

PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC1645

Project Name	Ayeyarwady Integrated River Basin Management Project (P146482)
Region	EAST ASIA AND PACIFIC
Country	Myanmar
Sector(s)	General water, sanitation and flood protection sector (40%), Flood protection (25%), Ports, waterways and shipping (25%), Public administration- Water, sanitation and flood protection (10%)
Theme(s)	Water resource management (60%), Natural disaster management (20%), Environmental policies and institutions (20%)
Lending Instrument	Investment Project Financing
Project ID	P146482
Borrower(s)	Republic of the Union of Myanmar
Implementing Agency	Directorate of Water Resources and Improvement of River Systems
Environmental Category	A-Full Assessment
Date PID Prepared/ Updated	13-Apr-2014
Date PID Approved/ Disclosed	13-Apr-2014
Estimated Date of Appraisal Completion	
Estimated Date of Board Approval	11-Dec-2014
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

Myanmar is the largest country in mainland Southeast Asia with a land area of about 654,000 square kilometers, abundant natural resources and one of the lowest population densities in the region. Its geographic location between China, India and Thailand, and more than 2,800 kilometers of coastline, leave it well positioned to resume its traditional role as a regional trading hub and key supplier of minerals, natural gas and agricultural produce.

Myanmar is also one of the poorest countries in East Asia, with an estimated GDP per capita of \$900 and an official poverty headcount of 26 percent. Since 2011, leaving behind decades of isolation, fragility, and conflict, Myanmar is undertaking a triple transition: from an authoritarian military system to democratic governance; from a centrally directed economy to market-oriented

reforms; and from 60 years of conflict to peace in the border areas.

The Government of the Republic of the Union of Myanmar has embarked on an ambitious economic and political reform program, announcing a series of reforms to remove economic distortions, stimulate direct foreign investments, and create an environment conducive to job creation.

The pace of change is rapid and expectations are high. A recent McKinsey Global Institute report suggested that the Myanmar economy could quadruple by 2030. In this period of profound transformation, the government will be challenged to ensure that growth is environmentally sustainable and inclusive. Water policies and early water infrastructure investment decisions could have profound impacts, both positive and negative, on the health and productive potential of the country's water resources, impacting development options across the economy.

Sectoral and Institutional Context

Myanmar is a land and water rich country. It has the world's 25th largest arable land area and 10 times the per capita water endowment of China and India. It was once the world's largest rice exporter. Looking forward, many of the opportunities considered most promising for Myanmar's future growth relate directly to water, i.e., enhanced production and trade in agricultural products, hydropower generation, and the expansion of national and regional green transport systems via rivers and ports. Anticipated growth in cities, industry, and cultural/eco-tourism will pose trade-offs for water use, and potentially impact water quality and therefore human and ecosystem health.

The Ayeyarwady is Myanmar's largest river basin and has been described as the heart of the nation. Today the basin accounts for over 60% of Myanmar's landmass, accommodates 70% of its population, and transports 40% of its commerce. It is a river of global proportions, with an average annual flow equivalent to roughly 85% of the Mekong. Groundwater resources in the basin are believed to be even greater than surface water resources.

The river's mainstream remains undeveloped. Construction on what would have been the first mainstream dam (a large storage-backed hydropower dam at Myitsone) was halted in 2011 in response to public concerns regarding environmental, social and livelihood impacts.

Hydropower development, however, remains a focus of significant interest. The Ayeyarwady River alone is believed to have 38,000 MW of potential installed capacity. Of the country's total estimated potential of 100,000 MW, only 2,660 MW of hydropower has been installed to date. Myanmar has tremendous opportunities to develop hydropower, but currently lacks the data and decision support tools needed to understand the basin-wide impacts of these developments and the tradeoffs of alternative development options.

Agriculture in the Ayeyarwady Basin has historically been the mainstay of the Myanmar economy. Myanmar's wealth of land and water resources have made the country food secure; but exports and incomes could be significantly enhanced by increasing agricultural productivity and diversifying production.

Sediment is a major challenge and appears to be compromising navigation on the river. The Ayeyarwady has the 5th highest sediment load of any major river in the world and many believe that the rate of sedimentation is rapidly increasing as a consequence of deforestation in the river's

fragile upstream landscape and widespread land use changes across the basin. Heavy, shifting sediment deposits now hamper navigation in the low flow season (November to May) when the draft is insufficient for large or heavily loaded vessels to ply.

Water quality and quantity are increasing concerns. Water quality concerns are being raised with regard to mining activities and the growth of cities and industrial zones. Water scarcity is an issue only in the basin's 'dry zone' today, but conflicting demands are anticipated if Myanmar continues its current rapid growth. Special Economic Zones (SEZs) have been or are being established in the basin.

Severe weather, storms and floods is another set of concerns in the Ayeyarwady Basin. The 'dry zone' is prone to droughts, the valley and delta experience extensive flooding, and the coastal zones are vulnerable to sea level rise and cyclones such as cyclone Nargis which in 2008 killed an estimated 138,000 people and affected 2.4 million.

Ecosystem management needs and related eco-tourism opportunities also need to be taken into account in the development of Myanmar's water resources. The Ayeyarwady Basin is home to a range of charismatic and endangered species including elephants, tigers, leopards, sea turtles, crocodiles, a broad range of waterfowl and migratory birds, and the Irrawaddy dolphin.

To address the broad inter-related risks and opportunities of the Ayeyarwady River, a National Water Resources Committee (NWRC) was established by Presidential decree in July 2013. The NWRC, chaired by the Vice President, will have three pillars: (i) a Secretariat, (ii) a Hydro-Informatics Center and (iii) an Expert Group. The establishment of the NWRC underscores the government's recognition of the importance and timeliness of water resources management during this period of rapid transformation.

Relationship to CAS

After more than two decades absence from the country, the World Bank Group (WBG) is reengaging in Myanmar's development effort. On October 30, 2012 the WBG approved an Interim Strategy Note (ISN) covering an 18-month period focusing on programs that can support the Myanmar government in the country's current triple transition. The ISN frames its support around three pillars:

- I. Supporting government's efforts to transform institutions to allow them to deliver for citizens;
- II. Building confidence in the ongoing reform process; and
- III. Preparing the way for the resumption of a full country program.

The proposed project would support all three Pillars. It will support Pillar I by reinforcing the government's efforts to rationalize and strengthen the institutions that manage, develop and allocate water resources in Myanmar. It will support Pillar II by delivering tangible livelihoods benefits through enhanced navigation opportunities on the Ayeyarwady River, as well as improved hydromet services such as weather forecasts and agricultural advisories that will strengthen disaster risk management and agricultural productivity. Pillar III will be supported by building a decision support system for water resources management and undertaking strategic basin-wide studies that will enable the Government and the Bank to assess the economic and environmental impacts and trade-offs of proposed large-scale infrastructure investments in agriculture, hydropower, navigation,

municipal and industrial water supply and wastewater treatment

In addition, the project will seek to align with the key WBG goals of ending extreme poverty and promoting shared prosperity. Projects such as this one that enhance disaster risk management, strengthen water management, support agricultural productivity and promote mobility will generally disproportionately benefit the poor, vulnerable groups and women. Benefits should be seen in particular in the Ayeyarwady Region which is reported (IHLCA Survey 2009-10) as the region with the country's largest national poverty share (nearly 20% of all the poor in Myanmar live in the Ayeyarwady Region). The Ayeyarwady Region lies at the mouth of the Ayeyarwady River so the impacts of water management decisions throughout the basin will be felt here. Furthermore, because this region is characterized by a dense network of canals and an extensive coastal area, improvements in navigability and disaster management will help secure lives and livelihoods in the region.

The AIRBM will implement a one WBG approach by seeking potential synergies with IFC's work on environmental and social standards for hydropower development in the context of the project's legal and regulatory reforms and basin planning framework activities.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The objective of the program (the Series of Projects) will be to strengthen integrated, climate resilient management and development of the Ayeyarwady River Basin and national water resources.

The objective of this first phase project is to develop the institutions and tools needed to implement integrated river basin management, and deliver related livelihoods benefits from enhanced navigation and hydromet warning and advisory services.

Key Results (From PCN)

The following would measure progress toward strengthening the institutions responsible for the management of Myanmar's water resources: (i) NWRC Secretariat and Hydro-Informatics Center (HIC) established and staffed, (ii) Water Law, National Water Resources Policy and National Water Framework Directive developed, and (iii) Decision Support System for the Ayeyarwady Basin developed and used by the HIC to inform NWRC policy. Additional proposed project outcome indicators include: (i) percentage of the agreed hydromet observation system modernization achieved, (ii) length of channel equipped with navigation aids, and (iii) acceptance of technical recommendations from studies.

III. Preliminary Description

Concept Description

A multi-phased approach (Series of Projects) is proposed that will focus, in the first phase, on developing the institutions and tools needed to enable informed decision making and implement integrated river basin management on the Ayeyarwady, while immediately enhancing the river's productivity with "no/low regrets" investments in the hydro-meteorological observation system and services (to support agricultural productivity and water-related disaster risk management) and in navigation enhancements (to promote transport) on the Ayeyarwady. The project design includes three inter-related investment components.

Component 1: Water Resource Management Institutions, Decision Support Systems & Capacity Building

1.1 Institutional Development

This sub-component will help to (a) establish and deliver the mandates of the newly created NWRC Secretariat, Hydro-Informatics Center and Expert Group, (b) undertake institutional, legal and regulatory reviews and reform, (c) create a stakeholder forum and promote communications and outreach, and (d) support capacity building.

1.2 Ayeyarwady Integrated River Basin Planning Framework

This sub-component will provide immediate guidance on investment options while also developing the tools and processes needed to ensure the government has ongoing capacity to plan and manage its water resources. The sub-component will include (i) strategic basin-wide analyses (i.e., groundwater and sediment) to ensure adequate information is available on key river basin resources, constraints and dynamics, (ii) development of a set of analytic tools to support decision making, (iii) a consultative process to ensure that the planning exercise leverages knowledge in the stakeholder community and responds to stakeholders concerns, and (iv) an integrated river basin master planning framework report that will include inter alia a strategic environmental and social assessment, and deliver analysis and recommendations on a range of investment scenarios (proposed investments would still require detailed project level environmental and social assessments) as well as proposed institutional arrangements for ongoing basin planning and management in Myanmar. The sub-component will also include resources to prepare potential investments for financing under a second phase of the program.

Component 2. Hydromet Observation and Information Systems Modernization

2.1 Institutional and regulatory strengthening, capacity building and implementation support of DMH

To design and operate a modernized hydromet system and deliver high quality services to users, the Department of Meteorology and Hydrology (DMH) will require technical assistance in systems design and integration, institutional development, capacity building and training.

2.2 Modernization of the Observation Infrastructure, Data Management Systems and Forecasting

The number of observation stations in Myanmar is significantly below WMO recommendations for all types of observations, and observation systems, communications, forecasting capabilities and data management systems are in general rudimentary, unreliable and fragmented. These systems will be expanded and upgraded, and a sustainable water quality monitoring system will be designed and piloted.

2.3 Enhancement of the Service Delivery System of DMH

Traditionally, departments of meteorology and hydrology have focused on data gathering rather

than delivering information services to users. This sub-component will support DMH in strengthening its service orientation in order to ensure the benefits of the project's investment are realized across the range of stakeholders. This will likely include (a) introduction of a Public Weather and Hydrological Service, (b) support for DRM operations including expansion of "end-to-end" early warning systems, (c) improvement of service delivery to communities including introduction of mobile applications, and (d) the creation of the National Framework of Climate Services.

Component 3. Navigation Enhancement on the Ayeyarwady River

3.1 Navigation Aids

Existing navigation aids are rudimentary and useful only for daytime navigation. Providing modern navigation aids and night navigation aids on the Ayeyarwady River from Mandalay to Yangon will enhance safety and facilitate both inland water transport and river tourism. This sub-component will include design and installation of navigation aids as well as related training, communications and awareness raising.

3.2 Channel Improvements

Channel improvements will be undertaken to ensure transport safety and efficiency along the busiest stretch of the Ayeyarwady system which lies between Mandalay and Nyaung-U. The present draught restriction during the dry seasons is just 1.5 meters. Draught improvements will allow vessels to pass and to be loaded more heavily during dry seasons, increasing the efficiency of passenger and cargo transport.

3.3 Ayeyarwady River Navigation Strategy

To explore the potential for appropriate river training works from Mandalay to Yangon, a channel design study will be undertaken. The study will model the morphology and sediment transport and address environmental and social implications.

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	✗		
Natural Habitats OP/BP 4.04	✗		
Forests OP/BP 4.36		✗	
Pest Management OP 4.09		✗	
Physical Cultural Resources OP/BP 4.11	✗		
Indigenous Peoples OP/BP 4.10	✗		
Involuntary Resettlement OP/BP 4.12	✗		
Safety of Dams OP/BP 4.37		✗	
Projects on International Waterways OP/BP 7.50	✗		
Projects in Disputed Areas OP/BP 7.60		✗	

V. Financing (in USD Million)

Total Project Cost:	100.00	Total Bank Financing:	100.00
Financing Gap:	0.00		
Financing Source			Amount
BORROWER/RECIPIENT			0.00
International Development Association (IDA)			100.00
Total			100.00

VI. Contact point**World Bank**

Contact: Julia M. Fraser
 Title: Sector Manager
 Tel: 5778+8380 /
 Email: jfraser@worldbank.org

Borrower/Client/Recipient

Name: Republic of the Union of Myanmar
 Contact: H.E. U Win Shein
 Title: Union Minister/Minister of Finance
 Tel:
 Email:

Implementing Agencies

Name: Directorate of Water Resources and Improvement of River Systems
 Contact: Htun Lwin Oo
 Title: Director General
 Tel: (95-6) 741-1030
 Email: dgdwir@mptmail.com.mm

VII. For more information contact:

The InfoShop
 The World Bank
 1818 H Street, NW
 Washington, D.C. 20433
 Telephone: (202) 458-4500
 Fax: (202) 522-1500
 Web: <http://www.worldbank.org/infoshop>