

SECTOR ASSESSMENT (SUMMARY): AGRICULTURE, NATURAL RESOURCES AND RURAL DEVELOPMENT¹

A. Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Agricultural development and sustainable natural resource management are critical for poverty reduction, as the majority (85%) of poor people in Bangladesh live in rural areas and depend on agriculture for their livelihood. Agriculture generates 50% of employment, contributes 20% of gross domestic product, and provides a secure food supply for the whole population. Fostering agricultural development and sustainable natural resource management has taken on increased importance in recent years as policy makers grapple with climate change and sudden spikes in food prices.

2. Agricultural growth is driven by a shift from subsistence rice-based cultivation to commercial high-value agriculture commodities, which is instrumental in advancing rural economic growth and contributing to long-term food security. The Government of Bangladesh promotes diversification in agriculture by encouraging private agribusiness as well as providing access to, and improving, rural infrastructure. Investments in rural infrastructure provide an opportunity to build technical skills and develop capacity within local governments, and they have a gender equality dimension. Rural infrastructure includes farm–market roads, power-related infrastructure, growth centers that provide marketplaces and should include women’s sections, water supply and sanitation, and infrastructure related to water resource management. Major causes of poverty are recurrent floods and riverbank erosion, as well as drainage congestion, salinity, cyclones and tidal surges, arsenic contamination, overexploitation of groundwater, chemical and biological contamination of surface water, and drought. To deal with drought, extensive irrigation facilities have been constructed, including privately owned and operated groundwater abstraction technologies, and large publicly owned and financed surface water irrigation schemes (larger than 2,000 hectares [ha]).

3. Large irrigation systems in Bangladesh suffer from inefficient water utilization and inadequate maintenance, and there is a large backlog of needed repairs. Climate change is expected to affect the future incidence and severity of disasters, necessitating more attention to managing disaster risk and adapting to change. More effort is required to foster community participation in sustainable management to include women and the private sector. The productivity of large irrigation schemes continues to be weakened by inadequate operation and maintenance (O&M), so that the infrastructure of most large schemes needs rehabilitation. This weakness is a result of inadequate financing, lack of beneficiary participation in management, and poor service delivery.² The present low performance may be aggravated in future by changes in temperature and rainfall patterns because of climate change. Such risks need to be considered when rehabilitating the infrastructure and modernizing system operations.

4. The government provides distribution systems down to secondary or tertiary levels for 15 existing large irrigation schemes, with a total command area of around 550,000 ha.³ During 1996–

¹ This summary is based on Asian Development Bank (ADB). 2011. [Country Partnership Strategy: Bangladesh, 2011–2015](#). Manila.

² Funds provided by the government for maintenance of these schemes is less than 50% of requirement, and irrigation service charges collected from end users amounts to only about 10% of the assessed amount.

³ Government of Bangladesh. 2000. [National Water Management Plan. Volume No. 3: Investment Portfolio](#). Dhaka.

1998, only about 46% of the net command area was irrigated from Bangladesh Water Development Board (BWDB) sources in the main irrigation season, and there is little evidence of improvement since then. Increasing the areas irrigated and recovering fees would assist economic growth through increased production and reduced subsidies. Also, developing sustainable approaches to management and operation of existing schemes would provide a sound basis for new schemes. The National Water Management Plan (2001) identified an additional 1 million ha that could be irrigated with new surface water schemes in areas where tube well irrigation is limited.

5. The plan for the Irrigation Management Improvement Project has been prepared in the context of existing well-developed policy, legal, institutional, and planning frameworks for the water subsector. It is designed to assist the government in modernizing and rehabilitating the infrastructure of existing major irrigation schemes, and to introduce public–private partnership (PPP) models. It also envisages an improved relationship between irrigators and scheme managers based on advance payment for timely and efficient service delivery. The approach is adapted from the system currently used by the Barind Multipurpose Development Authority (under the Ministry of Agriculture) for sustainable management and operation of deep tube well irrigation systems that cover more than 100,000 ha.

2. Government's Sector Strategy

6. The National Water Policy, adopted by the government in 1999, sets out a comprehensive policy framework for the water subsector as a whole and for large surface water irrigation schemes. According to the policy, (i) stakeholders in future schemes are to have a high degree of participation in planning, design, construction, and operation; (ii) poor and other vulnerable people are to have equitable access to water; (iii) women are to have an enhanced role in water management; (iv) scheme management is to be decentralized to the lowest appropriate level in accordance with basic integrated water resources management principles; and (v) social and environmental issues are to be properly managed. Future schemes are envisaged to be under private management through leasing, concession, or management contracts, or they are to be jointly managed by the scheme's implementing agency along with local government and community organizations. The policy envisages sufficient knowledge and capability in the country to design, through broad public participation, water management plans with economic efficiency, gender equity, social justice, and environmental awareness contributing to the national objectives.

7. The government's Sixth Five-Year Plan for fiscal years 2011–2015 recognizes the need to raise agricultural productivity, foster crop diversification, and boost public spending on rural infrastructure.⁴ The plan also presents a strategic direction for medium-sized and large surface water irrigation schemes. At its highest level, the strategy focuses firstly on achieving the intended benefits of existing irrigation schemes through modernization and improved management, and secondly on pursuing irrigation expansion while applying the lessons of improvements to existing schemes. To reduce public costs associated with sustainably operating these schemes, and to improve service delivery, the proposed strategy is to establish PPPs wherever appropriate. Where PPPs are not appropriate, reliance should be placed on improving the quality of the services delivered by the BWDB and on technologies to measure water applied to farmers' fields. To improve services, it is necessary to (i) field staff with basic skills required for sustainable delivery of irrigation services, (ii) provide training in participatory water management, and (iii) directly involve irrigators in decision-making for system management and O&M. Table 1 presents the

⁴ Government of Bangladesh, Planning Commission, Ministry of Planning. 2011. *Sixth Five-Year Plan, 2011–2015*. Dhaka.

government's subsector investment plan to modernize and upgrade major surface water irrigation schemes, for which the Irrigation Management Improvement Project will contribute to expanding and modernizing existing areas irrigated by major infrastructure.

Table 1: Investment Plan for Major Irrigation Infrastructure^a

Item	Total Amount
Net cultivated area ('000 ha)	7,700
Net irrigated area ('000 ha) ^b	4,850
Command area of large infrastructure ('000 ha)	552
Present area irrigated by large infrastructure ('000 ha)	254
Potential for new major irrigation schemes ('000 ha)	1,178
Investment for modernization	
Estimated modernization requirement (\$ million) ^c	745
Government-approved investment (\$ million) ^d	2
IMIP contribution to modernization (\$ million) ^e	128
Outstanding	615
IMIP contribution towards overall requirements (%)	17

ha = hectare, IMIP = Irrigation Management Improvement Project.

^a National Water Management Plan estimates.

^b Source: Bangladesh Bureau of Statistics. 2011. *Yearbook of Agricultural Statistics*. Dhaka.

^c Project preparatory technical assistance consultant estimate based on investment of \$1,350/ha.

^d Source: Bangladesh Water Development Board chief monitoring unit, February 2013.

^e The total Irrigation Management Improvement Project investment at approval is \$59.60 million, with physical investments (civil works) of \$30.36 million at 2013 prices. In addition, the project will prepare feasibility and detail designs for investments estimated at about \$150 million.

Source: Asian Development Bank.

B. Major Development Partners: Strategic Foci and Key Activities

8. The Asian Development Bank (ADB) has supported a range of investments in Bangladesh, including integrated water resources management, which includes irrigation components. Since the early 1980s, the World Bank, the Netherlands, the International Fund for Agriculture Development, and the Japan International Cooperation Agency have provided support for projects in Bangladesh in water resources management and irrigation.

9. The World Bank has been a major player in water resources management in Bangladesh, supporting sector reform and policy issues through the System Rehabilitation Project and Water Management Improvement Project, which encompassed both investment and sector reform issues, which are mutually beneficial to ADB. The Government of the Netherlands has identified new areas to further support the Government of Bangladesh in irrigation, agriculture, and value chain processes through the Blue Gold Program. There may be linkage established in future with the proposed project. The Japan International Cooperation Agency already supported irrigation projects and is planning to support water management in the northeastern area of Bangladesh. The International Fund for Agriculture Development is also supporting the government to help improve irrigation and the agriculture sector. It is cofinancing the third phase of ADB's participatory small-scale project and is willing to further support the irrigation subsector.

Table 2: Major Development Partners

Development Partner	Project Name	Duration	Amount (\$ million)
Netherlands	Early Implementation Phase I–IV	1985–1997	33.31
	Char Development and Settlement I–IV	1995–2013	120.00
	System Rehabilitation Project	1992–1998	20.00
	Small-Scale Water Resources Development, I–II	1996–2010	31.30

Development Partner	Project Name	Duration	Amount (\$ million)
ADB	Command Area Development Project	1995–2003	36.00
	Small-Scale Water Resources Development, I–III	1995–2013	120.00
	Jamuna–Meghna River Erosion Mitigation Project	2003–2011	40.00
	South West Area Integrated Water Resources Management Project	2006–2014	20.00
JICA	Rehabilitation of Pumping Station Facilities of GK	2005–2009	25.00
	Irrigation Project	1995–2013	42.00
IFAD	Small-Scale Water Resources Development, I and III		
International Development Association (WB)	System Rehabilitation Project	1992–1998	53.90
	Water Management Improvement Project	2007–2013	136.70

ADB = Asian Development Bank, GK = Ganges–Kobadak, IFAD = International Fund for Agriculture Development, JICA = Japan International Cooperation Agency, WB = World Bank.

Source. Local Consultative Group, Bangladesh.

C. Institutional Arrangements and Processes for Development Coordination

10. In Bangladesh, there exists a local consultative water management subgroup (LCG [WM]), comprising the active development partners. It is chaired by the Netherlands and cochaired by the BWDB. ADB regularly attends LCG (WM) meetings and liaises closely with the chair. Under the proposed project, close contact will be maintained with this forum and information shared as required. Cofinancing options with other development partners will also be explored through this forum.

D. ADB Sector Experience and Assistance Program

11. The overarching objective of ADB support is to contribute to the government's goals as stated in its Sixth Five-Year Plan and its commitment to enhancing growth and reducing poverty by boosting private sector investment, developing infrastructure, and enhancing the productive resources of the rural poor, among other things. Investment in infrastructure development is to include substantial private sector participation through PPPs. Towards this objective, ADB's country partnership strategy for Bangladesh, 2016–2020⁵ provides assistance within its Strategy 2020 agendas of inclusive economic growth, environmentally sustainable growth, and regional integration.⁶ The strategy for public sector operations focuses on six sectors, of which agriculture and natural resources is one, and includes improving management of water resources. For delivering high-impact results and better addressing constraints on growth, ADB will support larger strategic projects and programs, including projects requiring advanced technology. The CPS identifies seven thematic drivers, of which the following are relevant to surface irrigation: (i) good governance and capacity development, (ii) environmental sustainability and climate resilience, (iii) private sector development, and (iv) gender equity.

12. In the agriculture, natural resources, and rural development sector, to support the government's objectives for rural poverty reduction, flood security, and gender equity the CPS focuses on ensuring sustained high growth in agriculture with ADB assistance for rural infrastructure and innovative approaches to water resources management. Support for rural infrastructure will aim to boost productivity and foster rural transformation, while support for the efficient, integrated, and sustainable management of water resources will adopt a programmatic

⁵ ADB. 2016. *Country Partnership Strategy: Bangladesh, 2016–2020*. Manila.

⁶ ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

approach to scale up ADB's support for piloting new institutional approaches involving PPPs to improve the management of large irrigation schemes. The objectives are increased efficiency in water use, increased private sector and community participation, and improved irrigation service delivery with increased accountability to farmer organizations. This approach is consistent with ADB's Water Operational Plan, 2011–2012⁷ and Water for All policy.⁸

13. Modernized irrigation infrastructure and management can contribute significantly to mitigating drought-related risks associated with a changing climate. Additionally, ADB support will introduce PPPs that are expected to (i) promote the empowerment of beneficiaries by decentralizing scheme management, (ii) support an enhanced role for women in water management, (iii) enable equitable access to irrigation water, and (iv) reduce public costs associated with major irrigation schemes by establishing self-financing O&M mechanisms.

14. Despite having a water policy framework that strongly supports the government's agenda for major surface water irrigation schemes, performance in the subsector has been mediocre. Irrigation infrastructure is affected by insufficient maintenance stemming from inadequate budgets, the absence of need-based O&M cost assessments, undefined monitoring procedures, and little support for routine maintenance from local water management organizations. System management and operation is further affected by capacity within the BWDB, where staff levels have been reduced and remaining staff are not well-versed in participatory methods and have a bias towards managing construction, which in turn distracts them from developing capability in management and O&M.

15. With ADB's support, the government completed the First Command Area Development Project in 2003, and then requested ADB's support to prepare the Second Command Area Development Project aimed at improving the performance of large flood-control drainage and irrigation schemes. During preparation, two principal constraints on sustainable performance of major water schemes were identified: (i) limited capacity and resources of public agencies in effective maintenance of public agencies in managing O&M of large irrigation schemes, and (ii) major system deterioration because of inadequate O&M planning and financing mechanisms. In response, ADB provided capacity development technical assistance—Developing Innovative Approaches to Management of Major Irrigation Schemes⁹—completed in 2011. It recommended innovative irrigation service delivery and management arrangements using PPPs to improve large irrigation scheme management and O&M, particularly for the Muhuri Irrigation Project. This concept has been further developed and will be implemented under the Irrigation Management Improvement Project.¹⁰ Similar management innovation and infrastructure modernization will be applied to the Teesta Irrigation Project and Ganges–Kobadak Irrigation Project feasibility studies and detail design financed under the project.

16. With the Irrigation Management Improvement Project, ADB is taking the lead in the large irrigation subsector, with the intention of piloting and demonstrating sustainable management and O&M and attracting other donors for cofinancing.

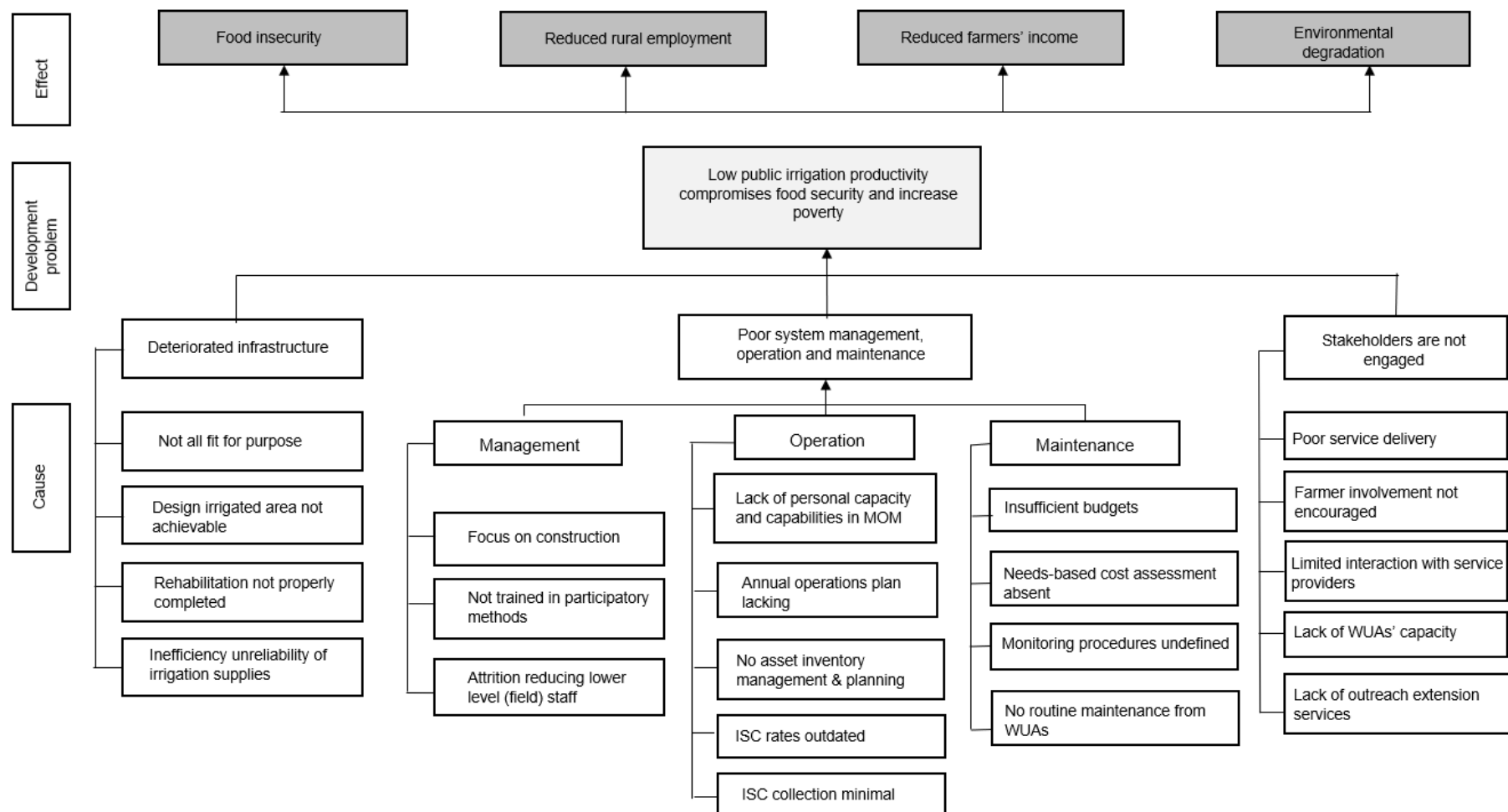
⁷ ADB. 2012. [Water Operational Plan, 2011–2020](#). Manila.

⁸ ADB. 2003. [Water for All: The Water Policy of the Asian Development Bank](#). Manila.

⁹ ADB. 2009. [Technical Assistance to Bangladesh for Developing Innovative Approaches to Management of Major Irrigation Schemes](#). Manila.

¹⁰ ADB. 2014. [Report and Recommendation of the President to the Board of Directors: Irrigation Management Improvement Project](#). Manila.

Problem Tree for Agriculture, Natural Resources and Rural Development (Irrigation Subsector)



ISC = irrigation service charge; MOM = management, operation and maintenance; WUA = water user association