimal use can be made of the available water during the dry season. Due to these infrastructure works the economic value of the land for agricultural production will greatly increase.

### 8.3 Increased agriculture-based production

The impact study of the IPSWAM (BARD, 2008) concludes that, (i) effective community “ownership” of the infrastructure and strong participation in operation and maintenance; (ii) doubling of the “flood-free” area within the polders; (iii) ten per cent increases in cropping intensities; (iv) 50 per cent increases in crop production; (v) 25 per cent increase in the average income of inhabitants; leading to (vi) significant poverty reduction. It should be realised that IPSWAM did not pay much attention to the productive sector and that this increased productivity is all realised by the producers alone.

The research conducted by IRRI and BIRRI (partly conducted in a number of “IPSWAM” polders) has shown that improved water management provides a big potential for the producers to drastically increase the productivity and cropping intensity. Even with some minor improvements in the water system major further improvements are possible.

Another indication of benefits to be expected is found in a recent evaluation of the FFS approach in the DANIDA-supported ASPS-II<sup>4</sup> The main conclusions of the evaluation concerning food security, household income and product diversification are presented in box.

#### Box 8.1: Summary of benefits of FFS

1. The impact of FFS on household **nutrition and food security** is statistically highly significant, most notably among the households with the lowest income levels. FFS households have reduced their vulnerability and increased intake of most food items significantly more than control village households. Likewise, FFS households estimate that their probability of being hit by food shortage has decreased from 20% before FFS to 11% after FFS, compared to a slight decrease from 31% to 30% within control village households.
2. The impact of FFS on **household income** is statistically highly significant. While income in FFS households on average has risen from BDT 52,000 before FFS (2007) to BDT 72,000 after FFS participation (2010), the increase within control village households within the same period was only from BDT 47,000 to BDT 57,000. The income increase within FFS households is most significant for the households with the lowest income levels.
3. The impact of FFS on **product diversification** is statistically highly significant. The total number of agricultural products produced is significantly larger for FFS households than for control village households.

The evaluation also concludes that the FFS approach is a very efficient development investment. When costs are compared with benefits from the FFS interventions at the household-level, it shows a “pay-back time” of less than one year from the investment. Compared to cost from FFS interventions in other countries, FFSs within the ASPS-II Project of Bangladesh appears to be at an average cost level.

FFSs have significantly benefited participating women and their husbands and families, for what women are capable of producing and contributing to household food security and income, if they are given the chance and permission. The successful “FFS women” and their husbands have become role models for other farmers in the neighbourhoods and for their children. FFSs have become a major boost to women’s self-confidence and contributed to

<sup>4</sup> Ministry of Foreign Affairs of Denmark; Evaluation of the Farmer Field School Approach in the Agriculture Sector Programme Support-Phase II, Bangladesh; June 2011

improving inter-household relations between men and women and contributed to increasing gender equality in decision making, at least on smaller issues, in relation to production and income. However, the evaluation did indicate some unintended negative impacts which could be directly or indirectly linked to the implementation of FFSs, e.g. increased workload for children, accidents with small children during women FFS sessions, land disputes and further social exclusion of marginalised groups within the villages and negative environmental impacts related to *boro* rice cultivation.

Although extrapolation is hazardous, an increased household income of Tk. 20,000 (with 2010 prices this amounts to approx. € 200) represents a substantial benefit. If it is assumed that this benefit accrues to the 60,000 households and half that benefit will accrue to the remaining 120,000 households covered by the Program this represents an annual benefit of around € 30 million from increased agricultural production only. This amount does not consider benefits from improved farmer to market linkages.

Organising reliable infrastructure operation through democratic and transparent water management institutions will encourage the development of land-uses which are not only more productive, but also beneficial to the majority of the local population (e.g. paddy-cum-fish, rather than brackish-water prawn monoculture).

#### **8.4 Immaterial benefits**

Bangladesh suffers a major practical 'democratic deficit' contributing to poor governance, unnecessary inequality and widespread corruption. By empowering local communities, including women and men and people from all socio-economic strata to manage and be responsible for their own water management infrastructure, the project will make an important grass roots contribution to meaningful participatory democracy and will be a seed-bed for grass-roots leaders to develop. This will have wide-reaching implications for governance and transparency which will go well beyond water management and food security.

## **ANNEX 1**

# **DETAILED BUDGETS**



**Table A.1: Budget Community mobilization and institutional strengthening**

Description	Quantity							Costs (x 1,000 euro)							
	Unit	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	unit cost	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	Total
<b>Technical Assistance:</b>															<b>4,243</b>
<b>International consultants</b>															<b>1728</b>
Community Organiser/institutional expert	Pm	10	10	10	10	10	10	22.00	220	220	220	220	220	220	1320
short term experts	Pm	3	3	3	3	3	2	24.00	72	72	72	72	72	48	408
<b>National consultants</b>															<b>1280</b>
Community Organisation	Pm	22	22	22	11	11	11	2.20	48	48	48	24	24	24	218
Gender	Pm	11	11	11	11	11	11	2.20	24	24	24	24	24	24	145
Development Planner	Pm	11	11	11	11	11		2.20	24	24	24	24	24	0	121
Sociologist/cooperative expert	Pm	11	22	22	11	11		2.20	24	48	48	24	24	0	169
Senior Socio-economist	Pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165
Socio-economist	Pm	33	44	44	44	33	33	2.00	66	88	88	88	66	66	462
<b>National support staff (central/zonal)</b>															<b>1235</b>
Subject matter specialist	Pm	110	132	132	132	110		0.50	55	66	66	66	55	0	308
Field Investigators/facilitators	Pm	330	825	825	825	550		0.25	83	206	206	206	138	0	839
Data Entry Operator	Pm	22	33	33	33	33	22	0.50	11	17	17	17	17	11	88
<b>Equipment</b>															<b>156</b>
Motorbikes team	Each	40	50		10			1.50	60	75	0	15	0	0	150
Photocopiers zonal office	Each	2	0	0	0	0	0	3.00	6	0	0	0	0	0	6
<b>contracts /studies</b>															<b>3,365</b>
Outsourcing audits	Nr	250	350	500	700	850	850	0.07	18	25	35	49	60	60	245
Pre-feasibility studies/location WMG	Nr	10	5	5				10.00	100	50	50	0	0	0	200
Polder Development Plan	Nr	10	10	10				15.00	150	150	150	0	0	0	450
TA cooperative management+ monitoring	Pm	0	10	10	10	10	10	2.20	0	22	22	22	22	22	110
Office/storage blocks WMG (60 m²)	Nr	25	50	50	50	25	50	9.00	225	450	450	450	225	450	2,250



Analysis and assessments studies	study	1	1	1	1	1	0.5	20.00	20	20	20	20	20	10	110
<b>Training/dissemination</b>															<b>1,040</b>
Training of facilitators	seminar	10	15	15	10	10		2.00	20	30	30	20	20	0	120
Training subject matter specialist	seminar	5	10	10	5	5		4.00	20	40	40	20	20	0	140
Cooperative/small-scale enterprises leaders	seminar	500	1000	1000	1000	1000	500	0.10	50	100	100	100	100	50	500
Government staff training on Comm Part	seminar	20	20	20	20	20		1.00	20	20	20	20	20	0	100
Training of GoB staff	LS								15	15	15	15	15	15	90
National/district level	workshop	1	2	1	2	1	2	10.00	10	20	10	20	10	20	90
<b>Operational cost/subcontracts</b>															<b>53</b>
operational costs motorbikes	Nr	40	80	80	80	60	10	0.15	6	12	12	12	9	2	53
<b>Total costs Community mobilisation</b>									<b>1,375</b>	<b>1,870</b>	<b>1,795</b>	<b>1,556</b>	<b>1,212</b>	<b>1,049</b>	<b>8,857</b>

**Table A.2.1: Budget Water Resources Management: EKN Contribution**

Description	Quantity							Costs (x 1,000 euro)							
	Unit	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	unit cost	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	Total
<b>Technical Assistance:</b>															<b>3,956</b>
<b>International consultants</b>															<b>1680</b>
Water Management Specialist	pm	10	10	10	10	10	10	22.00	220	220	220	220	220	220	1320
Short term experts	pm	2	3	3	3	3	1	24.00	48	72	72	72	72	24	360
<b>National consultants</b>															<b>2085</b>
Hydrologist/climate specialist	pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165
irrigation/drainage engineer	pm	33	33	33	33	33	33	2.50	83	83	83	83	83	83	495
irrigation agronomist	pm	33	33	33	33	33	33	2.50	83	83	83	83	83	83	495
Civil engineer water infrastructure	pm	22	33	33	33	33	33	2.50	55	83	83	83	83	83	468
QC Engineer	pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165
Field QC Engineer	pm	22	55	55	55	55	55	1.00	22	55	55	55	55	55	297
<b>National support staff (central/zonal)</b>															<b>191</b>
Manager (Dhaka)	pm	11	11	11	11	11	11	1.00	11	11	11	11	11	11	66
Manager/Account Assistant (zonal offices)	pm	22	22	22	22	22	22	0.45	10	10	10	10	10	10	59
Data Entry Operator	pm	22	22	22	22	22	22	0.50	11	11	11	11	11	11	66
<b>Equipment</b>															<b>66</b>
Motorbikes	each	20	0	0	10	0	0	1.00	20	0	0	10	0	0	30
Photocopiers++ BWDB offices	pm	3	0	0	3			5.00	15	0	0	15	0	0	30
Office furniture zonal offices+DPiII	unit	3	0	0	0	3	0	1.00	3	0	0	0	3	0	6
<b>Infrastructural works through BWDB</b>															<b>15,750</b>
Rehabilitation of polders	ha		5000	7500	7500	5000		225.00	0	1125	1688	1688	1125	0	5,625
Fine-tuning rehabilitated polders	ha		20000	30000	30000	30000	25000	75.000	0	1500	2250	2250	2250	1875	10,125
<b>Contracts through Program TA</b>															<b>2,610</b>
Water Management Innovation fund	LS								200	500	500	500	500	200	2,400
specific studies	study	1	1	1	1	1	1	35.00	35	35	35	35	35	35	210

<b>Training</b>															<b>527</b>
Training of water users (facilities, material)	polder	3	6	6	6	6		2.00	6	12	12	12	12	0	54
Training seminars Government Institutions	seminar	6	7	7	7	6	6	2.50	15	18	18	18	15	15	98
Staff training in-country courses	course	2	4	4	4	2	1	15.00	30	60	60	60	30	15	255
Workshops	workshop	1	1	1	1	1	1	20.00	20	20	20	20	20	20	120
<b>Operational cost/subcontracts</b>															<b>23</b>
operational costs motorbikes	LS	20	20	20	30	30	30	0.15	3	3	3	5	5	5	23
<b>Total costs Water Management Component</b>									<b>944</b>	<b>3,954</b>	<b>5,266</b>	<b>5,293</b>	<b>4,676</b>	<b>2,798</b>	<b>22,931</b>

**Table A.2.2 : Budget Water Resources Management: BWDB contribution**

Description	Quantity							Costs (lakh Tk)							Total
	Unit	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	unit cost	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	
<b>BWDB contribution</b>															
BWDB staff and operating costs									204	204	204	204	204	204	1,224
Zonal Planning Cells (2)									70	70	70	70	70	70	420
Purchase and investment									15	35	10	10	10	5	85
GoB contribution for rehabilitation	ha		5000	7500	7500	5000		72	0	360	540	540	360	0	1,800
GoB contribution for fine-tuning	ha		20000	30000	30000	30000	25000	24	0	480	720	720	720	600	3,240
O&M contribution (6% of rehab costs)			5000	7500	7500	5000		24	0	120	180	180	120	0	600
VAT and taxes									40	40	30	20	20	20	170
<b>BWDB</b>									<b>329</b>	<b>1,309</b>	<b>1,754</b>	<b>1,744</b>	<b>1,504</b>	<b>899</b>	<b>7,539</b>

**Table A.3 Budget Food Security**

Description	Unit	Quantity						Costs (x 1,000 EUR)								
		PY1	PY2	PY3	PY4	PY5	PY6	Unit costs	PY1	PY2	PY3	PY4	PY5	PY6	Total	
<b>Technical Assistance</b>																<b>4,063</b>
<b>International Consultants:</b>																<b>1680</b>
Agriculturalist	pm	10	10	10	10	10	10	22.00	220	220	220	220	220	220	1320	
Short term specialist	pm	2	3	3	3	2	2	24.00	48	72	72	72	48	48	360	
<b>National Consultants:</b>																<b>1753</b>
Agriculturalist	pm	33	33	33	33	33	33	2.50	83	83	83	83	83	83	495	
Fish expert	pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165	
Livestock expert	pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165	
Mechanisation/processing expert	pm	22	33	33	33	33	22	2.50	55	83	83	83	83	55	440	
Master Trainer (Rice Agronomist)	pm	6	11	11	11	11	11	2.00	12	22	22	22	22	22	122	
TC/Master Trainer (OFWM Specialist)	pm	6	11	11	11	11	11	2.00	12	22	22	22	22	22	122	
Master Trainer (Int Homestead Gardening)	pm	6	11	11	11	11	11	2.00	12	22	22	22	22	22	122	
TC/Master Trainer (High-value Cash Crops)	pm	6	11	11	11	11	11	2.00	12	22	22	22	22	22	122	
<b>National Support Staff:</b>																<b>630</b>
FFS facilitators	pm	166	220	220	220	220	110	0.50	83	110	110	110	110	55	578	
Administrative Assistant	pm	6	22	22	22	22	22	0.45	3	10	10	10	10	10	52	
<b>Equipment and Materials</b>																<b>435</b>
CAHW Kits	each	0	30	0	0	22	0	0.15	0	5	0	0	3	0	8	
Post-harvest Management Packages	PO	0	0	6	6	3	3	4.50	0	0	27	27	14	14	81	
Motor Cycles	each	30	20	0	0	3	0	1.00	30	20	0	0	3	0	53	
Generators	each	3	0	0	3	0	0	23.00	69	0	0	69	0	0	138	
Communications Equipment	LS								20	10	10	10	10	10	70	
Training Equipment	LS								10	15	15	15	15	15	85	
<b>Total Contracts</b>																<b>3,963</b>
<b>Contract-Dept. of Fisheries Works via TA budget</b>																<b>306</b>
Implementation of FFSs incl. all relevant works	LS									50	50	50	50		200	
Demonstration, inputs, training etc.	LS								10	25	25	25	15		100	

Computer, printer, peripherals	each	2	0	0	0	0	0	1.50	3	0	0	0	0	0	3
Photocopier, office supply (Dhaka office)	each	1	0	0	0	0	0	3.00	3	0	0	0	0	0	3
<b>Contract-Dept. of Livestock Works via TA budget</b>															<b>306</b>
Implementation of FFSs incl. all relevant works	LS									50	50	50	50		200
Demonstration, inputs, training, vaccines etc.	LS								10	25	25	25	15		100
Computer, printer, peripherals	each	2	0	0	0	0	0	1.50	3	0	0	0	0	0	3
Photocopier, office supply (Dhaka office)	each	1	0	0	0	0	0	3.00	3	0	0	0	0	0	3
<b>Contracts through TA -consultant</b>															<b>3351</b>
Awareness campaigns	WMG	50	200	200	200	100	0	0.25	13	50	50	50	25	0	188
Socio-economic Baseline Surveys	polder	9	9	9	0	0	0	5.00	45	45	45	0	0	0	135
Partnership with Wageningen University	lump sum								25	150	25	25	25	25	275
Partnership with Los Banos University	lumpsum								20	20	130	20	20	20	230
Specific studies	polder	1	5	5	5	5	0	20.00	20	100	100	100	100	0	420
Curriculum Development (for FFSs)	workshop	1	0	0.5	0	0	0	45.00	45	0	23	0	0	0	68
Sub-contracts IPs for FFSs (DoF, DLS, etc.)	lumpsum								1	10	11	5	5	5	38
Publication of Training Materials	lumpsum								10	5	5	5	3	3	30
Initiate Market Information Systems	District	0	0	1	2	1	1	4.00	0	0	4	8	4	4	20
Conduct Collection Trials	PO			1	2	3	2	6.00	0	6	6	12	18	6	48
Production Support+ Innovation fund	PO								200	400	400	400	300	200	1900
<b>Works through DAE</b>															<b>995</b>
Implementation of FFSs	each	150	250	300	300	300	200	0.40	60	100	120	120	120	80	600
Field Days/Demonstrations	each	50	100	100	100	100	80	0.15	8	15	15	15	15	12	80
FFS representation	LS								10	10	10	5	5	5	45
Training of FFS facilitators	LS								20	20	20	20	10	0	90
Training GoB staff	LS								40	20	20	45	15	5	145
Motorcycles	each	25	0	0	0	0	0	1.00	25	0	0	0	0	0	25
Computer, printer, peripherals	each	5	0	0	0	0	0	1.50	8	0	0	0	0	0	8
Photocopier, office supply (Dhaka office)	each	1	0	0	0	0	0	3.00	3	0	0	0	0	0	3
<b>Training</b>															<b>240</b>

Implement FBSs	PO	0	0	30	30	30	30	1.00	0	0	30	30	30	30	120
IRRI/DAE field research component	LS								20	20	20	20	20	20	120
<b>Operational cost transport</b>	<b>LS</b>														<b>202</b>
Operational cost motorbikes	LS	55	75	75	78	78	<b>78</b>	0.15	8	11	11	12	12	12	66
Travel for National Consultants	LS								17	24	24	24	24	24	137
<b>Total costs Food Security</b>									<b>1,351</b>	<b>1,926</b>	<b>1,990</b>	<b>1,907</b>	<b>1,621</b>	<b>1,103</b>	<b>9,898</b>

**Table A.4 Business Development**

Description	Unit	Quantity						Costs (x 1,000 EUR)							
		PY1	PY2	PY3	PY4	PY5	PY6	Unit costs	PY1	PY2	PY3	PY4	PY5	PY6	Total
<b>Technical Assistance</b>															<b>2,206</b>
<b>International Consultants:</b>															<b>945</b>
Business economist	pm	2	3	6	6	6	6	21.00	42	63	126	126	126	126	609
Institutional expert	pm	2	2	2	2	0	0	24.00	48	48	48	48	0	0	192
Good governance expert	pm	0	2	0	2	2	0	24.00	0	48	0	48	48	0	144
<b>National Consultants:</b>															<b>1234</b>
Private sector expert	pm	5	22	22	22	22	22	2.50	13	55	55	55	55	55	288
Business Administration expert	pm	5	33	33	33	33	33	2.50	13	83	83	83	83	83	425
Marketing expert	pm	0	11	11	11	11	11	2.50	0	28	28	28	28	28	138
Investment specialist	pm	0	11	11	11	11	11	2.50	0	28	28	28	28	28	138
Women Affairs expert	pm	0	6	6	6	6	6	2.00	0	12	12	12	12	12	60
Value chain expert	pm	5	11	11	11	11	11	2.00	10	22	22	22	22	22	120
Good Governance	pm	3	6	6	6	6	6	2.00	6	12	12	12	12	12	66
<b>National Support Staff:</b>															<b>27</b>
Administrative Assistant	pm	6	11	11	11	11	11	0.45	3	5	5	5	5	5	27
<b>Equipment and Materials</b>															<b>54</b>
Motor Cycles	each	2			2			1.00	2	0	0	2	0	0	4
Communications Equipment	set	2			0.5			10.00	20	0	0	5	0	0	25
Training Equipment	set	2			0.5			10.00	20	0	0	5	0	0	25
<b>Contracts</b>															<b>700</b>
Value Chain Analyses/Business Plans	PO	0	5	6	7	6	0	10.00	0	50	60	70	60	0	240
Studies on private sector development	set	0	2	2	2	2	0	45.00	0	90	90	90	90	0	360
Initiate Market Information Systems	District	0	2	2	2	2	2	10.00	0	20	20	20	20	20	100
<b>Training</b>															<b>550</b>
Development of Catalysts/Identify Buyers	LS								0	25	50	75	75	75	300



Business development	LS								0	50	50	50	50	50	250
<b>Component Operations</b>	<b>LS</b>														<b>2</b>
Operating cost transport		2	2	2	4	3	2	0.15	0	0	0	1	0	0	2
<b>Total costs Business development</b>									<b>176</b>	<b>638</b>	<b>688</b>	<b>783</b>	<b>713</b>	<b>515</b>	<b>3,512</b>

**Table A.5: Budget Program Management**

Description	Quantity							Costs (1000 euro)							
	Unit	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	unit cost	PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	Total
<b>Technical assistance</b>															<b>2,105</b>
<i>International</i>															336
Team Leader extra allowance	pm	10	10	10	10	10	10	3.00	30	30	30	30	30	30	180
Program Director lead consultant HQ	pm	1	1	1	1	1	1	26.00	26	26	26	26	26	26	156
<b>National consultants</b>															<b>1075</b>
national Project Coordinator	pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165
Institutional/legal Advisor	pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165
Training expert	pm	11	11	11	11	11		2.20	24	24	24	24	24	0	121
Environment expert	pm	11	11	11	11	11		2.20	24	24	24	24	24	0	121
M&E expert	pm	11	11	11	11	11	11	2.50	28	28	28	28	28	28	165
M&E assistant	pm	11	22	22	22	22	22	1.70	19	37	37	37	37	37	206
Communication expert	pm	11	11	11	11	11	11	2.00	22	22	22	22	22	22	132
<b>national support staff</b>															<b>694</b>
Financial/procurement expert/accountant	pm	11	11	11	11	11		2.20	24	24	24	24	24	0	121
Support staff	pm	22	33	33	33	33	22	0.50	11	17	17	17	17	11	88
Account Assistant	pm	33	33	33	33	33	33	0.45	15	15	15	15	15	15	89
Secretary	pm	33	33	33	33	33	33	0.40	13	13	13	13	13	13	79
Drivers	pm	132	132	132	132	132	132	0.30	40	40	40	40	40	40	238
Messengers	pm	66	66	66	66	66	66	0.20	13	13	13	13	13	13	79
<b>Equipment</b>															<b>442</b>
city vehicle	each	2						20.00	40	0	0	0	0	0	40
vehicle 4x4	each	10						30.00	300	0	0	0	0	0	300
Computers, printers and peripherals	each	30				5		1.50	45	0	0	0	8	0	53
Photocopiers	each	3						3.00	9	0	0	0	0	0	9
Program District Office furniture	set	3				1		10.00	30	0	0	0	10	0	40
<b>Contracts</b>															<b>1,204</b>
Stipends for vocational training	# students	0	100	100	100	100	100	1.00	0	100	100	100	100	100	500
Mid-Term reviews	mission		1		1			47.00	0	47	0	47	0	0	94

Annual reviews	mission	1	0	1	0	1	0	30.00	30	0	30	0	30	0	90
Final evaluation	mission						1	90.00	0	0	0	0	0	90	90
Baseline + household surveys/polder	surveys	7	20				27	5.00	35	100	0	0	0	135	270
Result monitoring/impact assessment	surveys		1	1	1	1	1	20.00	0	20	20	20	20	20	100
Information activities	LS								10	10	10	10	10	10	60
<b>Training</b>															<b>165</b>
exchange visits		1	2	2	2	2	2	15.00	15	30	30	30	30	30	165
<b>Operational cost</b>															<b>738</b>
Office operations	LS	3	3	3	3	3	3	25.00	75	75	75	75	75	75	450
Transport operations	nr	12	12	12	12	12	12	4.00	48	48	48	48	48	48	288
<b>TOTAL</b>									<b>981</b>	<b>798</b>	<b>681</b>	<b>698</b>	<b>698</b>	<b>798</b>	<b>4,653</b>

**ANNEX 2**

**POLDERS**

**in Satkhira, Khulna and Patuakhali districts**

**available for the Program**

**Table 2 a: Polders available in Satkhira district**

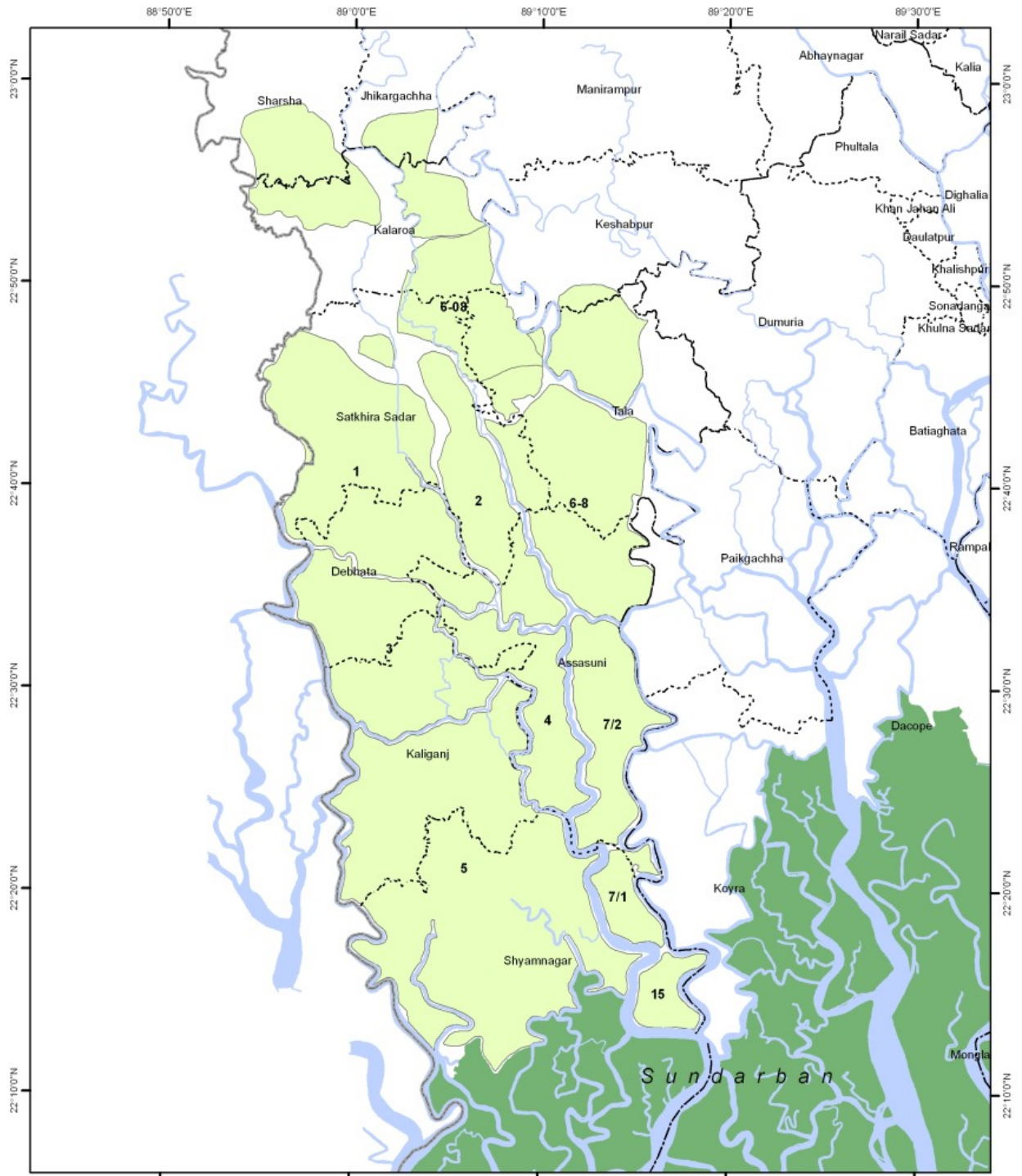
Polder No./ Polder Name	Location Name of Thana	Gross Protected Area (HA)	Cultivable Land				Main Project Feature				Remarks	Blue Gold Program	
			Total (HA)	Crop (HA)	Shrimp (HA)	Salt (HA)	Embkt. (Km)	Regulator (No)	Flushing Inlet (No)	Drain Channel (Km)		fine tuning	rehabilitation needed
1	Assasuni, Debhata & Satkhira	28,381	21,143	21,143	6,500	0	97	25	3	0	complete	28381	
2	Assasuni, Satkhira	11,290	11,000	6,547	4,495	0	64	20	0	21			11290
6-8	Assasuni, Satkhira, Tala	18,450	14,700	11,760	2,940	0	53	23	0	145			18450
6-8 Ext.	Satkhira, Kalarua	8,330	6,640	5,312	1,328	0	9	2	0	0	complete	8330	
15	Shymnagar	3,441	2,925	900	2,025	0	27	5	0	0	CEIP	3441	
	<b>TOTAL</b>	<b>69,892</b>	<b>56,408</b>	<b>45,662</b>	<b>17,288</b>	<b>0</b>	<b>249</b>	<b>75</b>	<b>3</b>	<b>166</b>		<b>40,152</b>	<b>29,740</b>

**Table 2 b : Polders available for the Program in Khulna district**

Polder No./ Polder Name	Location Name of Thana	Gross Protected Area (HA)	Cultivable Land			Main Project Feature				Remarks	Blue Gold Program		
			Total (HA)	Crop (HA)	Shrimp (HA)	Embkt. (Km)	Regulator (No)	Flushing Inlet (No)	Drain Channel (Km)		fine tuning	IPSWAM	rehabilitation needed
9	Paikgacha.	1,255	1,247	680	567	8	3	0	11				1,255
14/1	Koyara	2,933	2,350	1,880	470	25	4	0	0	CEIP	2,933		
16	Paikgacha, Tala	10,445	8,102	3,050	5,052	45	12	0	11	CEIP	10,445		
17/1	Dumuria	5,020	4,000	4,000	0	46	11	0	44	CEIP	5,020		
17/2	Dumuria	3,400	2,700	2,700	0	11	5	0	21	CEIP	3,400		
18-19	Paikgacha	3,380	3,300	2,200	2,800	32	4	0	3				3,380
20	Paikgacha	1,248	1,200	1,170	1,000	18	8	4	2				1,248
20/1	Paikgacha	352	300	300	250	5	2	0	0				352
21	Paikgacha	1,417	1,215	1,215	880	17	3	0	7				1,417
22	Paikgacha	1,630	1,417	1,417	0	20	4	48	0	IPSWAM		1,630	
23	Paikgacha	5,910	4,872	1,048	3,824	37	11	36	36	CEIP	5,910		
26	Dumuria	2,696	2,100	2,100	0	29	4	0	18				2,696
27/1	Dumuria	3,765	3,000	3,000	0	30	6	0	12				3,765
27/2	Dumuria	495	400	400	0	15	3	0	15	completed	495		
28/1	Dumuria	5,600	4,500	4,500	0	23	9	0	12				5,600
28/2	Batiaghata	2,590	2,000	2,000	0	20	4	0	5				2,590
29	Batiaghata, Dumuria	8,218	6,570	6,570	0	49	11	81	39	IPSWAM		8,218	
30	Batiaghata	6,396	4,048	4,048	0	40	21	3	37	IPSWAM		6,396	
31 Part	Batiaghata	4,848	4,048	4,048	0	30	9	2	29				4,848
32	Dacope	8,097	6,500	6,497	5,328	51	10	51	45	CEIP	8,097		
33	Dacope	8,100	6,400	5,120	1,280	53	13	11	20	CEIP	8,100		
	<b>TOTAL</b>	<b>87,795</b>	<b>70,269</b>	<b>57,943</b>	<b>21,451</b>	<b>603</b>	<b>157</b>	<b>236</b>	<b>366</b>		<b>44,400</b>	<b>16,244</b>	<b>27,151</b>

**Table 2 c: Polders available for the Program in Patuakhali district**

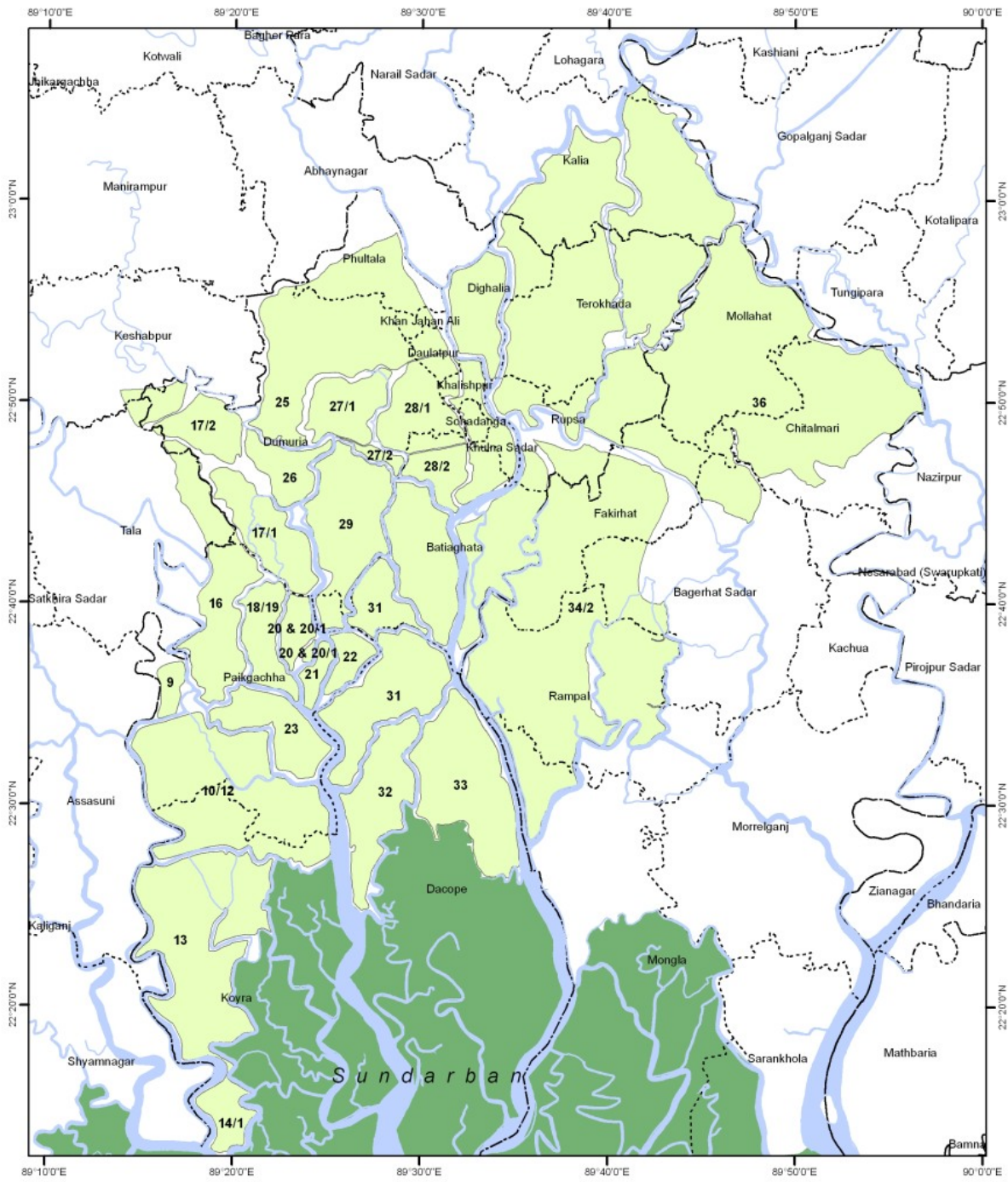
Polder No./ Polder Name	Location Name of Thana	Gross Protected Area (HA)	Cultivable Land			Main Project Feature				Remarks	Blue Gold options		
			Total (HA)	Crop (HA)	Shrimp (HA)	Embkt. (Km)	Regulator (No)	Flushing Inlet (No)	Drain Channel (Km)		fine tuning	IPSWAM	rehabilitation needed
43/1	Amtali	10,600	8,500	8,500	0	65	39	0	55	Comple	10,600		
43/1A	Amtali	2,675	2,200	2,200	0	27	6	0	59	IPSWAM		2,675	
43/2A **	Patuakhali	5,182	3,887	3,887	0	40	5	3	44	IPSWAM		5,182	
43/2B	Galachipa, Amtai, Patuakhali	5,460	4,000	4,000	0	42	6	24	40	IPSWAM		5,460	
43/2C **	Galachipa	2,753	2,000	2,000	0	26	6	40	26	CEIP	2,753		
43/2D	Patuakhali	6,500	4,875	4,875	0	43	16	58	110	IPSWAM		6,500	
43/2E	Patuakhali	1,650	1,300	1,300	0	20	7	40	42	IPSWAM		1,650	
43/2F	Amtali	4,453	3,500	3,500	0	35	13	55	33	IPSWAM		4,453	
44	Amtali, Kalapara	17,530	12,500	12,500	0	82	16	16	43	Comple	17,530		
45	Amtali	4,089	3,200	3,200	0	27	10	8	24	ECRRP	4,089		
46	Kalapara	4,697	3,757	3,757	0	40	12	4	37	ECRRP	4,697		
47/1	Kalapara	2,478	2,065	2,065	0	22	7	5	25	ECRRP	2,478		
47/3	Kalapara	2,025	1,660	1,660	0	20	5	10	25				2035
47/4	Kalapara	6,600	5,600	5,600	0	59	26	1	65	ECRRP	6,600		
47/5	Kalapara	7,500	6,000	6,000	0	33	14	0	76	ECRRP	7,500		
48 **	Kalapara	5,400	3,715	3,715	0	38	10	0	16	ECRRP	5,400		
54	Kalapara, Amtoli, Galachipa	13,954	10,256	10,256	0	59	10	0	30				10325
55/1	Galachipa	10,325	7,230	7,230	0	46	11	24	14	ECRRP	10,325		
55/2A	Patuakhali, Galachipa, Amtoli	7,166	5,000	5,000	0	41	11	6	35				7166
55/2B	Galachipa	2,600	2,080	2,080	0	30	6	8	46				2600
55/2C	Galachipa	6,275	5,020	5,020	0	48	6	29	38				6275
	<b>TOTAL</b>	<b>129,912</b>	<b>98,345</b>	<b>98,345</b>	<b>0</b>	<b>842</b>	<b>242</b>	<b>331</b>	<b>881</b>		<b>71,972</b>	<b>25,920</b>	<b>28,401</b>



Polders of Satkhira District	
<b>Legend</b>	
— International Boundary	Existing Polder
- - - District Boundary	Sundarban
..... Upazila Boundary	
— Major River	

9 0 9 Km.





Polders of Khulna District	
<b>Legend</b> ——— International Boundary ——— Major River - - - District Boundary ····· Upazila Boundary <span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid black; margin-right: 5px;"></span> Existing Project <span style="display: inline-block; width: 15px; height: 10px; background-color: #548235; border: 1px solid black; margin-right: 5px;"></span> Sundarban	
 9      0      9 Km.	



Polders of Patuakhali District		
<b>Legend</b>		
----- District Boundary	Existing Polder	
----- Upazila Boundary	Proposed Polder	
— Major River		

## **ANNEX 3**

# **LOGICAL FRAMEWORK**

## Logical Framework

Narrative summary	Indicators	Means of verification	Assumptions
<b>Goal</b> Reduced poverty and hunger for poor people living in polders in the coastal zone of Bangladesh.	<ul style="list-style-type: none"> <li>- Less than 10% of children with stunted growth and under-weight</li> <li>- No. hhs with 5 months or more of food shortage reduced to less than 10%</li> <li>- 50% increase in household assets</li> </ul>	Impact surveys at baseline, mid-term and completion (RIMS)	<ul style="list-style-type: none"> <li>- No major natural disasters</li> <li>- Political stability</li> </ul>
<b>Purpose</b> Improved and more secure rural livelihoods for 160,000 households in coastal polders.	<ul style="list-style-type: none"> <li>- 140,000 hhs reporting increased agricultural production</li> <li>- 10,000 hhs with more livestock</li> <li>- 20,000 hhs with increase fish production from ponds</li> <li>- 40,000 people in income earning occupations;</li> </ul>	Impact and outcome surveys undertaken by the M&E unit.	<ul style="list-style-type: none"> <li>- Economic growth and stability</li> <li>- Supportive enabling environment</li> </ul>
<b>Outputs</b>			
Community mobilisation and institutional strengthening to have the rural communities organised in cooperatives and they are an effective driver for change and economic growth.	<ul style="list-style-type: none"> <li>- 700 WMG newly registered</li> <li>- 240 WMG in IPSWAM polders strengthened on productive sectors</li> <li>- 80% WMG rated effective/ sustainable</li> <li>- 80% of WMG have decided upon their roles which are effectively implemented.</li> <li>- Institutional framework for the productive sector is strengthened for the benefit of the rural communities.</li> </ul>	<ul style="list-style-type: none"> <li>- Participatory monitoring of community orgs.</li> <li>- Establishment of cooperative associations.</li> <li>- Contracts between WMG/A and private sector.</li> </ul>	<ul style="list-style-type: none"> <li>- Experience from other projects can be directly applied.</li> <li>- Political support for a cooperative movement</li> <li>- A supportive enabling environment in particular on (good) governance</li> <li>- Dept. of Cooperative is supportive</li> </ul>
2. Water resources managed effectively to protect land from tidal and storm surges, improve drainage and irrigation.	<ul style="list-style-type: none"> <li>- 25,000 ha of polders rehabilitated.</li> <li>- 135,000 ha of polders water infrastructure fine-tuned for optimal use</li> <li>- Planning of works is done in close participation with the WMG/A</li> <li>- 40,000 women earning from LCS</li> <li>- Innovative concepts for water resources management designed and introduced</li> </ul>	<ul style="list-style-type: none"> <li>- Polder rehabilitation plan for water infrastructure</li> <li>- Tenders for works</li> <li>- Monitoring by WMA and TA team</li> </ul>	<ul style="list-style-type: none"> <li>- Sufficient allocations for O&amp;M by the Government.</li> <li>- Delays due to bureaucratic procedures of BWDB limited.</li> <li>- Vested interests &amp; elites do not disrupt land settlement.</li> </ul>
3. Productive sectors (crops, fishery and livestock) performance will be higher for the benefit of the producers through higher income	<ul style="list-style-type: none"> <li>- Productivity increased by 30%</li> <li>- Production intensity increased by 20%</li> <li>- Household income increased with Tk 15,000 from an average level of Tk 50,000.</li> <li>- Producers are more market oriented</li> <li>- Crop losses reduced by 20%</li> <li>- 3,000 FFS established and effective</li> <li>- Innovative technology introduced and applied</li> </ul>	<ul style="list-style-type: none"> <li>- Participatory monitoring feedback and surveys</li> <li>- Production statistics</li> </ul>	<ul style="list-style-type: none"> <li>- The outputs are for the producers with the Program as from year1</li> <li>- Producers will be able to settle their difference on water use.</li> <li>- Timely availability of quality inputs incl credit.</li> </ul>
4. Business Development	<ul style="list-style-type: none"> <li>- Value chain analysis for (at least) 8 products</li> <li>- Analysis of the services providers; their strengths and weaknesses</li> <li>- Cooperatives associations established to fill gaps in services by government and private sectors.</li> </ul>	<ul style="list-style-type: none"> <li>- Project reports</li> </ul>	<ul style="list-style-type: none"> <li>- Dept. of Cooperative is supportive.</li> <li>- Private sector farm product oriented.</li> <li>- Banks supportive for investments in productive sector development.</li> </ul>
4. Improved livelihoods	<ul style="list-style-type: none"> <li>- Amount of savings and no. of loans</li> <li>- 40,000 women trained in IGA</li> <li>- 40,000 women attend rights-based training and events</li> <li>- 600 students at vocational training centres</li> <li>- Protected against climate change consequences</li> </ul>	<ul style="list-style-type: none"> <li>- Participatory monitoring feedback and surveys</li> <li>- KAP surveys</li> <li>- Project reports from DAE and NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- NGOs not subject to undue regulatory interference.</li> </ul>
5. Knowledge management and lessons for Integrated Coastal Zone Management (ICZM).	<ul style="list-style-type: none"> <li>- Innovative solutions for water resources infrastructure designed and tested</li> <li>- Innovative technologies introduced for the productive sector; mainly for land preparation, harvesting, processing.</li> </ul>	<ul style="list-style-type: none"> <li>- Project reports</li> </ul>	<ul style="list-style-type: none"> <li>- Improvements are technical possible and needed.</li> <li>- Financial consequences for innovations can be catered for.</li> </ul>
<b>Activities</b>			

<p><b>1. Community mobilisation (I) and institutional strengthening (II): for I:</b> (a) community mobilisation; (b) formation process of primary societies (WVG); (c) participatory planning of the future development in the polder, (d) establishing community action plans related to water and productive sector and livelihood, (e) implementation of the plans; <b>for II</b> (i) analysis of the strengths and weaknesses of the services providers; (ii) creation of associations each with a clear objective, (iii) professionalization of the WVG to better serve their members, (iv) support to Government agencies whenever opportune for the development process (good governance and gender are well embedded in these activities).</p>
<p><b>2. Climate resilient water resources infrastructure:</b> (a) participatory planning, design and implementation of water infrastructure; (b) external and internal polder embankment rehabilitated; (c) water control sluices installed; (d) water storage facilities created; (e) operation and maintenance arrangement between BWDB and WMA ; (f) O+M effectively conducted with specific roles for LCS and women; (g) design and introduction of innovative solutions; (h) training mainly on-the-job and classroom sessions.</p>
<p><b>3. Productive sectors:</b> (a) participatory planning of development productive sectors; (b) define possible farm plans at WVG level; (c) defining knowledge and inputs needed for improved productivity; (d) creating of Farmers Field Schools; (e) introduce innovative technology. Surveys to assess availability of land and current ownership status; (b) selection of target group households; (c) process of land titling; (d) computerised land record management system.</p>
<p><b>4. Business development:</b> (a) analysis (weakness and strength) of the services providers; (b) close coordination with the value chain experts under the Care/Solidaridad contract; (c) development of Business Plans per polder; (d) strengthen the linkages with the selected services providers; (e) strengthen capacity of the WVG and newly established cooperative associations to play an entrepreneurial role.</p>
<p><b>5. Livelihood support:</b> (a) organise stipends for skill training; (b) introduction of water integrity; (c) promotion of better life for women (income, drinking water, balanced food, education); (d) promotion of better hygiene, SRHR and balanced nutrition in support of the WASH development is under a separate EKN contract.</p>
<p><b>5. Technical assistance and management support:</b> (a) community mobilisation and institutional strengthening; (b) support from TA team for implementing agencies; (c) quality control; (d) specialised training; (e) introduction of innovative approaches and technologies; (f) dissemination and sharing of experiences; (g) M&amp;E system and reporting.</p>

## **Annex 4**

# **Subjects/ideas for Innovations**

Examples of themes for which innovative solutions could be introduced and developed:

Integrated Water Resources Management:

Room for the River;  
Building with Nature,  
River training,  
Dredging technology and systems,  
Eco tourism,  
Smart dyke sensor technology.

Productive sectors:

e-Leave,  
climate atlases,  
prawn and shrimp production,  
testing facilities for water, soil, nutrient and pollution,  
tree planting,  
climate adaptive and vitamin enriched rice varieties,  
bio gas installation,

Business development:

Agro-machinery,  
Processing crop and fish,  
Cooperative banking,  
Crop storage,  
Cooperate Social Responsible investments.