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# List of water resources management projects

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This page contains short description about the water resources management projects in the coastal zones of Bangladesh.

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## **The Early Implementation Project (1975 - 1997)**[\[edit](#) | [edit source](#)]

The Early Implementation Project (EIP) started in 1975 as a cooperation programme between the Government of Bangladesh (GoB) and the Government of The Netherlands (GoN). The initial contribution of The Netherlands Government was support to relatively small labour-intensive, quick-result yielding water sector projects through the Bangladesh Water Development Board. The projects had mainly a rehabilitation and relief character. They needed comparatively limited technical preparation and could therefore, in theory, start early, hence the name: Early Implementation Project (EIP). The broad objectives of the project were:

- to increase the productivity and security of land and water.
- to promote national self-sufficiency in food.
- to improve the living standard of the poorest rural households

The project was mainly based on engineering solutions through structural interventions. Only gradually, some changes in the approach were incorporated, such as the initiation of socio-economic feasibility studies which started in 1985/86 with the aim to have a better selection between various technical options. In 1988 multi-disciplinary planning teams were introduced to include engineering,

agricultural and social aspects in the assessment of a project's viability. RRA and PRA trainings were therefore organized by BWDB as part of EIP to enhance the capacity of these multi-disciplinary teams in the use of RRA and PRA tools, thus introducing a first attempt to Peoples Consultation.

In 1988 EIP identified a few sub-projects where Operation and Maintenance (O&M) activities were introduced through the formation of sluice committees that were responsible for the operation of sluice gates.

Ultimately, the project went through four distinct phases (each of 5 years) and a consolidation phase of 2 years. The project was finally concluded in 1997. Over the years, the project implemented 88 schemes in various regions of Bangladesh, covering an area of 463,250 ha. The implemented schemes consisted of the development of low-lying basins (*haors*) and polders through the excavation of canals, construction of sluices, closures, and embankments.

## **Delta Development Project (DDP) (1976 - 1988)**[\[edit](#) | [edit source](#)]

The problems and constraints affecting the polder development activities in Bangladesh enhanced the need for an overall development programme for the implemented polders, which was called the Delta Development Project (DDP). The project was originally proposed in 1976 and consisted of three basic components:

- polder development projects;
- pilot areas;
- delta development studies.

The original proposal was to establish three empoldering projects of a representative nature for different water zones: the saline water zone, the fresh water zone, and the transition zone. Their problems and consequently the development strategies for each zone were different. The development programme of the project also included technical and socio-economic elements. The objective was to reach the full development of these three polders. Experience gained in this process could then be the base for the development activities of the entire South-western region in a later stage. An area of 40 to 80 ha, in each polder project, would be selected as a pilot area to test and develop appropriate farming methods, crop diversification and intensification. The experience gained would be gradually disseminated to the entire polder.

## **Land Reclamation Project (LRP) (1977 - 1991)**[\[edit](#) | [edit source](#)]

The construction of two cross-dams over branches of the river Meghna on the coast of the Noakhali district during 1957 and 1963 showed very positive results which introduced the prospect of land accretion in Bangladesh. During 1976, encouraged by the tremendous accretion, the Government of Bangladesh requested the Netherlands Government for technical assistance in land reclamation. Based on the Identification Mission Report, the Land Reclamation Project (LRP) began to function in late 1977.

The project's objectives were: (i) to carry out surveys and studies for the development of long term planning on land reclamation and estuary control in the estuarine area of Bangladesh, (ii) to try out various methods to accelerate the accretion of land and to define methods that are feasible in Bangladesh and (iii) to plan, prepare and monitor the implementation of specific land

conservation/land reclamation projects

Besides reaching these polder development objectives, other aspects were also investigated to achieve the project objectives like:

- hydrographic surveys for future planning and policy making;
- establishment of sedimentation fields to reduce estuary erosion.

A pilot polder was developed in Char Baggar Dona, including the settlement of several thousand extremely poor landless people on newly accreted land. This achieved long-term success.

A feasibility study on the construction of a 23 km long dam connecting Sandwip island with the mainland was also executed within the framework of the Land Reclamation Project. The study showed that dam construction could accrete 25,000 ha new land by blocking strong tidal currents.

## **Second Small Scale Flood Control Drainage and Irrigation Project (1988-1994)**[\[edit](#) | [edit source](#)]

The second SSFCDI project was funded jointly by the World Bank and CIDA. The main objectives of the project were to: (i) increase agricultural production and farm incomes by supporting investments in small schemes designed for the protection of agricultural lands against floods, prevention of salt water intrusion, improved drainage and provision of water for irrigation; (ii) strengthen the capacity of the Bangladesh Water Development Board (BWDB) to implement new projects and to operate and maintain completed sub-projects; and (iii) restore flood protection, drainage, irrigation and town protection infrastructures damaged by the 1987 floods.

Activities under the project included: (i) construction of 15 fully planned new sub-projects (requiring both earthworks and structures) covering about 50,000 ha, and construction/rehabilitation of 200 sub-projects (covering 200,000 ha nationwide), including provision of funds for operation and maintenance (O&M) of completed sub-projects; (ii) training of BWDB staff and farmers involved in the construction and O&M of sub-projects; (iii) provision of TA and training for planning, design and monitoring of construction of sub-projects, the benchmark and evaluation studies of selected sub-projects, the modernization of BWDB's financial management and accounting systems, and the establishment of an O&M Cost Cell at BWDB's headquarters.

The latter part, setting up an O&M cell did not materialise under the project and also the O&M activities were not very successful.

## **System Rehabilitation Project (SRP) (1990 - 1997)**[\[edit](#) | [edit source](#)]

The System Rehabilitation Project (SRP) was initiated in 1990 as a consequence of the need for rehabilitating already completed BWDB infrastructure sub-projects/schemes. The project was co-financed by World Bank, EC, GoN and GoB. A rehabilitation and improvement programme was carried out in 38 sub-projects. Whereas the project initially had a rehabilitation bias, it progressively shifted its focus to institutional development. Also finding ways to come to improved Operation and Maintenance (O&M) based on the experiences from the second SSFCDI project, received more attention.

Ultimately, the project's main results were:

- the development of an operational approach to strengthening maintenance.
- The development of an approach for participatory water management

In order to achieve these results, the project for the first time formed Water Users Groups for O&M and also prepared their own documents and procedures for participation.

## **Flood Action Plan (FAP) (1990-1995)[[edit](#) | [edit source](#)]**

The Flood Action Plan was an initiative to study the causes and nature of flood in Bangladesh after the disastrous floods in 1987 and 1988 and to prepare guidelines for controlling it. FAP was based on several earlier studies by the Netherlands, UNDP, USAID and JICA. The Government of Bangladesh (GOB) with financial support of The Netherlands undertook a comprehensive review of flood policy and flood protection measures. Accordingly, work commenced on a flood policy study and a flood preparedness study. The two studies were undertaken jointly by a team of local and expatriate professionals with UNDP assistance and completed in early 1989. At about the same time three other studies were carried out: a pre-feasibility study of flood control in Bangladesh funded by the French government; the Eastern Waters Study, sponsored by USAID (largely concerned with a broader view of land and water resources management in the Ganges and the Brahmaputra basins) and the Report on Survey of Flood Control Planning in Bangladesh, sponsored by the Japanese government.

Meanwhile, the G7 summit in Paris in July 1989 expressed concern about the periodic flood problem in Bangladesh and took note of the different studies, referred to above. The government of Bangladesh in the meanwhile had requested the World Bank to coordinate efforts aimed at mitigation of flood problem in Bangladesh. The G7 Summit stressed the need for a coordinated action by the international community. Accordingly, the World Bank coordinated the preparation of the Flood Action Plan. The GOB accepted the policy of high degree of structural protection as a key element of the long-term comprehensive flood control programme and adopted six broad principles for flood protection. The GOB also developed 'Eleven Guiding Principles', based on which all future planning were to be carried out.

Eleven guiding principles of FAP (1) Phased implementation of a comprehensive Floodplain aimed at: protecting rural infrastructure and controlled flooding to meet the needs of agriculture, fisheries, navigation, urban flushing and annual recharge of surface and groundwater resources; (2) Effective land and water management in protected and unprotected areas; (3) Measures to strengthen flood preparedness and disaster management; (4) Improvements of flood forecasting and early warning; (5) Safe conveyance of the large cross border flows to the Bay of Bengal by channelling it through the major rivers with the help of embankments on both sides; (6) River training to protect embankments and urban centres; (7) Reduction of flood flows in the major rivers by diversion into major distributaries and flood relief channels; (8) Channel improvements and structures to ensure efficient drainage and to promote conservation and regulation; (9) Floodplain zoning where feasible and appropriate; (10) Coordinated planning and construction of all rural roads, highways and railways embankments with provision for unimpeded drainage; (11) Encourage popular support by involving beneficiaries in the planning, design and operation of flood control and drainage works.

The FAP included 29 different components of which 11 were regional, with some pilot projects, and the rest were supporting studies on issues like environment, fisheries, Geographic Information System, socio-economic studies, topographic mapping, river surveys, flood modelling, etc. The aim of the FAP was to set the foundation of a long-term programme for achieving a permanent and comprehensive solution to the flood problem.

Whereas the Flood Action Plan incorporated both structural and non-structural components, the

study concluded that embankments would form the basis for controlled flooding. Until to date, deep controversies exist among water resource planners to these technical options that should lead to a solution to the flood problems in Bangladesh. The criticism touches among aspects such as the ecological consequences of polder construction and compartmentalization, lack of stakeholder involvement and coverage of social aspects (e.g. the criteria of equity and justice relating to the question 'who gains and who loses' from FAP and other flood related intervention), reliability of structural performance and the maintenance requirements.

Overall it could be concluded that the FAP helped establish a substantial knowledge base on complex water management issues, However, the FAP processes also revealed limited effectiveness of past interventions due to (i) overemphasis on a structural approach, (ii) insufficient stakeholder participation and agency coordination, (iii) lack of attention to diverse social and environmental water concerns in different livelihood activities, (iv) poor operation and maintenance (O&M), and (v) overall institutional weaknesses.

## **Compartmentalization Pilot Project (CPP)-FAP-20 (1991 - 2000)[[edit](#) | [edit source](#)]**

The aim of the project, which was co-financed by Germany and the Government of the Netherlands, was to test scheme level water management within a compartmentalized FCDI Scheme at Tangail with the involvement of beneficiaries. In the 1998 devastating flood, compartmentalized management of water in the scheme proved to be effective. This project examined the technical feasibility, the economic justifiability, the environmental impacts and also the institutional issues of comprehensive flood protection as well as integrated water management for Bangladesh. The objective was therefore to gather experience with the planning, construction and operation of compartments in the floodplain of the Jamuna River while taking the local water management, institutional and socio-economic conditions into account.

The construction of the compartment in Tangail, which covers 13,305 ha, included elements such as protective and side embankments, erosion control measures, a main inlet sluice and numerous structures for the regulation, storage and outlet of water. In order to avoid putting the population living close by the compartment at a disadvantage, various compensatory measures were carried out for roads, bridges and canals. At the same time, the construction measures were being carried out, water user groups were institutionalised and prepared for the operation and maintenance of the facilities. At the time of an ex-post evaluation in the year 2004 the users were successfully conducting adjusted water management through the regulating structures, yet they were participating very little in the maintenance of the compartment infrastructure.

## **Khulna Jessore Drainage Rehabilitation Project (KJDRP) (1993-2002)[[edit](#) | [edit source](#)]**

After implementation of the Coastal Embankment Project in the mid-1960s, the empoldered area in the southwest of Bangladesh deteriorated due to a continuing process of siltation in rivers and channels. Drainage congestion became progressively worse. Through lost agricultural production, decreased employment and deterioration of sanitary conditions, the standard of living declined dramatically, reflected by 75% of the population living below the poverty line at the time of project formulation

The principal objective of the Khulna-Jessore Drainage Rehabilitation Project was to reduce poverty by increasing agricultural production and creating on-farm employment in the project area. The



objective was to be achieved by (i) mobilizing beneficiary participation in the design, implementation, and subsequent operation and maintenance (O&M) of the project facilities; (ii) rehabilitating the existing drainage infrastructure to reduce congestion and protecting the project area from tidal and seasonal flooding; (iii) providing support for the expansion of agricultural extension services; and (iv) improving the management of fisheries in polder areas. The project covered one fourth of the Coastal Embankment Project area (approximately 100,000 hectares) of flat, low-lying alluvial lands with seasonally inundated depressions called “beels,” supporting a population of 800,000. The project was faced with continued tension between local stakeholders and the lead Executing Agency, BWDB, from the start of the Project due to diametrically opposed perspectives on the solutions to drainage congestion problems. The tension caused a more than 3-year delay in project implementation. Lack of appreciation for indigenous knowledge systems and BWDB’s resistance to adopting non-structural solutions in favor of structural solutions were the main factors contributing to the rift between the local people and BWDB. The Project made progress only after the local people demonstrated an indigenous-knowledge-based “tidal river management” (TRM) approach, which was later found as technically feasible, economically viable, and socially acceptable. The water management groups at the village level were formed at a much later stage and had little contribution to project design and implementation.

## **Char Development and Settlement Project (CDSP) (1994 - 2022)**[\[edit | edit source\]](#)

Based on the positive outcome of the Land Reclamation Project (LRP) the Char Development and Settlement Project was formulated. During the implementation of LRP, which ended in 1991, the focus shifted from surveys and trials of land accretion to the development of new land. In order to continue both planning and land development activities, the LRP was then split into two separate projects: the Meghna Estuary Study (MES), for water-based surveys and trials, and the Char Development and Settlement Project (CDSP), a land-based rural development project. In an environment where vulnerability is the most prominent feature, additional investment by the settlers can only be expected if they are provided with a sense of security. This project aimed to improve the vulnerabilities and livelihoods of char settlers in the southern part of the Greater Noakhali area and therefore had an explicit pro-poor character. The first phase of CDSP started in 1994 and was followed by three subsequent phases and a bridging phase which is currently ongoing.

The main concepts of the Char Development and Settlement Project are:

- settlement of government (*khash*) lands by the landless;
- integrated development of reclaimed (*khash*) lands settlement by the landless, including the construction of climate resilient infrastructure;
- poverty alleviation through livelihood improvement for the new land (*char*) dwellers;
- contribution to the accumulation and dissemination of data and knowledge on the coastal areas, including Integrated Coastal Zone Management (ICZM).

In order to address all these aspects, it was thought that a multi-sectoral and multi-institutional approach was required. Funded by Dutch grants and contributions from the GoB the first phase was implemented, through the support of the Ministry of Water Resources (MoWR) and with BWDB as the lead agency and Local Government Engineering Department (LGED) and the Ministry of Land as implementing partners. Two additional implementing partners, namely the Department of Agricultural Extension (DAE) and Department of Public Health Engineering (DPHE) were involved in CDSP II (1999-2005). In CDSP III (2005-2011) the Forest Department was included, making a total of six implementing parties, all with their own DPP and budget allocation. In CDSP IV (2011-2018) the implementing agencies were unchanged, whereas DAE is no longer included in the current

bridging period, which will end in June 2022. In CDSP IV and the current bridging project IFAD is providing additional budget support for investments through a loan agreement.

The responsibilities of the six implementing agencies can be summarised as follows:

- Bangladesh Water Development Board - for rehabilitation of embankments sluice gates dykes and canals.
- Local Government Engineering Department - for construction of roads, bridges cyclone shelters etc.
- Ministry of Land - for the provision of land titles to the people in the char.
- Public Health and Engineering Department, - assists in water and sanitation, wells and toilets.
- Department of Agricultural Extension, - provides training and demonstrations of high yielding crops.
- Forest Department - assists in tree plantation along roads and in villages.

NGOs have always been involved as contracted parties (either by the donor or by the consultant) in project implementation, being initially responsible for community mobilisation and organisation but later also for micro credits, health and family planning, capacity development in water and sanitation, legal and human rights, homestead agriculture, fisheries and livestock production and disaster management.

**CDSP-I (1994-1999):** 4 Chars (CBD - I, CBD -II, Char Majid, Bhatir Tek) in Noakhali District

**CDSP-II (1999-2005) :** 7 areas, including 5 non-poldered areas in Lakshmipur, Noakhali, Feni and Chittagong Districts.

**CDSP-III (2005-2011):** Boyer Char in Noakhali and Lakshmipur Districts

**CDSP-IV (2011-2018):** 5 Chars: (Char Nangulia, Noler Char, Caring Char, Urir Char and Char Ziauddin. Command area: 30,683 ha

CDSP-I, included four chars covering 6,800 ha in Noakhali District were developed: Char Baggar Dona I and II, Char Majid and Char Bhatir Tek, where 1,822 ha of khash land was distributed among 4,500 landless families containing about 30,000 people. Besides, numerous cluster villages, ponds, cyclone shelters, bridges, culverts and extensive embankments and rural roads were constructed to stimulate the socio-economic development of these remote coastal areas.

An important factor that shaped CDSP-II was the Integrated Coastal Zone Management (ICZM) concept that started to gain impetus in the late nineties. With the establishment of the ICZM framework, the demand for the experience gained in the coastal areas increased. During CDSP-II, there was room to pay proper attention to increasing the knowledge base in char development as well as to the dissemination of this knowledge. In CDSP-II, apart from the distribution of 4,500 ha of khas land to 6,848 landless families (about 45,000 people) and construction of considerable infrastructure, other important aspects such as capacity building for key institutions, e.g. improvement of the land settlement bureaucracy, formation and development of Water Management



Organisations (WMOs), and accumulation and dissemination of knowledge on the use and storage of fresh water in the (*char*) area were achieved.

CDSP-III which was meant to consolidate and monitor the achievements of earlier phases, to promote an institutional environment that sustains the proposed interventions; accumulate and disseminate data and knowledge on coastal char development while at the same time embarking on an intervention programme, specifically in Boyer Char covering about 6,500 ha in Noakhali and Lakshmipur districts. Also, the project needed to establish a bridge to a future char development programme by undertaking feasibility studies. Ultimately 6,000 ha land was distributed to 9,544 landless families (about 60,000 people)

As mentioned, NGOs were initially involved in the mobilisation of community members. In CDSP-II and III more rigorous consultation process with community members was initiated, and a start was made with the formation of various Field Level Institutions of which the Water Users Groups were one of the most important. The TA staff developed their own guidelines group formation for water management. After the formulation of GPWM the project started in adjusting these to develop own approaches, specifically geared to the conditions in the project area leading to the formation of water management organisations that were involved in the planning and monitoring of water management infrastructure and in its routine maintenance.

In CDSP-IV, there were six project components: protection from climate change; climate change resilient infrastructure, and water supply and sanitation; land settlement and titling; livelihood support; institutional development; knowledge management.

The bridging project CDSP-B has two specific objectives, namely: i) to consolidate the achievements of the earlier CDSP phases I to IV and ii) the preparation of future investments in char development in the South Eastern delta. To that means the project will undertake a strategic planning exercise for future land development and settlement, based on detailed knowledge of the hydro-morphological characteristics. Finally, the project will assist in the design of a more permanent institutional and organisational arrangement or structure which will be able to act as planning and coordination mechanism between the GoB agencies involved.

## **Small Scale Water Resources Development Sector projects (1996-2019)[[edit](#) | [edit source](#)]**

The Small Scale Water Resources Development Sector Project started in 1996 and was funded by the ADB with an additional contribution for TA by The Netherlands. It was the first donor funded project implemented through the Local Government Engineering Department (LGED) that addressed water resources constraints imposed by inadequate flood protection, waterlogging, and limited irrigation in a participatory manner. The project was spread over 37 districts of the western region of Bangladesh. It was highly relevant to the Government's sector policy, strategy, and action plans after adaptation of the National Water Management Plan and in line with the NWPo, which made LGED responsible for small-scale water projects including O&M up to a maximum of 1,000 hectares (ha).

The purpose of the project was to support the Government's poverty reduction effort by increasing sustainable agriculture and fish production through development of sustainable stakeholder-driven, small-scale water resource management systems with special attention to the poorer section of the population. The purpose is being achieved by:

- Developing improved means of beneficiary participation in the selection, design,

implementation, and operation and maintenance of small-scale water resource management development systems.

- Rehabilitating and constructing small-scale water resource management infrastructure with appropriate agricultural extension, fisheries extension, and aquaculture development.
- Establishing effective management of environmental and social impacts of subprojects, particularly in the area of floodplain capture fisheries.
- Developing institutional strengthening and capacity building of relevant Government and stakeholder organizations to ensure adequate support for small-scale water resources development at all levels.

So far, LGED had initiated the formation of Water User Groups and amended the Cooperative Act in 1987-88 in order to register and formalise WMOs under this Act. The project made a large institutional contribution to small-scale water resources development as it improved LGED's project management capabilities at the national, district, and upazila levels. The support included assistance in (a) establishing systems and procedures for participatory project planning, implementation, operation and maintenance (O&M) through the development of Water Management Cooperative Associations (WMCA); (b) establishing systems and procedures for preparing environmental reports and implementing mitigating plans; (c) sending personnel on study tours to successful project areas in neighboring countries; (d) studying sustainable community-based O&M of small-scale water resources; (e) reviewing bylaws for WMCAs.

The Project recruited through NGOs one facilitator for each subproject for the project period and also recruited one community organizer for each upazila as staff of LGED. The project arranged extensive training for the facilitators and the community organizers, who helped in mobilizing the beneficiaries, forming WMCAs, finalizing lease agreements between the Project and WMCAs, initially managing WMCAs, and helping the beneficiaries as well as the WMCA get access to various necessary services. However, if the facilitators had been recruited locally, they might have served better, utilizing their knowledge of the area and the people. During its implementation period, the project improved about 400 small-scale water resources subprojects.

The Second Small Scale Water Resources Management Project (SSSWRMP) continued the work of the first project, but its working area was extended, and now covered 61 of the country's 64 districts. The total cost of the Project is US\$ 78.0 million and the duration was from 2002-2009.

The major concern arising from the experience of both projects was sustainability, especially in relation to the capacity of Water Management Cooperative Associations (WMCAs) to continue essential operation and maintenance.

The Integrated Water Resources Management Unit IWRMU, was established within LGED in 2004, under the project, with the aim to coordinate all water resource activities of LGED, including the supervision of operations and maintenance (O&M) of completed subprojects. With an increase in the number of completed sub projects the role of IWRMU is expected to increase and a further strengthening of the unit was therefore included in the follow-up Participatory Small Scale Water Resources Project (PSSWRP) 2010-2019.

The PSSWRP aimed at supporting the development of stakeholder-driven water management cooperative associations (WMCA) which are suitably resourced in social and technical capital to improve system operation, have clear financing partnerships/cost sharing mechanisms for sustainable maintenance (with increased financial resources) and, within an enabling institutional framework, are capable of maximizing their collective potential to increase agriculture production in subproject areas.

For the initial four years the project was implemented in parallel with the Japan Bank for International Cooperation (JBIC) funded Small Scale Water Resource Development Project which was restricted to three Greater Districts of Bangladesh (Greater Mymensingh, Greater Faridpur and Greater Sylhet, covering 15 districts).

## **Integrated Coastal Zone Management (ICZM) (2002-2006)**[\[edit](#) | [edit source\]](#)

Based on a number of 'coastal success stories' i.e. projects such as LRP, SRP and CDSP, in the beginning of the 1990s an integrated and comprehensive coastal management strategy started to immerge based on ICZM approaches. Between 2002 - 2006 a new stage in the ICZM cycle emphasising stakeholder participation, was reached. Great importance was placed on building cooperation between and among the many national institutions, local NGOs and communities. These successful ICZM activities included the actually building of coastal cooperation, which is not easy and takes time and efforts. Therefore, a Program Development Office (PDO) for ICZM was established and a comprehensive knowledge base was built and disseminated in print and via a project website. The project assisted in the formulation of a coastal development strategy (CDS), a preparatory document for the step-wise establishment of a holistic ICZM approach. This development strategy integrated five 'building blocks' which formed outputs in themselves: A Government coastal zone policy, which laid down the Government's vision and principles of ICZM, stressing harmonization of different sectoral policies, the interaction between different levels of government and the development of government capabilities for implementing the critical steps. A Priority Investment Programme for infrastructure development and improvement, where possible drawing from previous studies and project proposals. Potential subprojects were screened, clearly specifying their contribution to the ICZM objectives of reducing vulnerability and realizing development opportunities. approaches and procedures for the improvement of community capacities to enhance their livelihood. Based on case studies, models of good practice were developed which consider, among other things, the access of local people to institutions, resources (natural and financial), and knowledge. Approaches and procedures for the development of an enabling institutional environment. Focus was on the creation of an environment which supports local communities in improving their livelihood conditions. Based on an analysis of coastal conditions and the consultation of stakeholders, mechanisms were designed for enhanced coordination between civil society, private sector, local communities, local government and national government agencies. Development of an integrated coastal resources knowledge base (ICRKB) covering both the national and the community level ICZM activities, which would: - make available knowledge accessible; - identify knowledge gaps based on a need assessment; - coordinate activities for organizing the data and filling knowledge gaps. The overall objective of the PDO-ICZM programme is to create favourable conditions for the reduction of poverty, development of sustainable livelihoods, and integration of the coastal zone in the national development processes. This is to be achieved by improving institutional and management capacities, increasing stakeholder involvement and establishing transparent marine and coastal resource management practices.

However, after the end of the project support in 2006, the institutional set-up for ICZM received little attention, probably as a result of changes in governmental priorities.

## **Integrated Planning for Sustainable Water Management (IPSWAM) (2002-2011)**[\[edit](#) | [edit source\]](#)

Based on the experiences from previous projects described above, it was realised that stakeholder participation, local level water management, and multi-disciplinary project planning and appraisal

are essential for an improved and sustainable operation and maintenance of water resources management infrastructures. This view was also reflected in the National Water Policy (NWPo), Guidelines for Participatory Water Management (GPWM) and National Water Management Plan (NWMP), and based on these the Integrated Planning for Sustainable Water Management (IPSWAM) programme was conceived

The objective of IPSWAM was to strengthen the capacity of water sector organisations, including local level water management organisations (WMOs), the different offices of the BWDB (headquarters and regional/local level) and to a limited extent local government institutions, to assume their roles as specified in the NWPo and the Guidelines for Participatory Water Management (GPWM). IPSWAM tried to achieve this by developing local level water management capability, stimulating the transfer of responsibilities for operation and maintenance to local level water management organisations, and enhancing the planning capacity of BWDB.

The programme aimed to assist the Bangladesh Water Development Board (BWDB) to find a practical way to introduce realistic, affordable and sustainable participatory and integrated water resources management. IPSWAM was initiated as a pathfinder programme, in that the methodology to be developed should be based on actual practical experience. The IPSWAM programme's field areas were located in 9 coastal polders in the Southern and South Western Zones of Bangladesh. Participation was addressed following a 6-step approach as guiding principle. It created WMOs following the GPWM and these organisations were registered with the Cooperatives department. Special attention was on shared O&M responsibility between WMOs and BWDBs under formal agreement

## **South-west Area Integrated Water Resources Planning and Management Project (SAIWRPMP) (2006-2022)**[\[edit](#) | [edit source](#)]

The Southwest Area Integrated Water Resources Planning and Management Project (SAIWRPMP) Supported by the Asian Development Bank and the Government of the Kingdom of the Netherlands started in August, 2006 and ended in 2015. The project had three objectives, namely i) to prepare participatory integrated water management plans for selected FCD/I schemes ii) to enhance livelihood opportunities impacted by integrated water resource management as a result of increased user participation and improved decentralised service delivery and iii) to strengthen institutional and project management capacities for planning, implementing, operating, maintaining and monitoring demand driven, participatory integrated water resources management plans.

The working area included Chenchuri Beel sub-project and Narail sub-project with a total area of about 57,000 ha; both areas were selected and feasibility studies carried out during the PPTA phase. Another 43,000 ha had to be selected from priority areas of the southwest region as part of project implementation.

Initially, the social mobilisation was envisaged to be carried out through NGOs, but ultimately community mobilisers were recruited by BWDB and placed in the Project Management Office under the responsibility of the Office of the Chief Water Management. MoUs were agreed under the project with DAE, DoF and DLS to ensure extension service delivery through these departments.

The project's major outputs were (i) an integrated participatory water management system plan within each hydrological unit, (ii) improved livelihood of project beneficiaries through created opportunities for income-generating activities, (iii) improved planning capabilities, and (iv) responsibility for O&M of facilities funded or upgraded by the project transferred to water

management organizations. The two major characteristics of the type of planning that was developed include (i) participation by stakeholders, beneficiaries, local government institutions, and local offices of government agencies, both in the planning of project activities and in the implementation; and (ii) establishment of water management organizations based on hydrological rather than on administrative boundaries. The project activities resulted in the formation of 14 WMAs and 102 WMGs in the two subproject areas.

The project support to the WMAs and WMGs expanded beneficiary opportunities for income-generating activities since livelihood training for members of the water management organizations were provided. Collective action plans for income generation were introduced and implemented as a means of ensuring the sustainability of the WMGs. The capacity of the organizations to operate and maintain the infrastructure financed by the project were also improved, since a share of the profits from these income-generating activities were used to augment the O&M funds of the water management organizations.

Each WMG engaged in collective action that (i) provided services to individual members and groups engaged in income-generating activities in the agriculture and fishery sectors; (ii) undertook their own collective income-generating activities, such as operation of fish ponds, producing and distributing paddy seed, and production of honey; and (iii) engaged in environmental protection activities, such as social forestry. Some WMGs even developed partnerships with the private sector.

The project was extended through an additional finance arrangement with a second phase which is scheduled from June 2017 and will end in June 2022. The second phase will replicate the successful participatory water resources planning and management practices to another nine additional subproject areas, covering 84,000 ha in the same region.

## **Estuary Development Programme (EDP) (2007-2011)**[\[edit | edit source\]](#)

As mentioned above (in project no. 3) the Land Reclamation Project (LRP) started in 1977 to address the problems of floods and coastal erosion and to exploit the potentials for reclamation and development of new land. As the project progressed, the initial emphasis shifted from land reclamation of new land to the consolidation of existing young land. LRP developed into two distinct sets of activities notably i) the development of polders and ii) study of erosion and accretion. By the end of LRP the 2 sets of activities were continued in 2 separate projects: the Char Development and Settlement Project (CDSP) was designed to take care of the land based activities and the Meghna Estuary Study (MES) was designed to address hydrological and morphological aspects of the estuary. Under MES a phased long term plan termed the Master Plan was made for the next 25 years, along with a list of priority projects. These priority projects and possible interventions for the next 5-10 year were indicated as the Estuary Development Plan.

The Estuary Development Programme (EDP) started in 2007 as a follow up of the activities carried out by LRP and MES. The objectives of the project were as follows:

- Mitigation against and better management of natural disasters as a result of storm surges caused by cyclones. The specific aim is to reduce risk of loss of life and damage to property;
- Improved management of natural resources in the coastal zone and mitigation against the negative effects of human induced natural resources degradation, biodiversity /habited loss, climate change, environmental pollution; and
- Creation of opportunities for sustainable development.

These objectives were translated in 3 main activities namely:

1. Updating of bathymetric surveys by the Survey & Study Support Unit (SSU) for updating of the database and the preparation of investment oriented projects
2. Investigations and design of potential cross-dams:
3. Investigation and Implementation of Potential erosion control and accelerated land accretions schemes.

## **Small Scale Water Resources Development Project (SSWRDP) 2007-2014**[\[edit](#) | [edit source](#)]

The objective of this project, funded by the Japan Bank for International Cooperation (JBIC) was to increase and streamline agriculture and fisheries production through effective utilization of water resources by developing small-scale infrastructure for control of water resources in the North-Eastern Region (greater Mymensingh area, greater Sylhet area) and central region (greater Faridpur area) of Bangladesh, and thereby contribute to the economic and social development as well as poverty reduction in these regions. The Local Government Engineering Department (LGED) was implementing the project.

The overall objective of the SSWRD Project was to reduce poverty in the 15 districts of the greater Mymensingh, Sylhet and Faridpur areas through improving agricultural and fisheries production and rural employment by developing infrastructure and effective participatory management of approximately 215 small scale water resources subprojects.

The SSWRD Project achieved its objectives by: 1) constructing and upgrading water management systems; 2) establishing and developing water users associations for management of the systems; 3) strengthening the capacity of Government organizations and facilities to provide support services to water management systems; and 4) improve the access of landless people in subproject areas to employment opportunities.

The project benefited about 130,000 ha of agricultural land and 150,000 farm families and generated approximately 6.5 million person-days of employment for construction activities plus increased labour opportunities resulting from increased agriculture and fishery stock production.

## **Water Management Improvement Project (WMIP) (2008-2016)**[\[edit](#) | [edit source](#)]

The Water Management Improvement Project (WMIP) loan component was financed by the World Bank, whereas the TA component was financed by The Netherlands. The primary reason for Dutch Co-financing was their interest in institutional development and piloting the participatory approaches through establishing the WMOs. The Netherlands considered it critical to the success of sector reforms and sustainability of the program to focus efforts on proper formation and functioning of the WMOs.

The project had two objectives. Firstly, to improve national water resources management by involving the local communities to play an expanded role in all stages of the participatory scheme cycle management. Secondly, to enhance institutional performance of the Country's principal water institutions, particularly BWDB and WARPO.

The outcomes expected from WMIP were to reduce vulnerability, but at the same time enhance



livelihood opportunities, for the beneficiaries, and the creation of a favourable environment for improved water resources management.

WMIP had three components: system improvement and management transfer, Operations and Maintenance (O&M) performance improvement, and institutional improvement.

1. **Component 1:** System Improvement and Management Transfer (US\$89.0 million of which US\$69.5 million IDA). This component was designed to support rehabilitation and improvement of 81 medium (average area 2,500 hectares) and 21 large (average area 8,400 hectares) FCD and FCDI schemes of the BWDB covering approximately 378,900 hectares. Important design features of the component included the participatory process in scheme cycle management, which is based on the Guidelines for Participatory Water Management that the government has adopted; financing the development of database survey, geographic information systems, and mathematical modeling tools that would be used in screening and auditing FCD and FCDI batches of schemes by hydrological unit; and preparation of annual plan based selection of eligible batches of medium and large FCD and FCDI schemes located in a particular hydrological unit.
2. **Component 2:** O&M Performance Improvement (US\$35.5 million of which US\$ 28.30 million IDA). This component was designed to support measures to improve O&M performance of approximately 98 medium and large BWDB schemes covering approximately 410,200 hectares that are "technically functional" and do not require major rehabilitation and improvement. This component supported medium and large FCD or FCDI schemes that had functioning WMOs or similar community organizations. The component was also designed to improve the culture and practice of the O&M planning and execution cycle within the BWDB.
3. **Component 3:** Institutional Improvement (US\$12.2 million, of which US\$ 10.30 million IDA). The component objective was to support the institutional improvement of BWDB and WARPO, the two major national institutions that manage the nation's water resources, and support activities related to program coordination, public relations, monitoring and evaluation (M&E), and strategic studied fiduciary reviews. Component 3 was structured into three subcomponents: (a) BWDB Institutional Improvement (US\$6.0 million): to support implementation of BWDB reforms, focusing primarily on implementation of decisions that the government has already made to restructure and strengthen BWDB as a water resources management agency rather than just a development agency; (b) WARPO Institutional Improvement (US\$2.6 million): (i) organizational improvement and institutional development and (ii) maintenance, updating, and dissemination of the National Water Resources Database; and (c) Program Coordination and Monitoring (US\$3.6 million) conducted by a program coordination unit (PCU) to support the establishment, operations, and facilitation of the PCU by providing office equipment and transport facilities.

In May 2011 the project was restructured and components were revised. The restructuring was done in response to the two major natural disasters - cyclones Sidr in 2007 and Aila in 2009. The scope of the project had to change to respond to the new reality of post-disaster rehabilitation, which led to changes in the components including clarification of incremental operating costs, modification of prior review thresholds, revision of financing percentages, and allowing for beneficiary contributions to be provided in kind. In addition, the Results Framework was streamlined.

Another minor restructuring exercise took place in 2015: to extend the project closing date until June 30, 2016, and reallocate funds to allow successful completion of ongoing works and Participatory Scheme management (PSM) and to cover overdrawn under some categories and adjust these against savings available in others after the partial cancellation of the government of Netherlands grant and a more-realistic cost estimate of the ongoing works contracts. The reallocation of funds did not present breakdown of component cost by IDA and other sources of



financing. After restructuring the revised components consisted of:

1. Component 1: System Improvement and Management Transfer (US\$19 million). The number of schemes under this component was reduced from 102 to 32 to allow for more robust designs (e.g., build-back better concepts) in the civil works. The revised component also included provision of civil works for the construction of training centers to support the PSM process and WMO mobilization.
2. Component 2: O&M Performance Improvement (US\$9.87 million). The number of schemes under this component was reduced from 98 to 35 using routine O&M to allow for greater focus on the participatory and community mobilization aspects of system management transfer and the involvement of communities in O&M management.
3. Component 3: Institutional Improvement (US\$9.27 million). This component remained primarily unchanged and continued to focus on institutional strengthening of BWDB and WARPO, as well as overall coordination and monitoring.
4. Component 4: Flood Damage Rehabilitation (US\$62.96 million). This was added as a new component to the project to focus on FDR with support for financing of repairs of embankments and hydraulic structures damaged in cyclones Sidr in November 2007 and Aila in May 2009.

The restructuring also provided an opportunity to address a number of operational challenges that had emerged, namely:

To address the lack of communication between BWDB and the monitoring teams, field-level monitoring was enhanced by increasing the strength of the M&E team, including a dedicated M&E point at field offices and holding regular project review meetings in district and at head offices.

- To address the lack of required information for the supervision of the works and the lack of capacity of the district offices to fully support the WMOs, random documentation checks were conducted during field visits and Bank's supervision missions.
- To ensure that monitoring teams fully understood their roles and authority, regular training programs were conducted.
- To ensure full understanding of the participatory management by BWDB staff, the participatory scheme management workflow was developed, and training was provided to district teams.
- To address the lack of mechanism to provide O&M support to WMOs, the role of the Water Management Cell was enhanced.

After the restructuring in 2011 The Netherlands financial support was withdrawn.

Some of the lessons learned from this project as formulated by the World Bank were:

1. **Changes in organizational structure are an important indicator of strong political ownership and the government's commitment to implementing any reform program.** Formation of the Water Management Cell in the Ministry of Water Resources, headed by the Chief of Water Management, not only raised the profile of the reforms, but also raised confidence in local communities that the government was serious about seeking and incorporating farmers' views consistently from planning to design and implementation of schemes. It should be mentioned though that the Water Management Cell was formed, but never received an important status and meanwhile is not functional anymore. The current Office of the Chief Water Management still lacks resources and institutional support.
2. **Institutional changes take time to establish.** The pace of implementation of institutional reforms and performance of new WMOs, which was initially slow, demonstrated this.

3. **Acknowledge complexity to incorporate phased approach to program design.** The complexity of institutional reforms when combined with multiple actors could make it difficult to achieve the desired outcomes. The BWDB had the challenging task of changing its internal organizational functions to become more participatory and inclusive. This meant changing the way it functioned and allocated financial and human resources. The additional assigned roles for the Department of Agricultural Extension and Department of Fisheries to assist WMOs and communities in the preparation of land use plans and agriculture and fishery development plans and to provide critical agriculture support services were beyond the scope of BWDB.
4. **Establishment of community organizations through a social engineering process is time consuming and may require iterations.** The acknowledgement that newly formed organizations would require additional handholding and institutional support to meet their objectives.

## **Coastal Embankment Improvement Project Phase I (CEIP-I) (2013-2020)**[\[edit | edit source\]](#)

The long-term objective of this World Bank-financed project is to increase the resilience of the entire coastal population to tidal flooding and natural disasters by upgrading the whole embankment system. With an existing 6,000 km of embankments with 139 polders, the magnitude of such a project is enormous. Hence, a multi-phased approach will be adopted over a period of 15 to 20 years. The proposed CEIP-I is the first phase of this long term program. To achieve the development objectives of the project in a complex and changing environment and to pilot innovative concepts in design and implementation, it was decided that a single investment loan would be most appropriate. Based on the success of the project, a series of projects that capture the lessons learned from CEIP-I can potentially be designed for other exposed areas along the coastal region of Bangladesh.

As clearly defined in the strategic assessment, the level of protection should be beyond the highest tides and should provide protection against frequent storm surges. A protection against a 25 year return period maximum surge height, with an additional buffer for climate change impacts, is adopted in this project.

When the construction is completed, the protection level will be close to 1 in 50 years. Comprehensive models and simulations of storm surge and drainage routing were created to inform the selection of the design parameters. The simulations were stress tested to make sure that the design is conservative and would provide the desired protection levels (e.g., the observed storms were simulated to occur during peak tide to test the resilience of the proposed embankment height). An afforestation program and mobilization of Water Management Organizations (WMOs) are included in this program to provide added protection and to contribute to an effective management of the water system within the polder schemes, respectively. Such activities lend themselves to maintain the durability polder scheme as a source of economic, social, and environmental benefits

The objectives of the First Phase of the Coastal Embankment Improvement Project for Bangladesh are to (a) increase the area protected in selected polders from tidal flooding and frequent storm surges, which are expected to worsen due to climate change; (b) improve agricultural production by reducing saline water intrusion in selected polders; and (c) improve the Government of Bangladesh capacity to respond promptly and effectively to an eligible crisis or emergency.

The project has five components. (1) Rehabilitation and improvement of polders component will finance activities that aim to increase community resilience to tidal flooding and storm surges. (2) Implementation of social and environmental management frameworks and plans component will support consultation with and strengthening of polder stakeholders and beneficiaries. (3)

Construction supervision, monitoring and evaluation of project and coastal zone monitoring component will cover consulting services for (i) surveys, designs of remaining polders to be included in the project and (ii) construction supervision of rehabilitation and improvement of coastal embankments; (iii) continuously monitoring project activities and providing feedback to the government and the implementing agency on the projects performance. (4) Project management, technical assistance, training and strategic studies component will support Bangladesh Water Development Board in implementing the project. (5) Contingent emergency response component will be contingent upon the fulfillment of the following conditions: (i) the Government of Bangladesh has determined that an eligible crisis or emergency has occurred and the Bank has agreed and notified the Government. This fifth component (with a provisional zero amount) has been included to allow for rapid reallocation of loan proceeds during an emergency, under streamlined procurement and disbursement procedures.

The establishment of WMOs will follow an eight-step process, as identified in the Guidelines for Integrated Planning for Sustainable Water Resources Management, published by BWDB in 2008. Social mobilization is expected to last around two years, during which time the WMOs will be established and trained in participatory planning, as well as in operation and minor maintenance activities. It is expected that where WMOs are piloted, the detailed design of polders will be discussed in a participatory manner with BWDB to ensure their full participation at early stage. Non-Government Organizations (NGO) will implement the social mobilisation and afforestation program. Small works, including minor periodic maintenance and operation of minor hydraulic infrastructure would be undertaken by the WMOs under a memorandum of understanding with BWDB. Should the participatory approach prove to be successful, it would be scaled up under the next phase of investments.

## **Blue Gold Program (2013-2020)**[\[edit](#) | [edit source](#)]

Main article: [Blue Gold Knowledge Portal](#)

This wiki covers this project in depth.

## **Bangladesh Delta Plan**[\[edit](#) | [edit source](#)]

### **Preparation of the Bangladesh Delta Plan 2100 (BDP2100) (2014-2017)**[\[edit](#) | [edit source](#)]

In 2014 a consortium consisting of Dutch and Bangladeshi experts initiated the design of the Delta plan in connection with an implementation program. The vision for developing the Bangladesh delta is to achieve long term sustainable development through adaptive water governance, based on long term analysis and scenario's as well as integration of relevant policy sectors and the creation of adequate institutional arrangements and capacity. The Delta Plan will create a clear vision or grand design of the future in 2100.

The overall objective of the project concerning the formulation of BDP 2100 was to realize a sustainable and commonly agreed strategy with all relevant stakeholders for an optimum level of water safety and food security, as well as sustained economic growth of Bangladesh and a framework for its implementation. As such, BDP 2100 will contribute to the overall development of Bangladesh and needs to be incorporated in the seventh Five Year Plan (2015 - 2020) and subsequent Five Year Plans of Bangladesh. The implementation of the Delta Plan will require a large investment and financing the agreed investment programs and interventions will need to be secured. Private financing through private sector participation and public private partnership is essential to

supplement public sources of financing.

The project consisted of 6 objectives/ outputs to realize the overall objective:

1. Socio-political support. Creating firm commitment of all stakeholders for the BDP 2100 formulation and implementation process. Important stakeholders include the Government of Bangladesh, regional and local governments and municipalities, NGOs, the private sector and civil society.
2. Common knowledge base. Establishing a comprehensive, commonly agreed upon and easily accessible shared knowledge base of important developments related to natural resources in the Bangladesh Delta with special focus on water and river management, land use, spatial planning, agriculture, environment, and biodiversity, wetland & haor management, disaster management, food security, socio-economic growth, spatial and ecological developments for all stakeholders involved.
3. Delta Framework. A coordinated, integrated and transparent institutional Delta Framework providing arrangements for an effective BDP 2100 process and implementation and realization of new projects and activities in line with BDP 2100.
4. Delta Plan document. A framework for evaluating policy options and investments.

A widely supported Delta Vision and a BDP2100 document. This document includes delta vision, delta goals, policy options, adaptation pathways, preferred pathways for the next 100 years, short term actions and principles of the Delta Framework.

1. Investment Plan and Private sector participation. The identification of funding sources and mechanisms to ensure long-term financing of BDP2100 and the development of a number of interesting PPP-ready projects (with potential revenues) to attract private sector financing for BDP 2100. This component also includes the support in establishing a Project Service Cell for mechanisms to integrate interventions and programs under BDP 2100 into national development planning process and streamlining donor funding.
2. Implementation Strategy. The development of an implementation strategy linked with the Bangladesh Five Year Plans and other important sectoral and geographical plans, based on the developed vision and framework

## **Support to the implementation of the Bangladesh Delta plan 2100 (SIBDP2100) 2018-2022**[\[edit](#) | [edit source](#)]

The Bangladesh Delta Plan (BDP) 2100 was approved at the National Economic Council (NEC) meeting, presided over by the Prime Minister and Chairperson of the NEC, on 4 September 2018. Bangladesh is the first country in the world to develop such a comprehensive plan including an investment plan for an entire delta using Adaptive Delta Management.

The Government of the Kingdom of the Netherlands has extended the financial support to operationalize BDP2100 in a form of a TA project, entitled "Support to the Implementation of the Bangladesh Delta Plan 2100 (SIBDP2100). The Government of Bangladesh has assigned the General Economics Division (GED) of the Planning Commission the responsibility of the overall coordination, facilitation, monitoring and evaluation of the BDP 2100 implementation.)".

BDP2100 seeks to integrate the medium- to long-term aspirations of Bangladesh to achieve upper middle income (UMIC) status, eliminate extreme poverty by 2030 and being a prosperous country beyond 2041 with longer term challenges of sustainable management of water, ecology, environment and land resources in the context of their interaction with natural disasters and climate change. To facilitate the achievement of the mentioned aspirations, BDP2100 is designed and

formulated as a long-term, holistic, techno-economic, water centric integrated strategic plan.

BDP2100 is framed to face huge challenges related to rapid population growth, urbanization and rapid industrial development. These challenges coincide with more extreme climate events and decreasing dry season flows as a result of developments in upstream countries. Salinity intrusion in the coastal belt and competing water demands for agriculture, industry and drinking water compound these natural and, in some cases, anthropogenic challenges.

By adopting an adaptive approach to its delta and climate change challenges, Bangladesh wants to avoid socio-economic setbacks and aims at sustainable growth. A long-term Delta Vision and Mission were formulated in relation to this. To achieve this Vision and realize the Mission, BDP 2100 indicates three higher-level national goals set by national plans and six Delta Goals focusing on water, ecology and land use that contribute to these higher-level goals.

**Vision:** 'Achieving a safe, climate resilient and prosperous delta'

**Mission:** 'Ensure long term water and food security, economic growth and environmental sustainability while effectively reducing vulnerability to natural disasters and building resilience to climate change and other delta challenges through robust, adaptive and integrated strategies, and equitable water governance'

**Higher level National goals:**

- Goal 1: Eliminate extreme poverty by 2030;
- Goal 2: Achieve upper middle-income status by 2030, and
- Goal 3: Being a prosperous country beyond 2041.

**BDP 2100 specific goals:**

- Goal 1: Ensure safety from floods and climate change related disasters;
- Goal 2: Enhance water security and efficiency of water usages;
- Goal 3: Ensure sustainable and integrated river systems and estuaries management;
- Goal 4: Conserve and preserve wetlands and ecosystems and promote their wise use;
- Goal 5: Develop effective institutions and equitable governance for in-country and transboundary water resources management; and
- Goal 6: Achieve optimal and integrated use of land and water resources.

BDP2100 has to achieve these goals provided 2 National Level Strategies, on i) Flood Risk and ii) Freshwater Management. BDP has also developed six Hotspot Specific Strategies, on i) Coastal Zone, ii) Barind and rough Prone Areas, iii) Haor and Flash Flood Areas, iv) Chattogram Hill Tracts, v) River Systems and Estuaries and vi) Urban Areas. BDP also provided eight Thematic Strategies for cross cutting issues, on i) Sustainable Land Use and Spatial Planning; ii) Agriculture, Food Security, Nutrition and Livelihood; iii) Trans-boundary Water Management; iv) Dynamizing Inland Water Transport System; v) Urban Water Management; vi) Advancing the Blue Economy; vii) Renewable Energy and viii) Earthquakes.

Given the uncertainties of long-term climate change and socio-economic development, a flexible and adaptive approach is key to achieve the vision and goals. BDP 2100 focuses on climate resilient development and uses the approach of Adaptive Delta Management (ADM) and best available

information to develop short-to-medium term strategies under different scenarios. The scenarios and strategies need to be updated frequently, as new information will be available on a 5-year cycle. This adaptive approach to delta planning including the selection of investment projects provides the link of the short-to-medium-term development targets and investment programs with the long-term goals of sustained development based on climate sensitive management and economic growth. ADM focuses on feasible adaptation pathways to plan for different future conditions, taking into account possible tipping points in major drivers and developments – requiring concerted action to avoid irreparable damage and seeks to avoid over- or underinvestment. This also underscores the importance of further elaborating the Delta Knowledge Portal and doing sound monitoring and evaluation to assess delta progress and shortcomings. Decision-support, such as envisaged in the Meta-model and the ESPA Deltas project, are also tools to support the knowledge portal, project preparation and approval processes.

In line with the broad scope of the challenges in BDP 2100 analysis and strategies, GoB indicated a financial block provision, called Delta Fund, of 2.5% of GDP annually (around \$5-6 billion) for BDP 2100 related investments.

## **Irrigation management Improvement Project (IMIP) (2018-2022)[[edit](#) | [edit source](#)]**

The IMIP project is designed to realize the full production potential of large scale irrigation schemes in Bangladesh. It will address the recurrent lack of sustainable management, operation and maintenance (MOM) and increase water productivity by transferring the MOM schemes to private operators and by introducing innovative infrastructure modernization.<sup>3</sup> The Project will focus on the modernization of Muhuri Irrigation Project (MIP) in the Chittagong division. It will also finance the feasibility study and detail design of the modernization of the Ganges-Kobadak (GK) and Teesta irrigation projects which are located respectively in the Khulna and Rangpur divisions.

The objective of the project is to realize the full production potential of the Muhuri Irrigation Project through the use of a third party private sector manager supported by rehabilitation and modernization of the schemes' infrastructure to establish highly efficient and sustainable irrigated agriculture. The results will be higher yields, larger irrigated areas and higher cropping intensities including diversification into higher return cropping systems.

The impact of the project will be sustained high growth in irrigated agriculture, with the outcome. The outcome will be increased productivity and sustainability of MIP. Performance-based irrigation management and agriculture support services established. This output will include contracting private irrigation management operators under 5 years performance-based management contracts. This “Construction phase” irrigation management operators (C-IMO) will supervise modernization works, establish sustainable MOM and provide agricultural support services in MIP. Efficient management systems will be adopted to maximize water use efficiencies and develop sustainable and reliable irrigation service delivery. Viable and effective operations and maintenance (OM) cost recovery mechanisms will be setup to achieve 100% cost recovery. The objective will be to bring MIP scheme to the level of profitability and sustainability required for enabling the recruitment of a long term (15 years) “Management Phase” irrigation management operator (M-IMO) through a PPP modality. The project will also support the preparation of the long-term PPP transaction.

Irrigation system infrastructure rehabilitated and modernized. This output will include physical rehabilitation and modernization of irrigation infrastructure including (i) repair of 450 km of drains/canals and 22.6 km of coastal embankment with ancillary facilities; (ii) development of 17,000 ha of modern and highly efficient piped water distribution system to improve timely water access



and reduce water losses; (iii) provision of prepaid card meters to allow water allocations to be based on a volumetric basis and ensure full and transparent payment and accounting, (iv) full electrification of the pumping to reduce the operational costs and increase management flexibilities and; (v) pilot solar pumping for 80ha.

The institutional development component will include (a) establishment of competent project management and project implementation unit; (b) timely procurement and disbursement; (c) timely appraisal of GK and Teesta irrigation projects modernization and provision of required feasibility studies and detail designs and strategies to transfer MOM to private sector; and (d) institutional support and capacity and awareness building of BWDB and water management organizations to successfully administer and support PPP contracts.

## **Smallholder Agricultural Competitiveness Project (SACP) (2019-2025)**[\[edit | edit source\]](#)

The goal of this IFAD financed project is to contribute to Bangladesh's agriculture smallholders' responsiveness and competitiveness in high value crops (HVC) production and marketing of fresh and/or processed products. The project will be implemented over a period of six years.

The project objective is to increase farmer income and livelihood through demand-led productivity growth, diversification and marketing in a changing climatic condition

The project will be implemented in 11 districts covering 30 upazilas in the Southern Region of Bangladesh, 250 unions will be selected based on the targeting criteria. The total population in this target area is more than 7,000,000, representing more than 1,246,000 households. The project will directly benefit at least 250,000 rural households. The selection of project beneficiaries will be undertaken based on an inclusive targeting strategy focusing on landless, marginal and small farmers, with up to 80 percent of beneficiaries coming from these categories. Youth will constitute up to 20 percent of beneficiaries and women participation will target at least 30 percent involvement.

The project will take farmer groups as its entry point for support to enhance production and value chain development in the project areas. The project will focus on strengthening agriculture competitiveness, strengthening sustainable technical support services/facilities, identification of market opportunities and linking these to an applied research, development and extension programme to support small farmers, improving access to income opportunities of high value crops through multi-stakeholder platforms, developing market linkages, and supporting individual and group organizational capacity to participate in agricultural value chains. The project will support production enhancement, identify market opportunities for both fresh and processed products, value added post-harvest management, build competitiveness in HVCs to move households from subsistence farming into commercial farming through three technical components supported by a project management component. They are:

- **Component 1** -Enhanced production of HVC and technology adoption. The objective of Component 1 will be the identification and prioritisation of appropriate VCs for smallholder investment and associated key research gaps that need to be filled through on-farm research. The purpose of the component is to develop the capacities for linking farmers to markets. This component will support the testing, evaluation and adoption of new technologies and management practices by smallholder farmers to enhance their production of HVCs that have identified market opportunities. This component will contribute to developing agricultural competitiveness linked to market demands by: (i) assessing the market demand for HVC that



can be produced in the south, (ii) identifying research demands for evaluation of new cropping systems, new crops and/or new varieties and improved post-harvest management storage options, (ii) strengthened research-extension and private sector service provision, and (iii) organizing producers and marketing groups to form greater scale and bargaining power.

- **Component 2** - Processing and marketing of HVC. This component will support small holders to access market in a more efficient manner through creating a conducive business environment for private sector to reach them. In parallel, promising rural agro-enterprises (individual farmer, farmer groups and/or rural entrepreneurs) will be assisted to add value to primary products and penetrate market through value-added products. Besides, village-level food processing will be promoted to encourage nutrition and food-safety along the value chains. Value addition will be through improved post-harvest practices, processing, storage, and transport of agricultural commodities. Activities will focus on (i) capacity building of DAMs (ii) developing a demand-driven extension approach within DAE and DAM and by engaging private sector, (iii) linking with private sector buyers (v) developing opportunities for village-level food processing, and (vi) developing existing and potential rural enterprises' ability to manage sustainable rural agro-enterprises.
- **Component 3** - Climate Resilient Surface Water Management. The activities under component 3 will support households interested in increasing their productivity and diversification to HVCs with water infrastructure that will provide supplemental or full season water access, through a range of investments in water storage and provision to cropland, with associated capacity development for households and groups to manage this water infrastructure. All activities in this Component will be closely associated and enhance initiatives of value addition under Component 1 and 2 - the location and scale of interventions will depend on identified and prioritised food production and cash crop production activities and their need for supplemental and full crop season irrigation. Considering the experience and capacity of minor irrigation and drainage development, the Bangladesh Agriculture Development Corporation (BADC) is proposed to implement activities under component 3. The BADC has a well-organized irrigation division headed by Chief Engineer (GOB grade II official). The activities under Component 3.2 (institutional support/capacity building) will be outsourced through competitive bidding where applicable. Some short-term consultancy provisions have been proposed for ensuring sustainable water user groups formation and community participation in O & M in line with the participatory water management rule, environmental aspects in water management.

The overall responsibility for SACP will be assumed by the Ministry of Agriculture (MoA), which is the implementing ministry. The Project will be implemented under the overall direction of a Project Steering Committee (PSC). A Project Implementation Committee (PIC) will be formed to provide technical guidance and bring in synergy with stakeholders and partners other than the MoAs. The PIC will play the role of technical exchange platform and synergy building among different development projects, where good practices and lessons learnt can be drawn to support the SACP implementation at operational level and shared for cross-benefits. Structure of operational management and coordination will be established along the DAE vertical structure from central to the Union, with DAE, DAM, BADC, and BARI participation at applicable levels where available, and managerial and technical officers appointed from respective agencies.

Early Implementation Project

Government of Bangladesh; a donor to the Blue Gold Program

Government of the Netherlands; a donor to the Blue Gold Program

A defined set of temporary activities through which facilitators seek to effect change

A feasibility study is an analysis that takes all of a project's relevant factors into account—including economic, technical, legal, and scheduling considerations—to ascertain the likelihood of completing the project successfully.

Bangladesh Water Development Board, government agency which is responsible for surface water and groundwater management in Bangladesh, and lead implementing agency for the Blue Gold Program

Operation and Maintenance

A vertical gate to control the flow of water; also referred to as 'regulator'

the adjustment of gates in water management infrastructure to control hydraulic conditions (water levels and discharges) in a water management system.

hectare

An area of low-lying land surrounded by an earthen embankment to prevent flooding by river or seawater, with associated structures which are provided to either drain excess rainwater within the polder or to admit freshwater to be stored in a khal for subsequent use for irrigation.

Land Reclamation Project

Sedimentation is the process by which fine particles of silt and clay suspended in river water settle out, for example when there is a drop in velocity.

assumed in this report to operate up to 0.5 acres (0.2 ha)

A feasibility study is an analysis that takes all of a project's relevant factors into account—including economic, technical, legal, and scheduling considerations—to ascertain the likelihood of completing the project successfully.

actions taken to prevent or repair the deterioration of water management infrastructure and to keep the physical components of a water management system in such a state that they can serve their intended function.

Technical Assistance

## Systems Rehabilitation Project

### Executive Committee

A process by which the local stakeholders are directly and actively involved in identification, planning, design, implementation, operation & maintenance and evaluation of a water management project.

A process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them.

### Flood Action Plan

The practice of admitting (fresh or saline) water for irrigation (or shrimp production) through regulators or inlets.

### Flood Control, Drainage and Irrigation

human intervention in the capture, conveyance, utilisation and drainage of surface and/or ground water in a certain area: a process of social interaction between stakeholders around the issue of water control.

Structure designed to only admit (fresh or saline) water across an embankment.

### Khulna Jessore Drainage Rehabilitation Project

Typically undesirable increase in concentration and deposition of water-borne silt particles in a body of water.

Any individual or group who, in one way or another is favourably influenced by the project.

the south-western coastal zone is characterised by broad tidal flats and fluvio-tidal plains, lying approximately 1 metre above sea level, with drainage provided by numerous tidal creeks and channels a some major rivers. Empolderisation now protects the intrusion of sea water to agricultural areas but restricts the deposition of sediments to within the channels, thus reducing the drainage capacity of the rivers and channels, causing drainage congestion.

### Char Development and Settlement Project

A livelihood is a way of making a living. It comprises capabilities, skills, assets (including material and social resources), and activities that households put together to produce food, meet basic needs,

earn income, or establish a means of living in any other way.

accreted sediment in a river course or estuary, including both lateral (point-bars) and medial (braid-bars). Chars (or sand bars) emerge as islands within the river channel (island chars) or as attached land to the riverbanks (attached chars), create new opportunities for temporary settlements and agriculture.

Integrated Coastal Zone Management (ICZM) - Assistance to the Programme Development Office of the Integrated Coastal Zone Management Programme (PDO-ICZM)

Ministry of Water Resources

Local Government Engineering Department

Department of Agricultural Extension, a department of the Ministry of Agriculture responsible for disseminating scientific research and new knowledge on agricultural practices through communication and learning activities for farmers in agriculture, agricultural marketing, nutrition and business studies.

Development Project Proforma: a formal document which sets out the intention of a GoB organisation to invest in a development project, seeking approval for the investment and, if successful, a budget allocation. The DPP follows a prescribed format, including the project's financial and physical scope, benefits, and proposals for monitoring and internal and external audits. The approval of a development project proposal follows a number of stages: formation with preliminary studies, formulation to develop greater detail and with additional information to make the economic case for the project, scrutiny by the executing agencies and concerned ministries, appraisal by the Planning Commission, recommendation for approval by Project Evaluation Committee (PEC), Minister/ECNEC approval, and inclusion of a budgetary allocation in the Annual Development Plan (ADP).

Land owned by the state, including recently accreted land

Water Management Organizations - The common name of organizations of the local stakeholders of a water resource project/sub-project/scheme. The concept WMO typically refers to WMGs and WMAs (and/or WMFs) together

Guidelines for Participatory Water Management

Soil is regarded as waterlogged when it is nearly saturated with water much of the time such that its air phase is restricted and anaerobic conditions prevail. In agriculture, various crops need air (specifically, oxygen) to a greater or lesser depth in the soil. Waterlogging of the soil stops air getting in. How near the water table must be to the surface for the ground to be classed as waterlogged, varies with the purpose in view. A crop's demand for freedom from waterlogging may vary between seasons of the year.

National Water Policy

Water Management Cooperative Association

Integrated Water Resources Management - Internationally-accepted approach for efficient, equitable and sustainable development and management of water resources especially applicable where there are multiple stakeholder interests with conflicting demands.

Japanese Bank for International Cooperation

A livelihood is a way of making a living. It comprises capabilities, skills, assets (including material and social resources), and activities that households put together to produce food, meet basic needs, earn income, or establish a means of living in any other way.

Integrated Planning for Sustainable Water Management

A process by which the local stakeholders are directly and actively involved in identification, planning, design, implementation, operation & maintenance and evaluation of a water management project.

National Water Management Plan

Flood Control and Drainage

Memorandum of Understanding

Department of Fisheries, a government department under the Ministry of Fisheries and Livestock responsible for regulating the fisheries industry in Bangladesh

Department of Livestock Services, a government department under the Ministry of Fisheries and Livestock responsible for the livestock industry in Bangladesh

Water Management Association - In Blue Gold, the polder-level representative of WMGs, and signatory to an O&M Agreement with BWDB

Water Management Group - The basic organizational unit in Blue Gold representing local stakeholders from a hydrological or social unit (para/village). Through Blue Gold, 511 WMGs have been formed and registered. The average WMG covers an area of around 230 ha has 365 households or a population of just over 1,500.

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stakeholders from a hydrological or social unit (para/village). Through Blue Gold, 511 WMGs have been formed and registered. The average WMG covers an area of around 230 ha has 365 households or a population of just over 1,500.

Collective action - by a producer group is one way to partially overcome constraints such as in weak markets, where inputs and services essential to production innovations, are generally scarce, costly to access and/or to obtain. Collective action is working in group instead of individually in order to gain economic or social benefit. Through collective action, farmers can address constraints in their market linkages, organise their activities jointly and use their collective bargaining power to reduce input costs through bulk purchase, or to obtain services from buyers such as farm-level collection of produce

Estuary Development Program

Water Management Improvement Project (WB-funded)

Water Resources Plan Organisation

Monitoring and Evaluation

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Community mobilization is a process that brings together different societal factions to undertake development activities. Within BGP this especially refers to organizing the community members into Water Management Groups

Coastal Embankment Improvement Project

tidal flooding is the temporary inundation of low-lying areas during high tide events.

Earthen dyke or bundh raised above surrounding ground level, for example so that roads or railway lines are above highest flood levels, or so that an area is empoldered to protect it from external floods and saline waters.

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Non-Governmental Organisation

## Bangladesh Delta Plan

Increase in the capacity of a country or an economic region to produce goods and services. It also refers to the increase in market value of the goods and services produced by an economy. It is usually calculated using inflation adjusted figures, in order to discount the effect of inflation on the price of the goods and services produced

## Public Private Partnership

## National Economic Council

General Economics Division, one of six divisions in the Planning Commission, with responsibility for the preparation of mid- and long-term plans; M&E of plans; and the determination of macroeconomic scenarios

## Upper Middle Income Country

gross domestic product

## Irrigation Management Improvement project (IMIP)

the amount of output (such as crops) produced per unit water

high value crop(s)

Value chain - the set of activities that need to be performed in a specific production sector in order to deliver the end product to the consumer. Agricultural value chains typically include input supply, growing/production, processing and marketing/distribution.

Also known as 'business linkages'. Linkages refer to the trading relationships between and among producers, input providers and traders, and other enterprises in a supply chain or value chain. We refer to Backward linkages on the input side and Forward linkages on the output side of the producer.

## Department of Agricultural Marketing

## Bangladesh Agricultural Development Corporation

## Ministry of Agriculture

## Program Steering Committee



Lowest tier of local government

Bangladesh Agricultural Research Institute

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## Namespaces

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## Variants

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## Blue Gold Program Wiki

The wiki version of the Lessons Learnt Report of the Blue Gold program, documents the experiences of a technical assistance (TA) team working in a development project implemented by the Bangladesh Water Development Board (BWDB) and the Department of Agricultural Extension (DAE) over an eight+ year period from March 2013 to December 2021. The wiki lessons learnt report (LLR) is intended to complement the BWDB and DAE project completion reports (PCRs), with the aim of recording lessons learnt for use in the design and implementation of future interventions in the coastal zone.

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