REPULIC OF THE UNION OF MYANMAR
Directorate of Water Resources and Improvement of River Systems

Myanmar Ayeyarwady Integrated River Basin Management Project
Draft Environmental and Social Management Framework

DRAFT August 2014

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ACRONYMS

ACAS	Agriculture and Climate Advisory Service
ADPC	Asian Disaster Preparedness Center
AWS	Automated Weather Station
CDU	Component Director Unit
DMH	Department of Meteorology and Hydrology, MoT
DWIR	Department of Water Resources and Improvement of River Systems, MoT
EA	Environmental Assessment
EMPF	Environmental Management Plan Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
EWS	Early Warning System
FM	Financial Managements
GoM	Government of the Republic of the Union of Myanmar
HIC	Hydro-Informatics Center
ICT	Information and Communications Technology
IDA	International Development Association
IPP	Indigenous Peoples Plans
IPPF	Indigenous Peoples Policy Framework
M&E	Monitoring and Evaluation
MEB	Myanma Economic Bank
MoF	Ministry of Finance
MoT	Ministry of Transport
NGO	Non-Governmental Organization
NWP	Numerical Weather Prediction
NMS	National Hydro-Meteorological Service
NWRC	National Water Resources Committee
PCR	Physical Cultural Resources
PDU	Project Director's Unit
PSC	Project Steering Committee
PWS	Public Weather Service
RAP	Resettlement Action Plan
RBO	River Basin Organization
RPF	Resettlement Policy Framework
SA	Social Assessment
SESA	Strategic Environmental and Social Assessment
SOPs	Standard Operating Procedures
WBG	World Bank Group
WMO	World Meteorological Organization
WRFM	Weather Research and Forecasting Model

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

1 INTRODUCTION

An Environmental and Social Management Framework (ESMF) was prepared by Directorate of Water Resources and Improvement of River Systems (DWIR) to cover the environmental assessment process and related social safeguard policies for investments financed under the Myanmar Ayeyarwady Integrated River Basin Management (AIRBM) Project. The ESMF provides a general option impact analysis with environmental and social criteria and an overall assessment on how to mitigate and monitor possible environmental and social effects affiliated with these investments.

The ESMF provides guidance on the process of proper project implementation including preventing, minimizing or mitigating possible site-specific environmental and social impacts during the investments. It provides guidance to all the sub-project sponsors, beneficiaries and DWIR to ensure the environmental and social assessment and other safeguard requirements will be carried out in compliance with the national guidelines for conducting Environmental Impact Assessments (EIA), other environmental and social regulations and laws of Myanmar, and in accordance with the World Bank Environmental Assessment (EA) and social policies and procedures on involuntary resettlement and indigenous peoples as specified in the World Bank Group safeguard policies.The ESMF will also be used as a reference document for assessing the potential environmental and social impacts of investment alternatives or strategies that are assessed and financed under this program. Finally, this ESMF will be an integrated part of the Project Implementation Manual (PIM) and is applicable to all linked investments financed for Ayeyarwady River Basin, regardless of their funding source or implementing agency.

Project Description

The proposed Myanmar AIRBM Project funded by the World Bank through a loan of US$ 100 million and implemented by DWIR is designed as a multi-phased approach (Series of Projects) to strengthen integrated, climate resilient management and development of the Ayeyarwady River Basin and national water resources. The first phase aims at developing the institutions and tools needed to implement integrated river basin management, and deliver related livelihood benefits from enhanced navigation and hydromet warning and advisory services. Specific project locations for interventions linked to navigation enhancements and hydromet warning on the Ayeyarwady from Mandalay to Yangon will be selected and identified during project implementation once the relevant modeling and feasibility studies are developed.

The proposed first phase will also lay the groundwork needed to undertake large-scale infrastructure investments in possible second or third phases (yet to be determined) and financed primarily under the project preparation of future investments subcomponent. It will provide the government with the capacity to do basin-wide scenario analyses, to properly identify and assess the complex trade-offs that inevitably arise from large, long-lived water infrastructure investments, and to follow economic, environmental and social 'good practices'. Therefore, the first phase will also support (pre-) feasibility, feasibility and other upstream technical studies for priority infrastructure investments that will be primarily identified in the course of a basin planning framework (master plan) for potential funding in subsequent phases. A Strategic Environmental and Social Assessment will be undertaken in parallel with the preparation of, and

to inform, the river basin master plan during project implementation in line with specific ToRs already developed as part of project preparation.

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

Subcomponent 1.1. Institutional Development: This sub-component will support (a) construction or refurbishment of a NWRC Secretariat and Hydro-Informatics Center headquarters facility including provision of office furnishings and equipment, (b) establishment and delivery of the mandates of the newly created NWRC Secretariat, Hydro-Informatics Center and Expert Group, including institutional, legal and regulatory reviews and reforms, (c) creation of a stakeholder forum, communications and outreach, and (d) capacity building.

Subcomponent 1.2. Ayeyarwady Integrated River Basin Master Plan and Decision Support System: 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. A phased approach will be taken to plan integrated development of the Ayeyarwady River, based on sufficient understanding of opportunities and risks and guided by agreed sustainable development objectives. Activities include (a) development of the Ayeyarwady Master Plan, basin-wide diagnostic studies, a Decision Support System (DSS), and stakeholder consultations, (b) implementation of a groundwater survey, and (c) development of Basin-wide Strategic Environmental and Social Assessment.

Subcomponent 1.3. Preparation of FutureInvestments (PFI): The PFI will provide finance to support the preparation of priority projects identified in the Ayeyarwady Basin Master Plan (Sub-component 1.1a). To be eligible for funding, a project must be on the Government's approved list of ODA projects and be consistent with the Bank's engagement objectives in Myanmar. Under this sub-component, funds will be made available to prepare investments to international quality standards and in accordance with basin wide development objectives. The preparation funds will be available for the duration of the five-year AIRBM implementation period.

Subcomponent 1.4. Implementation Support: This sub-component will provide incremental running costs and consultant and advisory services for overall project management, financial management, procurement, safeguards and monitoring and evaluation.

Component 2: Hydromet Observation and Information Systems Modernization

Subcomponent 2.1. Institutional and Regulatory Strengthening, Capacity Building and Implementation Support of DMH: This sub-component will support (a) institutional strengthening of the DMH including the development of a robust legal and regulatory framework, (b) capacity building and training for DMH staff, and (c) technical assistance in DMH systems design, integration and operations as well as Component 2 management and monitoring.

Subcomponent 2.2. Modernization of Observation Infrastructure, Data Management Systems and Forecasting: This sub-component will support (a) technical upgrading of the hydro-meteorological observation network, (b) modernization operations centers, data management and communications/IT systems, engineering and calibration facilities, (c) improvements in numerical weather prediction systems and associated hydrological modeling frameworks and (d) reconstruction and/or refurbishment of DMH facilities.

Subcomponent 2.3. Enhancement of the Service Delivery System of DMH: This sub-component will support DMH in strengthening its service orientation in order to ensure project benefits are realized across the range of stakeholders. This will likely include (a) enhancement of Public Weather Services and Hydrological Services and improvement of service delivery to communities, (b) support for DRM operations including expansion of "end-to-end" early warning systems in small river basins with floods and flash floods, (c) development of an Agricultural and Climate Advisory Service (ACAS), and (d) the creation of a National Framework for Climate Services.

Component 3: Ayeyarwady River Navigation Enhancements

Subcomponent 3.1. Ayeyarwady River Navigation Strategy (Mandalay to Yangon): This sub-component will develop (a) a navigation strategy for the full navigable length of the river from Mandalay to Yangon. This strategy will (i) update the currently referenced 1988 feasibility study for the entire river taking into account potential inland port developments to promote multi-modal transport planning in the future, (ii) identify the scope of works for navigational improvement including training works, dredging, bank protection and navigation aids on the two most urgent bottleneck stretches of about 30km each, (iii) provide detailed design for pilot training works at two stretches, (iv) and recommend a maintenance plan for the river (linked with sub-component 3.2.c.) and (b) a fleet optimization study.

Subcomponent 3.2. Navigation Improvements (Mandalay to Yangon with a focus on the Mandalay - Nyaung Oo section): This sub-component will support navigation improvements to increase the least available draught during the low water season for both passenger and cargo vessels along the busiest stretch of the Ayeyarwady river (Mandalay to Nyaung Oo). Activities will include: (a) 1-dimensional and 2-dimensional river modeling to identify the scope of works for river navigation enhancements, (b) preparation of an EIA, including an EMP for the proposed enhancement works, (c) preparation of detailed design documents and construction supervision, and (d) construction of enhancement works. The scope of works will be focused on the Mandalay – Nyaung Oo stretch of the Ayeyarwady and will be expanded to some other critical stretches on the Nyaung Oo – Yangon reach.

Subcomponent 3.3. Navigation Aids (Mandalay to Yangon with night navigation focused on the Mandalay – Nyaung Oo section): This sub-component will support the purchase and installation of navigation aids such as lighting, signage, mapping and a strengthened river pilot system to enhance safety and facilitate efficient navigation along the Mandalay – Yangon section of the Ayeyarwady. In addition it will support investments, for example in lighting and signage, to enable night navigation on the Mandalay – Nyaung Oo section.

Subcomponent 3.4. Institutional Strengthening and Implementation Support: This component will support (a) Component 3 implementation and management, and (b) capacity building, training and communications and awareness raising activities on river improvements and new information, regulations and procedures.

Subcomponent 3.5, Design and piloting of surface water quality monitoring system: This component will (a) design the possible network of monitoring station for river water quality in the Ayeyarwady River Basin, (b) implement a few pilot stations and (c) include capacity building for water quality monitoring.

Component 4: Emergency Contingency Response

This 'zero component' (initially without any allocations of funding) will allow for the rapid reallocation of funds from other components to provide preparedness and rapid response support to disaster, emergency and/or catastrophic events, as needed. The funds flow and disbursement arrangements will be determined at the time that a contingency response is activated.

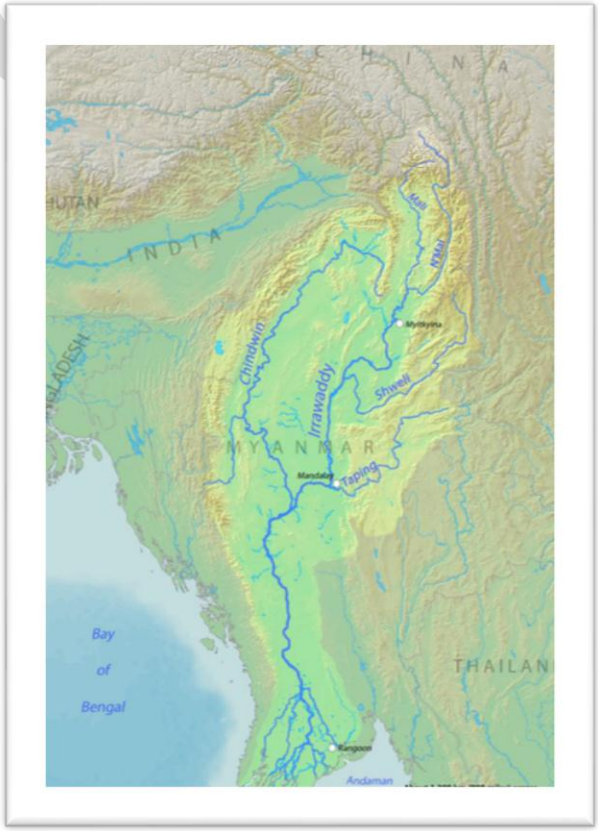
Brief Project Baseline Information

The Ayeyarwady River Basin

The Ayeyarwady River (also known as Irrawaddy; length 2170 km; drainage area 413,710 Km^2) is the largest river in Myanmar and has been described as the heart of the nation. The basin accounts for over 60% of Myanmar's landmass, accommodates 70% of its population, and transports 40% of its commerce. Groundwater resources in the basin are believed to be even greater than surface water resources. It is rich in natural resources particularly forests, land and water in addition to biodiversity.

Natural Resources

The Ayeyarwady basin is an international river basin rising in the Himalayas, bisecting Myanmar from north to south and empting through a nine-armed delta into the Bay of Bengal. The average discharge of the Ayeyarwady River is 13,000 m^3/s (Win, 2011). The combined flow outside of Myanmar is estimated to be 0.3%. The remaining 99.7% of the flow is accumulated within Myanmar, which is the river's downstream most riparian country. The international section of the catchment, a portion feeding two of the tributaries of the River (the Maykha and the Malikha) is located in China. Also, a sub-tributary originating within India feeds the Malikha tributary. The confluence of both tributaries (Myitsone inMyanmar language) is situated at a



placeapproximately 45 km north of Myitkyina, in Kachin State in northern Myanmar. From there on, the river is called the Ayeyarwady.

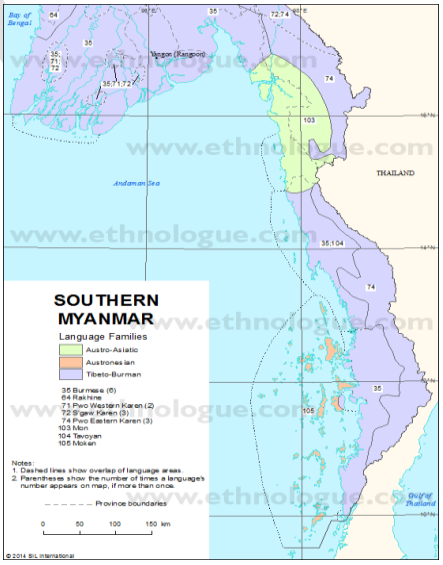
Large part of the water, energy and food security of Myanmar depends upon the Ayeyarwady river basin. Therefore the ecosystem of the Ayeyarwady River Basin plays a crucial role as the lifeline of Myanmar populace. Achieving sustainable development of these resources is vital to the country and the sustainability of water, energy and food security in Myanmar.

There are an estimated 517,000 ha of mangrove forest in Myanmar, of which 46% are located in Ayeyarwady Delta (Ramsar, n.d.). In the Ayeyarwady Region, mangrove forest has been seriously degraded in recent years due to agricultural conversion and the high demand for firewood and charcoal from Yangon, with consequent decline of fish catches and increased vulnerability to natural disasters. It has been estimated that ~83% of mangroves in the Ayeyarwady Delta have been destroyed between 1924 and 1999 (NECC, 2012). The Ayeyarwady river also has extensive wetlands in the interior of the country, which are mostly seasonally inundated floodplains, most of which have been reclaimed for permanent agriculture.

The swamp forest, found in the Ayeyarwady Delta is of high ecological importance for many bird species, which have suffered dramatic population declines across their global distributions. The Ayeyarwady River also has extensive wetlands in the interior of the country, which provide excellent feeding areas for large number of waterfowl and fertile spawning grounds for a number of fishes, such as carp, catfish and perch. As mentioned above, large areas of this floodplain have been reclaimed for permanent agriculture

Socio-economic Setting

The total population of Myanmar is estimated to be around 50 million although the number varies between sources of data. About 75% of population is considered to live in rural areas. Average household size is 5, with little difference between rural (5.0) and urban (4.9) areas There are more than 60,000 villages, Various studies indicate that poverty stands above 20% at the national level, while poverty incidence is higher in rural areas by about 5 percentage point.



Myanmar is one of the most ethnically diverse countries in south East Asia. The Bamar is the largest ethnic group, comprising around two-thirds of the population, and various ethnic minorities accounting for about one third. The majority Bamar population mainly lives in the central and delta regions (divided into seven Regions) while the ethnic minorities live mainly, however not exclusively, in the seven States (Kayah, Kayin, Kachin, Chin, Mon, Rakhine, and Shan) along the borders. The official population estimates of the main ethnic minority groups are roughly: Shan (9%), Kayin/Karen (7%), Rakhine (4.5%), Chin (2%), Mon (2%), Kachin (1.4%), Kayah (1%). The eight "ethnic races," including the majority Bamar are subdivided into 135 officially recognized ethnic groups and belong to five linguistic families (Tibeto-Burman, Mon-Khmer, Tai-Kadai, Hmong-Mien, and Malayo-Polynesian); there are no population figures for ethnic minority sub-groups.

The Ayeyarwady River Basin is known to be a home to diverse ethnic groups.Numerous ethnic groups are present within the river basin although data do not exist that clearly show the list of ethnic groups who are present. The Strategic Environmental and Social Assessment (SESA) will collect more data on the distribution of ethnic minorities in river basin at the early stage.

Project Legal and Institutional Framework

Legal Framework relevant to project activities

The Government of Myanmar (GoM) is currently in the process ofcarrying out various reforms that include political, economical and environmental reforms consequently updating and developing its Environmental legal and institutional framework are ongoing. However, numerous challenges remain. Myanmar Environmental policies and laws are mostly sectoral and are gradually transitioning from a nature conservation focus to environmental mainstreaming into the economic and social development of the country.

Sector specific laws - where developed - regulate only particular environmental aspects. Therefore, there are no laws that comprehensively regulate strategic aspects such as environmental impact assessment, waste management, involuntary resettlement, or particular measures for vulnerable groups such as ethnic minorities. Sectoral laws also produce overlapping of certain responsibilities (e.g. licensing for works on river ways fall under both Ministry of Transportation and Ministry of Environmental Conservation and Forestry). Myanmar is party to several international treaties, however the incorporation of those provisions into domestic law has been somewhat fragmented.

The legal and institutional gap also extends into administrative and procedural structures, and capacity and resources to enforce such provisions. There is also a need for better coordination between sectoral ministries and between union and local government. Some members of Myanmar Civil Society have argued that the lack of environmental protection legislation and enforcement capacity has left room for unabated ecological degradation.

Legal framework concerning ethnic minorities

According to Chapter 1, clause 22 of the 2008 Constitution of Myanmar, the Union Government of Myanmar is committed to assisting in developing and improving the education, health, language, literature, arts, and culture of Myanmar's "national races." It is stated, that the "Union shall assist:

a) To develop language, literature, fine arts and culture of the National races;
b) To promote solidarity, mutual amity and respect and mutual assistance among the National races;
c) To promote socio-economic development including education, health, economy, transport and communication, [and] so forth, of less-developed National races."

The constitution provides equal rights to the various ethnic groups included in the national races and a number of laws and regulations aim to preserve their cultures and traditions. This includes the establishment of the University for the Development of the National Races of the Union which was promulgated in 1991 to, among other things, preserve and understand the culture, customs and traditions of the national races of the Union, and strengthen the Union spirit in the national races of the Union while residing in a friendly atmosphere and pursuing education at the University.

Under the current government, free media is developing and ethnic parties and associations are politically active. Ethnic minority organizations may also play a stronger role going forward through the current Government's decentralization efforts which would afford States and Regions to play a more prominent role in decision-making and implementation of various policies and programs.

Present Institutional Framework relevant to project activities

The Ministry of Environmental Conservation and Forestry (MOECAF) is the focal agency for overall environmental management in Myanmar. MOECAF´s predecessor, the Ministry of Forestry (MOF) created in 1992, had been gradually taking over the coordination of environmental protection in Myanmar. In 2005, the MOF absorbed the 1990 National Commission for Environmental Affairs (NCEA), the main environmental authority at the time, composed by nineteen heads of departments from various sectoral ministries. In 2012, NCEA became one of the six departments under the MOECAF, the Environmental Conservation Department, which main objectives include: (i) implementing National Environmental Policy, strategy, framework, planning and action plan for the integration of environmental consideration into in the national sustainable development process; (ii) managing natural resources conservation and sustainable utilization, the pollution control on water, air and land for the sustainable environment; and (iii) cooperating with other government organizations, civil society, private sectors and international organizations concerning with environmental management.

The GoM established in 2004 the National Environmental Conservation Committee (NECC) aimed at consolidating the environmental conservation activities at local and national levels. NECC, chaired by the Ministry of Forestry, was reformed in April 2011 to include 21 members from 19 ministries. NECC is divided in four sub-committees, one of which aims at addressing the environmental problems in rivers and wetland areas.

MOECAF priority actions include creating: (i) guidelines for environmental quality standards and pollution control; (ii) EIA procedures and guidelines as well as review and monitoring institutions; (iii) Environmental related Water Management Master Plans; (iv) Climate Change strategy and Emergency Risk Management Plan; (v) Green Economy Strategy for low carbon development; and (vi) Environmental Monitoring programs and inspections rules and regulations. The principal constrains identified by MOECAF include: (i) lack of information, (ii) lack of technical expertise, (iii) lack of financial resources and sustainability, (iv) lack of coordination both

within and between government institutions and well as national and local entities, (v) challenges around public participation, and (vi) time limits.

The other important sectoral agencies in the area of environmental and water resources management are the Ministry of Transport (MoT), Ministry of Health (MOH), the Ministry of Agriculture and Irrigation (MOAI), the Ministry of Social Welfare, Relief and Resettlement (MSWRW), and the Ministry of Livestock, Fisheries and Rural Development(MOLFARD). In recent years, the MOH has been incorporating environmental health activities such as surveying for toxic and hazardous materials, monitoring occupational health linked to environmental pollution, and improving clean water supply and sanitation. The Relief and Resettlement Department and the Myanmar Disaster Preparedness Agency, under MSWRR, are tasked with the implementation of the Myanmar Action Plan on Disaster Risk Reduction, which includes water monitoring, early warning systems and flood control activities, among others. The Water Resource Utilization Department and Irrigation Department under MOAI work in improving water supply for irrigation purposes. The Department of Fisheries under MOLFARD is responsible for not only fishery resource management but also fish diversity conservation in both fresh water and marine environments. Directorate of Water Resources and Improvement of River System (DWIR) under MoT is responsible for the health, sustainability and disaster reduction of all river systems in Myanmar as well as their economic productivity.Table 1 highlights various agencies with different tasks related to water resources management.

Table 1. Agencies with water resources management responsibilities

Agency	Water Resources Management Responsibilities
Irrigation Department	Responsible for: (i) agriculture water supply for irrigation Development, (ii) to some extent, urban water supply, and (iii) preventing of saline water intrusion, (iii) water level recording and discharge measurement, especially for irrigation dams and canals
Meteorology and Hydrology Department	Responsible for (i) weather/water monitoring stations, sediment discharge stations on main rivers and big tributaries, (ii) water quality stations on Ayeyarwady delta for measuring discharge and sediment flows and monitoring salt intrusion
Forest Department	Responsible for rehabilitation and conservation of forests and watersheds and maintaining the stability of Environment in order to develop the social and economic conditions of the nation, especially in rural areas
Water Resource Utilization Department (WRUD) under MOAI	Responsible for pumping up water from rivers for irrigation purposes.
Directorate of Water Resources and Improvement of River Systems (DWIR)	Responsible for improving water ways, canals and river systems for a variety of issues including navigation, sedimentation and water quality issues, river system health, sustainability, disaster risk reduction and economic productivity
Municipal bodies like Yangon, Nay Pyi Taw, Mandalay City Development Committees (YCDC, MCDC) and Township Development Committees (TDC)	Gradually taking over the responsibility for urban water supply.
Department of Health	Partially responsible for some aspects related to rural water supply and sanitation linked to health facilities' operation.

World Bank Group Safeguard Policies

The proposed project investments are expected to be designed to have generally positive social and environmental benefits and will trigger several World Bank policies such as *Environmental Assessment* (OP 4.01); *Natural Habitats* (OP 4.04); *Physical Cultural Resources* (OP 4.11), *Safety of Dams (*OP 4.37*), Involuntary Resettlement* (OP 4.12) and *Indigenous Peoples* (OP 4.10). The project has been classified as environmental category "A" in accordance to the World Bank policy OP/BP 4.01 on *Environmental Assessment* given the possible high environmental and social risk impacts affiliated with the project interventions and the overall complex impact of the project focused on an integrated river basin planning approach. However, specific infrastructure investments (once identified in terms of location, characterized for their technical complexity and assessed in view of their impact) may qualify for category "B" and/or category "A" impact subprojects. Other activities supported by the project, such as the undertaking of prefeasibility, feasibility and other studies also need to review and assess potential environmental and social impacts of the activities and alternatives considered on a case-by-case basis.

Currently, there is no environmental and social impact assessment framework in Myanmar. The GoM drafted in 2001 a set of Environmental Impact Assessment rules, but they have yet to be enacted. The 2012 Conservation Law provides a general mandate to MOECAF to produce an ESIA system but specific ESIA procedures and guidelines are yet to be endorsed. EIAs are conducted, however, on an ad hoc basis for projects funded by international organizations and some foreign corporations. The EIA challenges also expand into the institutional framework with a MOECAF with little technical and financial resources to review and monitor environmental and social performance of investment projects on the ground. Table 2 summarizes the main aspects of the draft EIA rules vis a vis the OP 4.01 procedures. Myanmar does not have a unitary law or legislation with regard to land acquisition and compensation or on ethnic minorities.

Table 2. National Draft EIA rules versus OP/BP 4.01 EIA requirements

Issue	**Draft EIA Rules**	**OP 4.01**
Triggers	Projects with significant environmental impact	All projects financed by the World Bank. EA process depth will depend on the risk and impacts associated with the Project.
Responsibilities	Project proponent leads the EA process	Borrower leads the EA process

Public participation	MOECAF shall arrange as it deems necessary for Public Participation. In the process of approving the EIA report, MOECAF shall take into account suggestions from project affected people and civil society. However, the rules do not specify the process of receiving feedback or incorporating it into the proposed project.	For all Category A and B projects, during the EA process, the borrower consults project-affected groups and local nongovernmental organizations (NGOs) about the project's environmental and social aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them.
Disclosure	The Project proponent shall disclose all relevant project information to MOECAF. No further requirement of disclosure to project affected people or civil society is made in the EIA rules.	The borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted. For a Category A project, the borrower provides for the initial consultation a summary of the proposed project's objectives, description, and potential impacts; for consultation after the draft EA report is prepared, the borrower provides a summary of the EA's conclusions. In addition, for a Category A project, the borrower makes the draft EA report available at a public place accessible to project-affected groups and local NGOs Any separate Category B report is made available to project-affected groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of Category A reports, and of any Category B report, are prerequisites to Bank appraisal of these projects. Once the borrower officially transmits the Category A EA report to the Bank, the Bank distributes the summary (in English) to the executive directors (EDs) and makes the report available through its InfoShop. Once the borrower officially transmits any separate Category B EA report to the Bank, the Bank makes it available through its InfoShop. If the borrower objects to the Bank's releasing an EA report through the World Bank InfoShop, Bank staff (a) do not continue processing an IDA project, or (b) for an IBRD project, submit the issue of further processing to the EDs.

Screening	Lists projects that require environmental examination including land use change, exploitation of resources for introduction of new species. MOECAF shall determine the format and timing of the reports. MOECAF will determine the type of environmental assessment required based on the environmental examination	The Bank screens all projects and classifies them into one of four categories (Category A, B, C, and FI), depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts
EA Content	MOECAF determines the content of the EA report, which primarily includes assessment of direct impacts linked to project and description of mitigation measures (environment mitigation plan).	The EA needs to include assessment of project alternatives; cumulative impacts; specific mitigation measures and monitoring activities.
Monitoring	MOECAF shall monitor project performance in accordance to the Environmental Management Plan (EMP). The Project proponent shall comply with the EMP and the terms included in the license throughout the lifetime of a project. If found in non-compliance, MOECAF shall impose penalties or suspend project construction or operation.	During project implementation, the borrower reports on (a) compliance with measures agreed with the Bank on the basis of the findings and results of the EA, including implementation of any EMP, as set out in the project documents; (b) the status of mitigatory measures; and (c) the findings of monitoring programs. The Bank bases supervision of the project's environmental aspects on the findings and recommendations of the EA, including measures set out in the legal agreements, any EMP, and other project documents

In addition, the AIRBM project investments will follow the WBG Environmental, Health, and Safety (EHS) Guidelines, which are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each investment on the basis of the results of an environmental assessment in which site-specific variables, such as local country context, assimilative capacity of the environment, and other sub-project factors, are taken into account. The assessment of the range of pollution prevention and control techniques available to an investment may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity, as well as varying levels of financial and technical feasibility. Gap analysis between national legislation and the Bank's social safeguards policies OP 4.10 and 4.12 is provided in the RPF and IPPF of the ESMF.

POTENTIAL PROJECT IMPACTS FROM RIVER WORKS

Adverse and positive impact analysis of the Project at the level of framework can be considered using only the limited available general information on the environmental and social situation at the project area of influence and the typical known impacts of suggested project activities. Site specific impacts (during pre-/construction stages as well as operation stage) will be analyzed during the detail design and included in the relevant ESIA and EMPs.

It is expected that dredging process and river training works can influence the water regime in rivers and swamp areas in the wider Ayeyarwady river catchment area. This is not an instantaneous impact but a slow process that will develop slowly over the years after completion of works. As a result of reduced water flow in the lateral branches and minor flooding, the changes in groundwater levels can be expected. This can potentially negatively affect the functioning of wetlands, which are important refuges, hatching grounds and habitats of plants, birds, fish, amphibians and other animals. Therefore, the full ESIA prepared in parallel with the detail design will have to include the results of the hydraulic modeling, including ecological flows, and must be engaged in the selection of the feasible alternatives with least environmental impact based on the modeling results.

Improved navigation transport could produce and increased pressure over resources and land use change just as an improved road does. The full ESIA will consider land use change modeling and provide mitigation initiatives.

The ESIA will also produce mapping of the development initiatives in the Project area of influence in order to enhance development results and avoid duplications (e.g. as part of the Action Plan on Disaster Risk Reduction, the Disaster Preparedness Agency is leading enhanced flood monitoring and forecasting initiatives in townships and flood preparedness plans in the Ayeyarwady basin) as well as to assess any cumulative impacts at the project sites.

Project Safeguard Approach

The proposed approach for addressing environmental and social issues in the project will include preparation of the following safeguard instruments:

- Environmental and Social Management Framework (ESMF);
- Environmental Impact Assessments (EIAs) and/or Environmental and Social Management Plans (ESMPs), and other safeguard instruments as required (involuntary resettlement plans, indigenous peoples plans, etc) will be prepared for all investments/subprojects that are identified or designed during project implementation and prepared under the PFI subcomponent;,
- Strategic Environmental and Social Assessment (SESA) will be carried out for the basin Master Plan.

ESMF

- The ESMF will be applied to all infrastructure projects that are identified during project implementation and those financed by the PFI subcomponent. The Preparation of Future Investments activity (PFI) will primarily finance feasibility studies, scoping and prioritization of project concepts, surveys and tests, strategic options studies, policy work, and other studies for future water resources infrastructure investments planned by Borrower in the subsequent project phase (i.e., in irrigation, hydropower, navigation, delta management, municipal water supply or wastewater management systems).

The ESMF includes:

- Screening and scoping criteria for individual sub-projects that are identified during project implementation or to be included in the PFIs activities.
    - Guidance on project Categorization (A or B) and the definition of the required safeguard work

- A Resettlement Planning Framework for land acquisition and resettlement
- An Indigenous Peoples Planning Framework
- Guidance on:
    - Terms of Reference for EIA and ESMP for Category A projects
    - Management of environmental impacts for small construction projects
    - Terms of Reference for SESA

EIA/ESMPs

- An EIA and/or ESMP will be prepared for the civil works related to (i) infrastructure navigation works on selected river sections, for which feasibility studies and designs need to be prepared or revised; (ii) construction or rehabilitation of buildings/offices linked to management and operation of water quality and weather forecasting and DMH operation; (iii) installation of river water monitoring stations and other relevant weather and hydrologic observing network stations; and (iv) installation of navigation aids along the selected river sections.

SESA

- The SESA will be carried out as part of technical assistance activities related to (i) preparation of the Ayeyarwady Integrated River Basin Master Plan and its Strategic Assessment; (ii) technical background studies such as the Ayeyarwady basin groundwater survey; fleet optimization study; and Ayeyarwady river navigation strategy.

Each of the AIRBM project investments, depending on its typology, will include an assessment of the potential social and environmental impacts and a specific Environmental Assessment (EA) tool consistent with Myanmar laws and standards (as applicable) and World Bank Group requirements. Table 3 summarizes the safeguard approach for the project:

Table 3. AIRBM Project proposed investments – environmental and social safeguard process

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
ESIA – Environmental and social impact assessment (category "A")	• Executive summary • Policy, legal, and administrative framework • Project description. Concisely describes the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power plants, water supply, housing, and raw material and product storage facilities). Indicates the need for any resettlement plan or indigenous people plan. Normally includes a map showing the project site and the project's area of influence. • Baseline data. Assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not	**Component 3.2**. Navigation Improvements works from Mandalay to Yangon	Some preliminary assessments have already been carried out.

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
	directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigation measures. The section indicates the accuracy, reliability, and sources of the data. • Environmental impacts including cumulative impacts. Predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention. • Assessment of social impacts and risks, including potential land acquisition or other involuntary resettlement impacts, screening for the presence of ethnic minorities and if presence is confirmed assessment of adverse impacts, free, prior and informed consultations and identification of measures to ensure culturally appropriate benefits and avoidance or mitigation of adverse impacts. • Analysis of alternatives.Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the "without project" situation—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the environmental impacts to the extent possible, and attaches economic values where feasible. States the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement. • Environmental and social management plan (ESMP), including resettlement plan and indigenous peoples plan if needed. • Appendixes o List of EA report preparers—individuals and organizations. o References—written materials both published and unpublished, used in study preparation. o Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs. o Tables presenting the relevant data referred to or summarized in the main text. o List of associated reports (e.g., resettlement plan or indigenous people plan). See ToRs for category A EIA in ESMF Annex 8		
ESMP - Environmental and Social Management Plan including	• Environmental and Social Impacts: identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous peoples or involuntary resettlement). Describes--with technical details--each mitigation measure, including the type of impact to which it	**Component 1.1** Construction or refurbishment of a National Water	See ESMF Annex 2 for sample ECOPs for small construction

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
ECoPs (category "B")	relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate. Estimates any potential environmental and social impacts of these measures; and provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project. • Monitoring: provides(a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation. • Capacity Development and Training: provides a specific description of institutional arrangements - which is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental and social safeguard management capability in the agencies responsible for implementation, most EMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes. • Implementation Schedule and Cost Estimates: For all three aspects (i.e. mitigation, monitoring, and capacity development), the EMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the EMP. These figures are also integrated into the total project cost tables. • Integration of EMP with Project: The Bank expects the plan to be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the EMP within the project so that the plan will receive funding and supervision along with the other components.	Resources Committee (NWRC) Secretariat and Hydro-Informatics Center headquarters facility; **Component 2.2** the Modernization of Observation Infrastructure, Data Management Systems and Forecasting; reconstruction and refurbishment of DMH offices and facilities; technical modernization of the observation network; **Component 2.3** - expansion of "end-to-end" early warning systems in several small river basins prone to floods and flash floods **Component 3.3.** establishing of Navigation Aids from Mandalay to Yangon focused on the Mandalay – Nyaung Oo section	works.
SESA – Strategic Environmental and Social Assessment (Category "A")	• OP 4.01 defines a SESA as an instrument that describes analytical and participatory approaches that aim to integrate environmental and social considerations into policies, plans and programs and evaluate their inter linkages with economic considerations • The Ayeyarwady is home to an extraordinary diversity of cultural communities as well as ecosystems, flora and fauna.	**Component 1.2.** Ayeyarwady Integrated River Basin Master Plan	ESMF Annex 3 includes ToR and a process for carrying out the SESA

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
	To understand the environmental and social dynamics of potential development options in the Ayeyarwady Basin, a SESA will be carried out. A SESA is a tool for including environmental considerations into policies, plans, and programs at the earliest stages of decision-making. SESA extends the application of environmental assessments (EAs) from projects to policies, programs, and plans. Ideally, SESAs are participatory, designed to give voice to those affected. This SESA will be undertaken early in project implementation to inform the preparation of the Master Plan (1.2.a), for example by highlighting areas of the basin that is particularly fragile from an environmental or social perspective. In addition, the information generated in the SESA process will be captured in the DSS to ensure its integration in future planning and monitoring activities. See ToRs for SESA in ESMF Annex 3		
Environmental and Social Management Framework ("A" or "B" investments)	• Recognizing that there are a variety of study types with varying degrees of environmental implications it is important that the prefeasibility, feasibility studies and other studies demonstrate an appropriate consideration for promoting environmental objectives, as well as minimizing related risks of future plans, policies and programs. To address environmental issues associated with the desired outcome of the prefeasibility and/or feasibility study, detailed screening and scoping procedures and criteria will be applied to each proposed project leading to detailed ToRs for ESIAs that will be included in project preparation.. • Assessment of social impacts and risks, including triggering of OP 4.10 and/or OP 4.12, for PFI subcomponent activities. Required instruments (e.g. resettlement plan and indigenous peoples plan) will be prepared.	**Component 1.3** -PFIs - Pre-feasibility studies, technical studies etc. **Component 1.2.** - Ayeyarwady Basin Groundwater Survey **Component 2.2** – Design and pilot operation of surface water quality monitoring system **Component 3.1** – Ayeyarwady River Navigation Strategy (Mandalay to Yangon)	The ESMF process for PFIs subcomponent is presented in Chapter 4. Resettlement Framework in Annex 6 Indigenous Peoples Framework in Annex 7

Instiutional Arrangements and Capacity Building for Esmf Implementation

ESMF Implementation Arrangements

The implementation of the Environmental and Social Management Framework, Environmental Management Plan, Resettlement Policy Framework and Indigenous Peoples Planning Framework will be the responsibility of the Borrower/DWIR and project designer (in the planning phase); the Executors of civil works and supervision works (in the construction phase), and the Manager(s) of Ayeyarwady River System (in the implementation phase).

Stakeholder involvement is an important element of the overall Environmental and Social Assessment process for the AIRBM Project, as stakeholder identification and analysis at an early stage of a project is critical in the assessment of interests, concerns, relationships, assumptions, their level of influence and the ways in which they affect project risks. Stakeholder identification and engagement commenced during project conceptualization and will continue throughout the ESIA and SESA development.

Effective implementation of the ESMF will require technical capacity in the human resources of implementing institutions as well as logistical facilitation. Implementers need to understand inherent social and environmental issues and values and be able to clearly identify them during project implementation.

Sufficient understanding of the mechanisms for implementing the ESMF will need to be provided to the various stakeholders implementing the AIRBM investments. This will be important to support each CMPU and appreciate their role in providing supervision, monitoring and evaluation including environmental and social reporting on the projects activities. The scheme including the project implementation arrangements is presented in Figure 1.

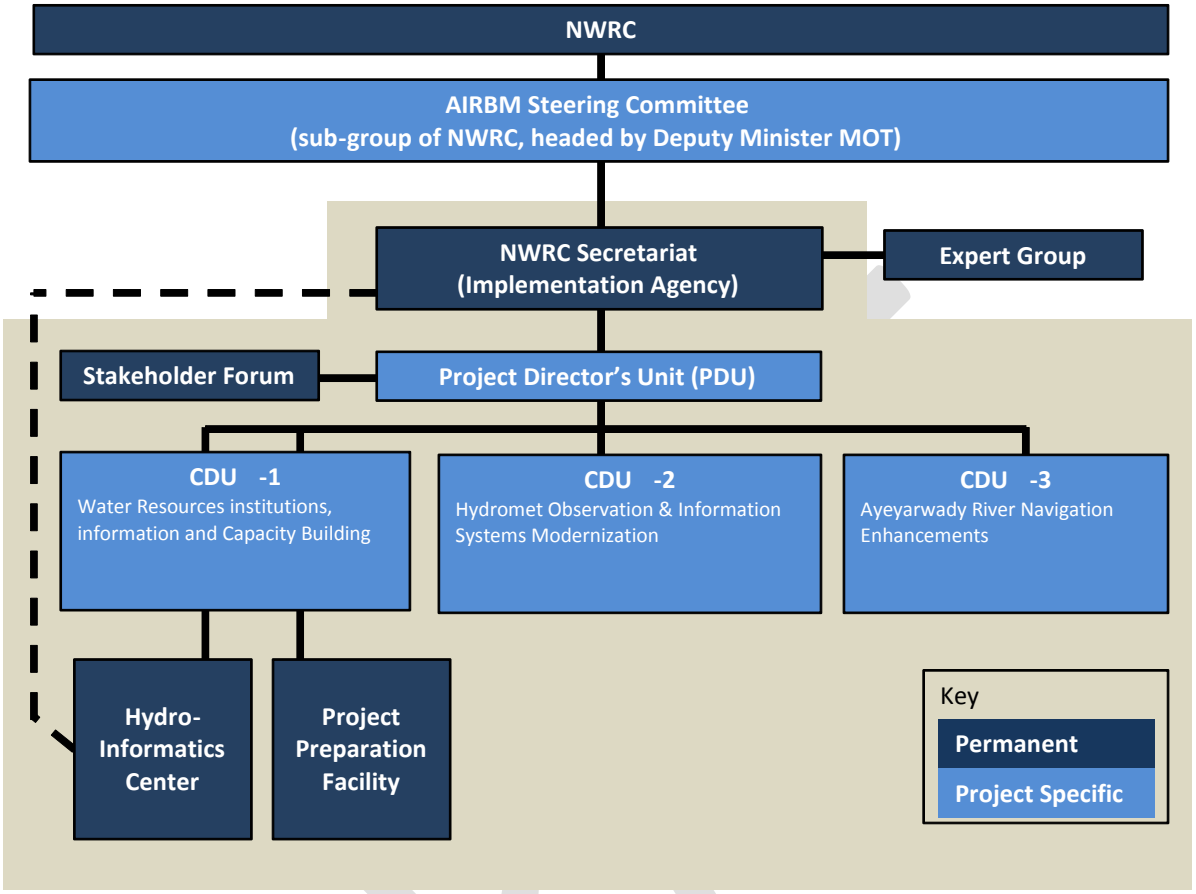
Capacity Building for ESMF Implementation

In order to ensure that there is adequate capacity to implement and monitor the ESMF provisions, environmental and social specialists/expertise will be appointed by PDU as part of each of the three CMPUs.

This expertise and capacity building will contribute to the objectives of the Project, and will include, among other specific tasks:

- Preparing, together with the implementing entities, annual work programs and budgets linked to ESMPs;
- Monitoring project progress as it relates to compliance with the ESMF guidelines, resolving implementation bottlenecks, and ensuring that overall project implementation proceeds smoothly;
- Collecting and managing information relevant to the project and accounts (i.e., environmental and social monitoring and audit reports);
- Ensuring that the implementing bodies are supported adequately and that they adhere to the principles of the project, specific to compliance with the ESMF guidelines; and
- Responsible for the organization and provision of training sessions, including a training plan and its modules, in environmental screening and environmental management and similarly training is also needed for involuntary resettlement and indigenous peoples safeguard policies for field supervision staff, and communityrepresentatives to familiarize them with the principles and procedures as set out in the ESMF (this could be applicable to PFI activities as well).

Figure 1. ***The AIRBM Project Implementation Arrangements***



Grey shaded area indicates the offices that are located together in the same office space.

Project Public Consultation Process

Public consultations are ongoing on the project. A first round of public consultations on the AIRBM was carried out by the DWIR May 16 and 19, 2014 in Mandalay and Yangon, respectively. Participants included CSOs, local NGOs, International NGOs, and the River Users' Association, researchers, private sector and the media. The main objectives of the consultations were to (a) provide background information on the proposed AIRBM, (b) obtain feedback on the scope of work of the draft Environmental and Social Management Framework (ESMF) Terms of Reference (TOR), (c) discuss ways to maximize benefits from the proposed Project, and (d) discuss ways to improve the Project consultation processes. The documents used for consultation includedthe Myanmar and English versions of Project Information Document (PID), Integrated Safeguard Data Sheet (ISDS), and the draft Environmental and Social Management Framework (ESMF) terms of reference.

Invitations were issued and documents were circulated and posted on the Directorate of Water Resources and Improvement of River Systems (DWIR) website www.DWIR.coffeecup.com, in both English and Myanmar language two weeks before the meetings. All the meetings were led by the AIRBM Project Director, U Sein Tun. The sessions were conducted in both English and Myanmar language with some simultaneous

translation provided. Overall, the consultations were well attended, informative and constructive. The participants highlighted important issues for attention, provided the team with valuable information, and confirmed the need and value of improving the country's capacity to better plan and manage the Ayeyarwady River.

Another round of public consultations will take place on the ESMF shortly.Therefore, this Executive Summary and the ESMF will be revised and updated with any information brought up and discussed by stakeholders that would improve the project design and the sustainable implementation of the project investments. Public consultations will continue and be expanded on specific activities as identified in ESMF during project implementation.

2 PROJECTINTRODUCTION

Project Overview

The proposed Myanmar Ayeyarwady Integrated River Basin Management (AIRBM) Project funded by the World Bank through a loan of US$ 100 million and implemented by the Directorate of Water Resources and Improvement of River Systems (DWIR) is designed as a multi-phased approach (Series of Projects) to strengthen integrated, climate resilient management and development of the Ayeyarwady River Basin and national water resources.The first phase aims at developing 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. Specific project locations for interventions linked to navigation enhancements and hydromet warning on the Ayeyarwady from Mandalay to Yangon will be selected and identified during project implementation once the relevant modeling and feasibility studies are developed.

The proposed first phase will also lay the groundwork needed to undertake large-scale infrastructure investments in possible second or third phase (yet to be determined). It will provide the government with the capacity to do basin-wide scenario analyses, to properly identify and assess the complex trade-offs that inevitably arise from large long-lived water infrastructure investments, and to follow economic, environmental and social 'good practices'. Therefore, the first phase will also support (pre-) feasibility, feasibility and other technical studies for priority infrastructure investments that will be primarily identified in the course of a basin planning framework exercise (master plan) for potential funding in subsequent phases. A Strategic Environmental and Social Assessment report will be prepared in parallel with the river basin master plan during project implementation in line with specific ToRs described in this document (Annex 3).

The proposed project investments are expected to be designed to have generally positive social and environmental benefitsand will trigger several World Bank policies such as *Environmental Assessment* (OP 4.01); *Natural Habitats* (OP 4.04); *Physical Cultural Resources* (OP 4.11), *Safety of Dams* (OP 4.37), *Involuntary Resettlement* (OP 4.12) and *Indigenous People* (OP 4.10).[1]The project has been classified as environmental category "A" in accordance to the World Bank policy OP/BP 4.01 on *Environmental Assessment*given the possible high environmental and social risk impacts affiliated with the project interventions and theoverall complex impact of the project focussed on an integrated river basin planning approach. However, specific infrastructure investments (once identified in terms oflocation, characterized for their technical complexity and assessed verusus their impact) may qualify for category "B" and/or category "A" impact subprojects.Other activities supported by the Project, such as the undertaking of prefeasibility, feasibility and other studies also need to review and assess potential environmental and social impacts of the activities and alternatives considered on a case-by-case basis.

[1]The project also triggers the policy on*Projects on International Waterways* (OP/BP 7.50). Up to 99.7% of the Ayeyarwady River flow isaccumulated within Myanmar, the river's downstream most riparian. It is envisaged that the planned investment will not adversely change the quality or quantity of water flows to the other riparians, and will not be adversely affected by the other riparians' possible water use. Thus, while the policy is triggered, the project qualifies for an exception to the riparian notificationrequirement under para. 7(a) of OP 7.50 and no notificationwill be required.

The proposed first phase project includes three inter-related investment components plus a contingency component to allow for rapid reallocation of funds if emergencies arise, as below: (i) Water Resource Management Institutions, Decision Support Systems& Capacity Building; (ii) Hydromet Observation and Information Systems Modernization; (iii) Ayeyarwady River Navigation Enhancements and (iv) Emergency Contingency Response. This document presents the Environmental and Social Management Framework for the AIRBMProject and will cover all first three components in line with Terms of References discussed with main stakeholders and approved by the World Bank group (Annex 1).A brief description of all project components is listed below:

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

Subcomponent 1.1. Institutional Development: This sub-component will support (a) construction or refurbishment of a NWRC Secretariat and Hydro-Informatics Center headquarters facility including provision of office furnishings and equipment, (b) establishment and delivery of the mandates of the newly created NWRC Secretariat, Hydro-Informatics Center and Expert Group, including institutional, legal and regulatory reviews and reforms, (c) creation of a stakeholder forum, communications and outreach, and (d) capacity building.

Subcomponent 1.2. Ayeyarwady Integrated River Basin Master Plan and Decision Support System: 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. A phased approach will be taken to plan integrated development of the Ayeyarwady River, based on sufficient understanding of opportunities and risks and guided by agreed sustainable development objectives. Activities include (a) development of the Ayeyarwady Master Plan, basin-wide diagnostic studies, a Decision Support System (DSS), and stakeholder consultations, (b) implementation of a groundwater survey, and (c) development of Basin-wide Strategic Environmental and Social Assessment.

Subcomponent 1.3. Preparation of Future Investments (PFI): The PFI activities will provide finance to support the preparation of priority projects identified in the Ayeyarwady Basin Master Plan (Sub-component 1.1a). To be eligible for funding, a project must be on the Government's approved list of ODA projects and be consistent with the Bank's engagement objectives in Myanmar. Under this sub-component, funds will be made available to prepare investments to international quality standards and in accordance with basin wide development objectives. The preparation funds will be available for the duration of the five-year AIRBM implementation period.

Subcomponent 1.4. Implementation Support: This sub-component will provide incremental running costs and consultant and advisory services for overall project management, financial management, procurement, safeguards and monitoring and evaluation.

Component 2: Hydromet Observation and Information Systems Modernization

Subcomponent 2.1. Institutional and Regulatory Strengthening, Capacity Building and Implementation Support of DMH: This sub-component will support (a) institutional strengthening of the DMH including the development of a robust legal and regulatory framework, (b) capacity building and training for DMH staff, and (c) technical assistance in DMH systems design, integration and operations as well as Component 2 management and monitoring.

Subcomponent 2.2. Modernization of Observation Infrastructure, Data Management Systems and Forecasting: This sub-component will support (a) technical upgrading of the hydro-meteorological observation network, (b) modernization operations centers, data management and communications/IT systems, engineering and calibration facilities, (c) improvements in numerical weather prediction systems and associated hydrological modeling frameworks and (d) reconstruction and/or refurbishment of DMH facilities.

Subcomponent 2.3. Enhancement of the Service Delivery System of DMH: This sub-component will support DMH in strengthening its service orientation in order to ensure project benefits are realized across the range of stakeholders. This will likely include (a) enhancement of Public Weather Services and Hydrological Services and improvement of service delivery to communities, (b) support for DRM operations including expansion of "end-to-end" early warning systems in small river basins with floods and flash floods, (c) development of an Agricultural and Climate Advisory Service (ACAS), and (d) the creation of a National Framework for Climate Services.

Component 3: Ayeyarwady River Navigation Enhancements

Subcomponent 3.1. Ayeyarwady River Navigation Strategy (Mandalay to Yangon): This sub-component will develop (a) a navigation strategy for the full navigable length of the river from Mandalay to Yangon. This strategy will (i) update the currently referenced 1988 feasibility study for the entire river taking into account potential inland port developments to promote multi-modal transport planning in the future, (ii) identify the scope of works for navigational improvement including training works, dredging, bank protection and navigation aids on the two most urgent bottleneck stretches of about 30km each, (iii) provide detailed design for pilot training works at two stretches, (iv) and recommend a maintenance plan for the river (linked with sub-component 3.2.c.) and (b) a fleet optimization study.

Subcomponent 3.2. Navigation Improvements (Mandalay to Yangon with a focus on the Mandalay - Nyaung Oo section): This sub-component will support navigation improvements to increase the least available draught during the low water season for both passenger and cargo vessels along the busiest stretch of the Ayeyarwady river (Mandalay to Nyaung Oo). Activities will include: (a) 1-dimensional and 2-dimensional river modeling to identify the scope of works for river navigation enhancements, (b) preparation of an EIA, including an EMP for the proposed enhancement works, (c) preparation of detailed design documents and construction supervision, and (d) construction of enhancement works. The scope of works will be focused on the Mandalay – Nyaung Oo stretch of the Ayeyarwady and will be expanded to some other critical stretches on the Nyaung Oo – Yangon reach.

Subcomponent 3.3. Navigation Aids (Mandalay to Yangon with night navigation focused on the Mandalay – Nyaung Oo section): This sub-component will support the purchase and installation of navigation aids such as lighting, signage, mapping and a strengthened river pilot system to enhance safety and facilitate efficient navigation along the Mandalay – Yangon section of the Ayeyarwady. In addition it will support investments, for example in lighting and signage, to enable night navigation on the Mandalay – Nyaung Oo section.

Subcomponent 3.4. Institutional Strengthening and Implementation Support: This component will support (a) Component 3 implementation and management, and (b) capacity building, training and communications and awareness raising activities on river improvements and new information, regulations and procedures.

Subcomponent 3.5, Design and piloting of surface water quality monitoring system: This component will (a) design the possible network of monitoring station for river water quality in the Ayeyarwady River Basin, (b) implement a few pilot stations and (c) include capacity building for water quality monitoring.

Component 4: Emergency Contingency Response

This 'zero component' (initially without any allocations of funding) will allow for the rapid reallocation of funds from other components to provide preparedness and rapid response support to disaster, emergency and/or catastrophic events, as needed. The funds flow and disbursement arrangements will be determined at the time that a contingency response is activated.

Environmental and Social Management Framework Scope and Objectives

The DWIR in consultation with main stakeholders including the World Bank Group developed this ESMF with the aim to assist the Government of Myanmar in integrating environmental and social concerns and mitigation measures in the AIRBM Project design. As the technical evaluation (e.g., proper site characterization, feasibility studies, detailed designs) and specific location of activities under the project will not be ready hence, their specific impacts will not be known by project appraisal, the preparation of an ESMF, including a Resettlement Policy Framework (RPF) and an Indigenous Peoples Planning Framework (IPPF), is required to describe the overall environmental and social safeguard procedures to be undertaking during project implementation.The purpose of this ESMF is to manage the potential adverse impacts by establishing a guide consisting of a set of methodologies, procedures and measures to facilitate adequate environmental and social management, including risk management of environmental and social impacts, directed to the group of works to be financed by the project and whose specific location is unknown and may change over project implementation.

The ESMF will provide guidance to all the sub-project sponsors and DWIR to ensure the environmental and social assessment and other safeguard requirements will be carried out in compliance with the national guidelines for conducting Environmental Impact Assessments (EIA), other environmental and social regulations and laws of Myanmar, and in accordance with the World Bank Environmental Assessment (EA) and social policies and procedures as specified in the World Bank Group safeguard policies. It will also be used as a reference document for assessing the potential environmental and social impacts of investment alternatives or strategies that are assessed. Finally, this ESMF will be an integrated part of the Project Implementation Manual (PIM) and is applicable to all linked investments financed for Ayeyerwady River Basin, regardless of their funding source or implementing agency.

This ESMF includes an**Indigenous Peoples Planning Framework (IPPF)** as required under the Operational Policies (OP) 4.10 of the World Bank. It describes procedures to identify if ethnic minorities are present in the "zone of influence" of investments that will be identified during implementation and executed directly under the project. If this is found to be the case, the IPPF describes the procedures for: (i) free, prior and

informed consultations with affected ethnic minorities leading to their broad community support to respective project activities; (ii) undertaking a social assessment (SA) to assess impacts and potential mitigation measure; and (iii)preparing anIndigenous Peoples Plan. As for the investments that will be identified under the Component 1.2 (and 1.3) for implementation in the future, a Strategic Environmental and Social Assessment (SESA) will be carried out. The SESA will assess broad issues and potential opportunities for, impacts on, and benefits to ethnic minorities concerning the integrated river basin master plan and the Preparation for Future Investments (PFI) subcomponent. For projects supported under the PFI, the IPPF, and ESMF, describes procedures and requirements for assessing potential project risks, impacts and benefits and preparing required safeguard plans, such as an Indigenous Peoples Plan (IPP) in line with OP 4.10.

A **Resettlement Policy Framework (RPF)** is also included in the ESMF in order to ensure that the acquisition of private land and the loss of income or private assets due to the implementation of investments directly funded by this project would be addressed in line with OP 4.12. Both permanent land acquisition and temporary occupation of private land are addressed in the ESMF and RPF. The SESA will assess broader risks and issues concerning impacts on private land and assets that may be affected due to investments to be identified under the Component 1 and included in the Ayeyawardy River Basin Management and Development Plan. For projects supported under the PFI subcomponent, the RPF, and ESMF, describes procedures and requirements for assessing potential impacts and preparing required safeguard plans, such as a Resettlement Action Plan in line with OP 4.12.

Stakeholder consultations are key aspects of and inputs to this ESMF. The framework approach allows also for screening and mitigation measures by the project owners and implementers to ensure investments are environmentally and socially sustainable and inclusive.

The proposed AIRBM Project will be located primarily within the Ayeyarwady River Basin (Figure 1). The basin accounts for over 60% of Myanmar's landmass, accommodates 70% of its population, and transports 40% of its commerce. The basin is home to an extraordinary range of ecosystems, and flora and fauna, including the charismatic and endangered species such as elephants, tigers, leopards, sea turtles, crocodiles, waterfowl and migratory birds, and the Irrawaddy dolphins. It is also home to diverse groups of ethnic minorities who are dependent on the river for livelihoods and subsistence. It is expected that many poor and vulnerable ethnic Burman, the majority population group, derive a significant livelihood from the Ayeyarwady River Basin and that they may be significantly affected by changes in the way it is managed.

Figure 2. ***Ayeyarwady Integrated River Basin Management***

Project geographical location

Project Implementation Arrangements, Capacity and Monitoring

Overall Project Implementation Arrangements

The AIRBMP has the following main institutions involved in its implementation:

The AIRBM Project Steering Committee (PSC): The NWRC will provide strategic guidance to the AIRBM and receive regular updates on project progress implementation. A Project Steering Committee (PSC) will be formed from the NWRC to review and advise on annual progress reports, work programs and key processes and outputs. The PSC will be chaired by the Deputy Vice Minister, Ministry of Transport, and will include three or four officials of the NWRC. The Secretary of NWRC/DG of DWIR will have financial oversight of the project.

NWRC Secretariat: The NWRC Secretariat/DWIR will be the primary implementing agency of the AIRBM, in addition to serving the NWRC. The NWRC Secretariat will be headed by the DG of DWIR who also serves as the Secretary of the NWRC. The Director General/Secretary's dual role should help to ensure coordination among different entities. Implementation arrangements are based on the evolving structure of the NWRC agencies but rooted in the existing organization and business processes of the DWIR. A capacity assessment of the implementing agency found that the implementing entities had little to no experience with the current WBG operational procedures. This is not surprising as the project represents the first World Bank reengagement effort in the water sector in Myanmar after over two decades of hiatus. To mitigate this risk, funds have been allocated under Component 1 for staff training and consultant support for all fiduciary aspects including safeguards.

Project Director's Unit (PDU): A full-time Project Director has been appointed, reporting directly to the Secretary of NWRC/DG of DWIR. The Project Director will be responsible for overall project management and technical coordination, as well as procurement and financial management, monitoring and evaluation, and compliance with environmental and social safeguards for all project components. The Project Director will be supported by additional government staff who will be appointed as Deputy Project Director(s) and/or Technical Coordinator(s). Financial management and procurement functions will be undertaken by existing staff of DWIR, with additional support from consultants to be hired under the project as needed. Project funds will be made available for the required equipment and incremental operating costs, as well as for hiring of consultants to support (i) financial management, (ii) procurement, (iii) technical coordination, (iv) social and environmental safeguards compliance, (v) monitoring and evaluation, (vi) training, communications and outreach, and (v) administrative/secretarial support. The PDU and CMU offices will be located together in Yangon, with satellite offices at DWIR and DMH in Nay Pyi Taw.

Component Units (Cs): The Project Director will of Component 1 2 and 3each ha a government appointed omponent. The Component will be supported by additional government staff who will be appointed as Technical Coordinator(s). Technical specialist consultants may also be hired under the CUs to support day-to-day activities including procurement efforts as needed by preparing technical specifications and assisting with the preparation of bidding documents, evaluation reports, acceptance of works, goods and services, and other technical aspects of procurement activities. Component 1 will be implemented under the NWRC Secretariat/DWIR, Component 2 by DMH, and Component 3 by DWIR. Members of the Expert Group may be assigned to help provide guidance as necessary.

Stakeholder Forum: A Stakeholder Forum will be created to support the PDU and ensure engagement of key stakeholders from the public sector, private sector, NGOs and CSOs throughout the life of the project. Input and feedback obtained from the Stakeholder Forum will be used to inform progress implementation of the AIRBM. The Stakeholder Forum will serve as a key platform to support the engagement of communities in project consultations, including consultations on the Basin development objectives for the Master Plan (Component 1).

The PDU (under the DWIR/NWRC Secretariat) will monitor progress against the agreed performance indicators, including the progress on the implementation of the Environmental and Social Management Framework (ESMF) and other safeguards tools and measures.

Project Monitoring Arrangements

The PDU will carry out a mid-term review to assess the status of the Project as measured against the performance indicators. Such a review would include an assessment of the (a) overall implementation progress of the Project, (b) results of M&E activities, (c) progress on procurement, disbursement and financial management, (d) progress on the implementation of the Environmental and Social Management Framework (ESMF) and other safeguards measures, (e) implementation arrangements, and (f) need for any project adjustments or reallocation of funds to improve performance.

The PDU will inform the Project team on the status of the environmental and social instruments and their correspondent action plans on a regular basis, at least once every 6 months in writing and before every disbrusement. The PDU will immediately inform the Project team of any circumstance or acurrance that could affect environmental and social project performance. Details on reporting and monitoring of environmennal and social management aspects during project implementation are provided later in the document.

Project Legal And Institutional Framework

Legal Framework relevant to project activities

The Government of Myanmar (GoM) is currently in the process of updating and developing its Environmental legal and institutional framework. However, numerous challenges remain. Myanmar Environmental policies and laws are mostly sectoral and are gradually transitioning from a nature conservation focus to environmental mainstreaming into the economic and social development of the country.

Sector specific laws - where developed - regulate only particular environmental aspects. Therefore, there are no laws that comprehensively regulate strategic aspects such as environmental impact assessment, waste management, involuntary resettlement, or particular measures for vulnerable groups such as ethnic minorities. Sectoral laws also produce overlapping of certain responsibilities (e.g. licensing for works on river ways fall under both Ministry of Transportation and Ministry of Environmental Conservation and Forestry). Myanmar is party to several international treaties, however the incorporation of those provisions into domestic law has been somewhat fragmented.

The legal and institutional gap also extends into administrative and procedural structures, and capacity and resources to enforce such provisions. There is also a need for better coordination between sectoral ministries and between union and local government. Some members of Myanmar Civil Society have argued that the lack of environmental protection legislation and enforcement capacity has left room for unabated ecological degradation.

Legal framework concerning ethnic groups

According to Chapter 1, clause 22 of the 2008 Constitution of Myanmar, the Union Government of Myanmar is committed to assisting in developing and improving the education, health, language, literature, arts, and culture of Myanmar's "national races." It is stated, that the "Union shall assist:

d) To develop language, literature, fine arts and culture of the National races;
e) To promote solidarity, mutual amity and respect and mutual assistance among the National races;
f) To promote socio-economic development including education, health, economy, transport and communication, [and] so forth, of less-developed National races."

The constitution provides equal rights to the various ethnic groups included in the national races and a number of laws and regulations aim to preserve their cultures and traditions. This includes the establishment

of the University for the Development of the National Races of the Union which was promulgated in 1991 to, among other things, preserve and understand the culture, customs and traditions of the national races of the Union, and strengthen the Union spirit in the national races of the Union while residing in a friendly atmosphere and pursuing education at the University.

Under the current government, free media is developing and ethnic parties and associations are politically active. Ethnic group organizations may also play a stronger role going forward through the current Government's decentralization efforts which would afford States and Regions to play a more prominent role in decision-making and implementation of various policies and programs.

Present Institutional Framework relevant to project activities

The Ministry of Environmental Conservation and Forestry (MOECAF) is the focal agency for overall environmental management in Myanmar. MOECAF´s predecessor, the Ministry of Forestry (MOF) created in 1992, had been gradually taking over the coordination of environmental protection in Myanmar. In 2005, the MOF absorbed the 1990 National Commission for Environmental Affairs (NCEA), the main environmental authority at the time, composed by nineteen heads of departments from various sectoral ministries. In 2012, NCEA became one of the six departments under the MOECAF, the Environmental Conservation Department, which main objectives include: (i) implementing National Environmental Policy, strategy, framework, planning and action plan for the integration of environmental consideration into in the national sustainable development process; (ii) managing natural resources conservation and sustainable utilization, the pollution control on water, air and land for the sustainable environment; and (iii) cooperating with other government organizations, civil society, private sectors and international organizations concerning with environmental management.

The GoM established in 2004 the National Environmental Conservation Committee (NECC) aimed at consolidating the environmental conservation activities at local and national levels. NECC, chaired by the Ministry of Forestry, was reformed in April 2011 to include 21 members from 19 ministries. NECC is divided in four sub-committees, one of which aims at addressing the environmental problems in rivers and wetland areas.

MOECAF priority actions include creating: (i) guidelines for environmental quality standards and pollution control; (ii) EIA procedures and guidelines as well as review and monitoring institutions; (iii) Environmental related Water Management Master Plans; (iv) Climate Change strategy and Emergency Risk Management Plan; (v) Green Economy Strategy for low carbon development; and (vi) Environmental Monitoring programs and inspections rules and regulations. The principal constrains identified by MOECAF include: (i) lack of information, (ii) lack of technical expertise, (iii) lack of financial resources and sustainability, (iv) lack of coordination both within and between government institutions and well as national and local entities, (v) challenges around public participation, and (vi) time limits.

The other important sectoral agencies in the area of environmental and water resources management are the Ministry of Transport (MoT), Ministry of Health (MOH), the Ministry of Agriculture and Irrigation (MOAI), the Ministry of Social Welfare, Relief and Resettlement (MSWRW), and the Ministry of Livestock, Fisheries and Rural Development (MOLFARD). In recent years, the MOH has been incorporating environmental health activities such as surveying for toxic and hazardous materials, monitoring occupational

health linked to environmental pollution, and improving clean water supply and sanitation. The Relief and Resettlement Department and the Myanmar Disaster Preparedness Agency, under MSWRR, are tasked with the implementation of the Myanmar Action Plan on Disaster Risk Reduction, which includes water monitoring, early warning systems and flood control activities, among others. The Water Resource Utilization Department and Irrigation Department under MOAI work in improving water supply for irrigation purposes. The Department of Fisheries under MOLFARD is responsible for not only fishery resource management but also fish diversity conservation in both fresh water and marine environments. Table 1 highlights various agencies with different tasks related to water resources management.Directorate of Water Resources and Improvement of River System (DWIR) under MoT is responsible for the health, sustainability and disaster reduction of all river systems in Myanmar as well as their economic productivity.

Table 4. Agencies with water resources management responsibilities

Agency	Water Resources Management Responsibilities
Irrigation Department	Responsible for: (i) agriculture water supply for irrigation Development, (ii) to some extent, urban water supply, and (iii) preventing of saline water intrusion, (iii) water level recording and discharge measurement, especially for irrigation dams and canals
Meteorology and Hydrology Department	Responsible for (i) weather/water monitoring stations, sediment discharge stations on main rivers and big tributaries, (ii) water quality stations on Ayeyarwady delta for measuring discharge and sediment flows and monitoring salt intrusion
Forest Department	Responsible for rehabilitation and conservation of forests and watersheds and maintaining the stability of Environment in order to develop the social and economic conditions of the nation, especially in rural areas
Water Resource Utilization Department (WRUD) under MOAI	Responsible for pumping up water from rivers for irrigation purposes.
Department of Water Resources and Improvement of River Systems (DWIR)	Responsible for improving water ways, canals and river systems for a variety of issues including navigation, sedimentation and water quality issues, river system health, sustainability, disaster risk reduction and economic productivity
Municipal bodies like Yangon, Nay Pyi Taw, Mandalay City Development Committees (YCDC, MCDC) and Township Development Committees (TDC)	Gradually taking over the responsibility for urban water supply.
Department of Health	Partially responsible for some aspects related to rural water supply and sanitation linked to health facilities' operation.

World Bank Group Safeguard Policies

The proposed project investments are expected to be designed to have generally positive social and environmental benefits and will trigger several World Bank policies such as *Environmental Assessment* (OP 4.01); *Natural Habitats* (OP 4.04); *Physical Cultural Resources* (OP 4.11), *Safety of Dams (*OP 4.37*), Involuntary Resettlement* (OP 4.12) and *Indigenous Peoples* (OP 4.10). Detailed information on these policies applicable to the project is presented in Annex 1.

The project has been classified as environmental category "A" in accordance to the World Bank policy OP/BP 4.01 on *Environmental Assessment* given the possible high environmental and social risk impacts affiliated with the project interventions and the overall complex impact of the project focused on an integrated river basin planning approach. However, specific infrastructure investments (once identified in terms of location, characterized for their technical complexity and assessed in view of their impact) may qualify for category "B" and/or category "A" impact subprojects. Other activities supported by the project, such as the undertaking of prefeasibility, feasibility and other studies also need to review and assess potential environmental and social impacts of the activities and alternatives considered on a case-by-case basis.

Currently, there is no environmental and social impact assessment framework in Myanmar. The GoM drafted in 2001 a set of Environmental Impact Assessment rules, but they have yet to be enacted. The 2012 Conservation Law provides a general mandate to MOECAF to produce an ESIA system but specific ESIA procedures and guidelines are yet to be endorsed. EIAs are conducted, however, on an ad hoc basis for projects funded by international organizations and some foreign corporations. The EIA challenges also expand into the institutional framework with a MOECAF with little technical and financial resources to review and monitor environmental and social performance of investment projects on the ground. Table 2 summarizes the main aspects of the draft EIA rules vis a vis the OP 4.01 procedures. Myanmar does not have a unitary law or legislation with regard to land acquisition and compensation or on ethnic minorities.

Table 5. National Draft EIA rules versus OP/BP 4.01 EIA requirements

Issue	Draft EIA Rules	OP 4.01
Triggers	Projects with significant environmental impact	All projects financed by the World Bank. EA process depth will depend on the risk and impacts associated with the Project.
Responsibilities	Project proponent leads the EA process	Borrower leads the EA process

Public participation	MOECAF shall arrange as it deems necessary for Public Participation. In the process of approving the EIA report, MOECAF shall take into account suggestions from project affected people and civil society. However, the rules do not specify the process of receiving feedback or incorporating it into the proposed project.	For all Category A and B projects, during the EA process, the borrower consults project-affected groups and local nongovernmental organizations (NGOs) about the project's environmental and social aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them.
Disclosure	The Project proponent shall disclose all relevant project information to MOECAF. No further requirement of disclosure to project affected people or civil society is made in the EIA rules.	The borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted. For a Category A project, the borrower provides for the initial consultation a summary of the proposed project's objectives, description, and potential impacts; for consultation after the draft EA report is prepared, the borrower provides a summary of the EA's conclusions. In addition, for a Category A project, the borrower makes the draft EA report available at a public place accessible to project-affected groups and local NGOs Any separate Category B report is made available to project-affected groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of Category A reports, and of any Category B report, are prerequisites to Bank appraisal of these projects. Once the borrower officially transmits the Category A EA report to the Bank, the Bank distributes the summary (in English) to the executive directors (EDs) and makes the report available through its InfoShop. Once the borrower officially transmits any separate Category B EA report to the Bank, the Bank makes it available through its InfoShop. If the borrower objects to the Bank's releasing an EA report through the World Bank InfoShop, Bank staff (a) do not continue processing an IDA project, or (b) for an IBRD project, submit the issue of further processing to the EDs.

Screening	Lists projects that require environmental examination including land use change, exploitation of resources for introduction of new species. MOECAF shall determine the format and timing of the reports. MOECAF will determine the type of environmental assessment required based on the environmental examination	The Bank screens all projects and classifies them into one of four categories (Category A, B, C, and FI), depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts
EA Content	MOECAF determines the content of the EA report, which primarily includes assessment of direct impacts linked to project and description of mitigation measures (environment mitigation plan).	The EA needs to include assessment of project alternatives; cumulative impacts; specific mitigation measures and monitoring activities.
Monitoring	MOECAF shall monitor project performance in accordance to the Environmental Management Plan (EMP). The Project proponent shall comply with the EMP and the terms included in the license throughout the lifetime of a project. If found in non-compliance, MOECAF shall impose penalties or suspend project construction or operation.	During project implementation, the borrower reports on (a) compliance with measures agreed with the Bank on the basis of the findings and results of the EA, including implementation of any EMP, as set out in the project documents; (b) the status of mitigatory measures; and (c) the findings of monitoring programs. The Bank bases supervision of the project's environmental aspects on the findings and recommendations of the EA, including measures set out in the legal agreements, any EMP, and other project documents

In addition, the AIRBM project investments will follow the WBG Environmental, Health, and Safety (EHS) Guidelines, which are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each investment on the basis of the results of an environmental assessment in which site-specific variables, such as local country context, assimilative capacity of the environment, and other sub-project factors, are taken into account. The assessment of the range of pollution prevention and control techniques available to an investment may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity, as well as varying levels of financial and technical feasibility. Gap analysis between national legislation and the Bank's social safeguards policies OP 4.10 and 4.12 is provided in the RPF and IPPF of the ESMF.

3 POTENTIAL PROJECT IMPACTS FROM RIVER WORKS

Adverse and positive impact analysis of the Project at the level of framework can be considered using only the limited available general information on the environmental and social situation at the project area of influence and the typical known impacts of suggested project activities. Site specific impacts (during pre-/construction stages as well as operation stage) will be analyzed during the detail design and included in the relevant ESIA and EMPs.

It is expected that dredging process and river training works can influence the water regime in rivers and swamp areas in the wider Ayeyarwady river catchment area. This is not an instantaneous impact but a slow process that will develop slowly over the years after completion of works. As a result of reduced water flow in the lateral branches and minor flooding, the changes in groundwater levels can be expected. This can potentially negatively affect the functioning of wetlands, which are important refuges, hatching grounds and habitats of plants, birds, fish, amphibians and other animals. Therefore, the full ESIA prepared in parallel with the detail design will have to include the results of the hydraulic modeling, including ecological flows, and must be engaged in the selection of the feasible alternatives with least environmental impact based on the modeling results.

Improved navigation transport could produce and increased pressure over resources and land use change just as an improved road does. The full ESIA will consider land use change modeling and provide mitigation initiatives.

The ESIA will also produce mapping of the development initiatives in the Project area of influence in order to enhance development results and avoid duplications (e.g. as part of the Action Plan on Disaster Risk Reduction, the Disaster Preparedness Agency is leading enhanced flood monitoring and forecasting initiatives in townships and flood preparedness plans in the Ayeyarwady basin) as well as to assess any cumulative impacts at the project sites.

4 PROPOSED FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL ASSESSMENT PROCESS, GUIDELINES AND PROCEDURES RELATED TO AIRBM PROJECT INVESTMENTS

The proposed approach for addressing environmental and social issues in the project will include preparation of the following safeguard instruments:

- Environmental and Social Management Framework (ESMF);
- Environmental Impact Assessments (EIAs) and/or Environmental and Social Management Plans (ESMPs), and other safeguard instruments as required (involuntary resettlement plans, indigenous peoples plans, etc) will be prepared for all investments/subprojects that are identified or designed during project implementation and prepared under the PFI subcomponent;,
- Strategic Environmental and Social Assessment (SESA) will be carried out for the basin Master Plan.

ESMF

- The ESMF will be applied to all infrastructure projects that are identified during project implementation and those financed by the PFI subcomponent. The Preparation of Future Investments activity (PFI) will primarily finance feasibility studies, scoping and prioritization of project concepts, surveys and tests, strategic options studies, policy work, and other studies for future water resources infrastructure investments planned by Borrower in the subsequent project phase (i.e., in irrigation, hydropower, navigation, delta management, municipal water supply or wastewater management systems).

The ESMF includes:

- Screening and scoping criteria for individual sub-projects that are identified during project implementation or to be included in the PFIs activities.
- Guidance on project Categorization (A or B) and the definition of the required safeguard work
- A Resettlement Planning Framework for land acquisition and resettlement
- An Indigenous Peoples Planning Framework
- Guidance on:
    - Terms of Reference for EIA and ESMP for Category A projects
    - Management of environmental impacts for small construction projects
    - Terms of Reference for SESA

EIA/ESMPs

- An EIA and/or ESMP will be prepared for the civil works related to (i) infrastructure navigation works on selected river sections, for which feasibility studies and designs need to be prepared or revised; (ii) construction or rehabilitation of buildings/offices linked to management and operation of water quality and weather forecasting and DMH operation; (iii) installation of river water monitoring stations and other relevant weather and hydrologic observing network stations; and (iv) installation of navigation aids along the selected river sections.

SESA

- The SESA will be carried out as part of technical assistance activities related to (i) preparation of the Ayeyarwady Integrated River Basin Master Plan and its Strategic Assessment; (ii) technical background studies such as the Ayeyarwady basin groundwater survey; fleet optimization study; and Ayeyarwady river navigation strategy.

Each of the AIRBM project investments, depending on its typology, will include an assessment of the potential social and environmental impacts and a specific Environmental Assessment (EA) tool consistent with Myanmar laws and standards (as applicable) and World Bank Group requirements.

For example, in the case of component 3, the full system of dykes and river bank protection works existing on the river spans about 1,200 km of navigable river channel.The project interventionswill first focus on immediate works on a river section (Mandalay-Nyaung Oo) that is about 180 km (15% of the navigable river). Within this key stretch, the project will be designing works (3.2d)and the affiliated construction within two 15 km stretches; while further the project will finance additional works downstream in a second set of works up to Yangon (3.2f) identifiedbased on the modeling to be undertaken in the respective river sections during implementation. For these type of investments, a site specific ESIA (category "A" level) and affiliated EMP will be prepared at the level of feasibiliy study/detailed design before respective works may commence.

Furthermore, detailed Environmental and Social Management Plans (ESMPs) will be developed as the only relevant EA tool to support activities such as: (i) the construction or refurbishment of a National Water Resources Committee (NWRC) Secretariat and Hydro-Informatics Center headquarters facility, under Component 1.1, (ii) the Modernization of Observation Infrastructure, Data Management Systems and Forecasting under Component 2.2, and (iii) establishing of Navigation Aids from Mandalay to Yangon with night navigation focused on the Mandalay – Nyaung Oo section, under Component 3.3. If needed, the ESMPs will include stand-alone Resettlement Action Plans and Indigenous Peoples Plans.

Finally, the AIRBM project activities included as (**B**) above will support, among other TA activities, the preparation of feasibility studies for investments (i.e., in irrigation, hydropower, navigation, delta management, municipal water supply or wastewater management systems) that could be financed in future phases of the proposed series of projects (sub-component 1.3). The Terms of References (TORs) of these studies will require consideration of environmental and social safeguards provisions in line with relevant World Bank operational policies and performancedsas well as local laws and regulations. Annex 1 sumamrizes the applicable natonal environmental and social regulations amd World Bank safeguard policies.

In case the river basin planning process/master plan identifies priority investments for which feasibility studies and/or designs will be supported by the project, ESIAs will also be prepared for such investments according to this ESMF. Any advisory support for prefeasibility and/or feasibility studies or other planning studies with possible environmental implications should be assessed (ESMFs level) and the requirements clearly spelled out in the Terms-of-Reference (ToRs) associated with each activity. Also, a review of potential downstream effects or rapid risk assessment should be prepared and the associated costs of any environmental and social work that would have to be carried-out in addition to, or part of, the proposed study should be assessed prior to starting it. The studies will also include the principles and procedures for planning and implementation to comply with Bank and national policies.

Table 6 summarizes the EA instruments and their brief content required to be prepared for the specific AIRBM project investments listed above:

Table 6. AIRBM Project proposed investments – environmental and social safeguard process

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
ESIA – Environmental and social impact assessment (category "A")	• Executive summary • Policy, legal, and administrative framework • Project description. Concisely describes the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power plants, water supply, housing, and raw material and product storage facilities). Indicates the need for any resettlement plan or indigenous people plan. Normally includes a map showing the project site and the project's area of influence. • Baseline data. Assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and	**Component 3.2**. Navigation Improvements works from Mandalay to Yangon	Some preliminary assessments have already been carried out.

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
	proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigation measures. The section indicates the accuracy, reliability, and sources of the data. • Environmental impacts including cumulative impacts. Predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention. • Assessment of social impacts and risks, including potential land acquisition or other involuntary resettlement impacts, screening for the presence of ethnic minorities and if presence is confirmed assessment of adverse impacts, free, prior and informed consultations and identification of measures to ensure culturally appropriate benefits and avoidance or mitigation of adverse impacts. • Analysis of alternatives.Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the "without project" situation—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the environmental impacts to the extent possible, and attaches economic values where feasible. States the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement. • Environmental and social management plan (ESMP), including resettlement plan and indigenous peoples plan if needed. • Appendixes o List of EA report preparers—individuals and organizations. o References—written materials both published and unpublished, used in study preparation. o Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs. o Tables presenting the relevant data referred to or summarized in the main text. o List of associated reports (e.g., resettlement plan or indigenous people plan). See ToRs for category A EIA in ESMF Annex 8		
ESMP - Environmental and Social Management	• Environmental and Social Impacts: identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous peoples or involuntary resettlement). Describes--with technical details--each	**Component 1.1** Construction or refurbishment of a National	See ESMF Annex 2 for sample ECOPs for small

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
Plan including ECoPs (category "B")	mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate. Estimates any potential environmental and social impacts of these measures; and provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project. • Monitoring: provides(a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation. • Capacity Development and Training: provides a specific description of institutional arrangements - which is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental and social safeguard management capability in the agencies responsible for implementation, most EMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes. • Implementation Schedule and Cost Estimates: For all three aspects (i.e. mitigation, monitoring, and capacity development), the EMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the EMP. These figures are also integrated into the total project cost tables. • Integration of EMP with Project: The Bank expects the plan to be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the EMP within the project so that the plan will receive funding and supervision along with the other components.	Water Resources Committee (NWRC) Secretariat and Hydro-Informatics Center headquarters facility; **Component 2.2** the Modernization of Observation Infrastructure, Data Management Systems and Forecasting; reconstruction and refurbishment of DMH offices and facilities; technical modernization of the observation network; **Component 2.3** - expansion of "end-to-end" early warning systems in several small river basins prone to floods and flash floods **Component 3.3.** establishing of Navigation Aids from Mandalay to Yangon focused on the Mandalay – Nyaung Oo section	construction works.
SESA – Strategic Environmental and Social Assessment (Category "A")	• OP 4.01 defines a SESA as an instrument that describes analytical and participatory approaches that aim to integrate environmental and social considerations into policies, plans and programs and evaluate their inter linkages with economic considerations • The Ayeyarwady is home to an extraordinary diversity of	**Component 1.2.** Ayeyarwady Integrated River Basin Master Plan	ESMF Annex 3 includes ToR and a process for carrying out the SESA

EA Instrument and category	Content according to the OP/BP 4.01 and relevant safeguard policies	AIRBMP Component	Comment
	cultural communities as well as ecosystems, flora and fauna. To understand the environmental and social dynamics of potential development options in the Ayeyarwady Basin, a SESA will be carried out. A SESA is a tool for including environmental considerations into policies, plans, and programs at the earliest stages of decision-making. SESA extends the application of environmental assessments (EAs) from projects to policies, programs, and plans. Ideally, SESAs are participatory, designed to give voice to those affected. This SESA will be undertaken early in project implementation to inform the preparation of the Master Plan (1.2.a), for example by highlighting areas of the basin that is particularly fragile from an environmental or social perspective. In addition, the information generated in the SESA process will be captured in the DSS to ensure its integration in future planning and monitoring activities. See ToRs for SESA in ESMF Annex 3		
Environmental and Social Management Framework ("A" or "B" investments)	• Recognizing that there are a variety of study types with varying degrees of environmental implications it is important that the prefeasibility, feasibility studies and other studies demonstrate an appropriate consideration for promoting environmental objectives, as well as minimizing related risks of future plans, policies and programs. To address environmental issues associated with the desired outcome of the prefeasibility and/or feasibility study, detailed screening and scoping procedures and criteria will be applied to each proposed project leading to detailed ToRs for ESIAs that will be included in project preparation.. • Assessment of social impacts and risks, including triggering of OP 4.10 and/or OP 4.12, for PFI subcomponent activities. Required instruments (e.g. resettlement plan and indigenous peoples plan) will be prepared.	**Component 1.3** -PFIs - Pre-feasibility studies, technical studies etc. **Component 1.2.** - Ayeyarwady Basin Groundwater Survey **Component 2.2** – Design and pilot operation of surface water quality monitoring system **Component 3.1** – Ayeyarwady River Navigation Strategy (Mandalay to Yangon)	The ESMF process for PFIs subcomponent is presented in Chapter 4. Resettlement Framework in Annex 6 Indigenous Peoples Framework in Annex 7

Overall, the set of guiding principles for developing the EA instruments relevant to the AIRBM project should encompass the following concepts:

(i) *Integrate environmental and social objectives into the prefeasibility/feasibility study process*. These studies often provide a significant opportunity to integrate environmental and social objectives as an integral part of the planning process. As such, ToRs to incorporate environmental and social objectives into the studies, plans and policy formulation should be included within the scope of work;

(ii) *Promote transparency through stakeholder participation and public information disclosure.* Since many studies promote improved planning, this provides an excellent opportunity to promote broad stakeholder

engagement and participation. As appropriate, strategic planning initiatives this could include focus groups, citizen consultations, expert panels, public hearings, etc. at all phases of the studies;

(iii) *Promote use of innovative environmental and social assessments (e.g. SESA)*. Studies supporting policies, plans and programs are ideally suited to apply new and innovative techniques of strategic environmental analysis. Studies can provide an ideal vehicle for this longer term analytical approach and there currently exists a strong interest and demand among counterpart agencies and line ministries;

(iv) *Promote systematic and comprehensive analysis of alternatives*. In the case of studies which support the development of specific investment plans, such as for large scale infrastructure, studies should be used to meaningfully explore alternatives at various levels, including assessing the relative impacts of those alternatives. Such alternatives analysis could be explicit in an SESA or could be carried out as part of other master planning or strategic studies.

(v) *Promote environmental and social capacity building and institutional strengthening*. Studies can provide an opportunity to build counterpart capacity for integrating environmental and social concerns into their work. This could be done through direct support to line agencies. Support for capacity building could come in the form of policy strengthening, training, and support for operations, technical standards setting, monitoring and reporting among others.

5 ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

Projects that are identified during project implementation or proposed to the PFI subcomponent will be subject to this framework in order to identify potential environmental and social issues and guarantee that all required safeguard instruments are included in the ToR for the feasibility and/or design studies.

The PFI subcomponent could finance projects in the folowing sectors:

- irrrigation,
- hydropower,
- navigation, delta management,
- municipal water supply or
- wastewater management systems

SAFEGUARD PROCEDURES

Step 1: Screening and Scoping

Screening is perhaps the most important step in safeguard management tool for the PFI subcomponent. Screening will be based on an assessment of project components and site sensitivity. Subproject screening is the responsibility of the PDU. The objective of screening is to eliminate subprojects that are ineligible for financing under the project and identify the potential safeguard risks.Subproject screening is done at the start of the development phase

Step 2: Preparation of Terms of Reference

Based on the screening, Terms of reference for required safeguard instrument will be included in feasibility and/or design studies.Safeguard instruments could include:

- Full Environmental Impact Assessment:
- Environmental and Social Management Plans.
- Resettlement Action Plans

- Indigenous Peoples Plan
- Physical Cultural Resources Plan.

Terms of reference are either carried out independently or included in overall terms of reference for feasibility studies and/or design. EIAs cannot be carried out by engineers that do the design for the same investment according to World Bank requirements.

Step 3 Site Sensitivity

The required safeguard work will be commensurate with potential environmental and social impacts. The following matrix in **Table 7** should be applied for identifying potential issues.

Table 7. : Site Sensitivity and safeguard policies

Safeguard Policy or Site Characteristic	SITE SENSITIVITY		
	Low Sensitivity	**Medium Sensitivity**	**High Sensitivity**
Natural Habitats (OP 4.04)	No natural habitats present of any kind	No critical natural habitats; other natural habitats occur	Critical natural habitats present
Resettlement (OP 4.12)	No new sites are required. Project site is already acquired and is free of squatter; legal tenure is well- defined.	Project site has tenant renters. Yet to be acquired.	Project site will entail resettlement of vulnerable
Indigenous Peoples (OP 4.10)	No indigenous population	Dispersed and mixed indigenous populations; mainstream (highly acculturated) indigenous populations	Indigenous territories and reserves; vulnerable indigenous populations
Natural hazards vulnerability; floods, soil stability/erosion	Flat terrain; no potential stability/erosion problems; no known volcanic/seismic/flood risks	Medium slopes; some erosion potential. Medium risksto volcanic/seismic/flood/ hurricanes	Mountainous terrain; steep slopes; unstable soils; high erosion potential; volcanic, seismic or flood risks
Physical Cultural Resources (OP 4.11)	No known or suspected cultural heritage sites	Suspected cultural heritage sites; known heritage sites in broader area of influence	Known heritage sites in project area

Step 4 Definition of (sub)-project Category

Projects will be Categorized as A or B, according to Bank policies. Project Category will be decided based on the scale of project components and the sensiticity of the site. Annex 5 provides guidance on the definition of project category based on project typology and site sensitivity.

Step 5 Definition of required Environmental and Social Safeguard Work

Based on the screening and scoping exercise and the project Category the required environmental and social work that needs to be included in project feasibility and design needs to be determined**. Table 5**provides a list of required safeguard dcuments for various type of subprojects and activities financed under the AIRBM project.

Table 8. : Definition of required subprojects' safeguard documents work

Type of Project	**Required Safeguard Instruments**
Projects with major construction works, sensitive sites, multi-safeguard issues.	Prepare Full ESIA and EMP (Guidance in Annex 5) Specific reports to address issues identified in the screening formats might be necessary. Resettlement Action Plans (Guidance in Annex 6) Indigenous Peoples (Guidance in Annex 7) Physical Cultural Resources
Projects with minor reconstruction or rehabilitation	If Category B: Use site screening criteria to prepare specific assessments and prepare ESMPs for construction. (Guidance in Annex 2) Confirm need for land acquisition and/or resettlement. Abbreviated Resettlement Plans might be sufficient (Guidance in Annex 6). If projcts are to be built in areas with indigenous peoples undertake a social assessment and consultation process and prepare an Indigenous Peoples Plan (Guidance in Annex 7)

6 INSTITUTIONAL CAPACITY AND CAPACITY BUILDING FOR ESMF IMPLEMENTATION AND MONITORING

The implementation of Environmental and Social Management Framework, Environmental Management Plan and Resettlement Policy Framework will be responsibility of the Borrower/DWIR and project designer (in the planning phase); the Executors of civil works and supervision works (in the construction phase), and the Manager(s) of Ayeyerwady River System (in the implementation phase).

Stakeholder involvement is an important element of the overall Environmental and Social Assessment process for the AIRBM Project, as stakeholder identification and analysis at an early stage of a project is critical in the assessment of interests, concerns, relationships, assumptions, their level of influence and the ways in which they affect project risks.

Stakeholder identification and engagement commenced during project conceptualization and will continue throughout the ESIA development.

Effective implementation of this ESMF will require technical capacity in the human resources of implementing institutions as well as logistical facilitation. Implementers need to understand inherent social and environmental issues and values and be able to clearly identify them during project implementation.

Sufficient understanding of the mechanisms for implementing the ESMF will need to be provided to the various stakeholders implementing the AIRBM investments. This will be important to support the CDUs and appreciate their role in providing supervision, monitoring and evaluation including environmental reporting on the projects activities.

The scheme including the project implementation arrangements is included in Figure 2.

In order to ensure that there is adequate capacity to implement and monitor the performance of this ESMF and its provisions, it is advised that environmental and social specialists/expertise be appointed to PDU as part of each of the three CDUs.

This expertise will contribute to the objectives of the Project, and will include, among other specific tasks:

- Preparing, together with the implementing entities, of annual work programs and budgets linked to EMPs;
- Monitoring project progress as it relates to compliance with the ESMF guidelines, resolving implementation bottlenecks, and ensuring that overall project implementation proceeds smoothly;
- Collecting and managing information relevant to the project and accounts (i.e., environmental and social monitoring and audit reports);
- Ensuring that the implementing bodies are supported adequately and that they adhere to the principles of the project, specific to compliance with the ESMF guidelines; and
- Responsible for the organization and provision of training sessions, including a training plan and its modules, in environmental screening and environmental management and similarly training is also needed in land acquisition and involuntary resettlement safeguard policies for field supervision staff, and communities representatives to familiarize them with the principles and procedures as set out in the ESMF (this could be applicable to PFI activities as well).

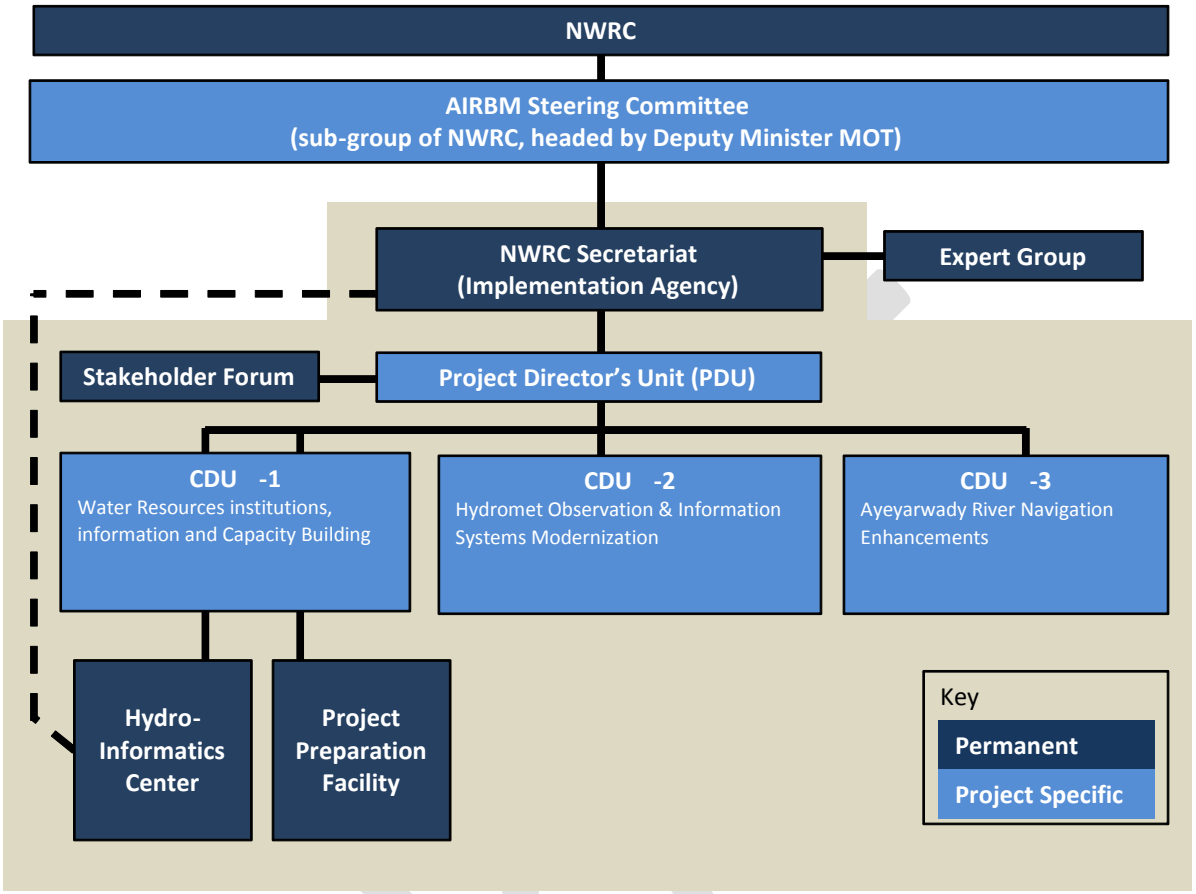
Capacity building and Training Plan

The Environmental and Social specialists (if selected nationally) may need some specific training in the policy areas of environmental assessment as applied by the World Bank. The World Bank will assist to identify appropriate external training opportunities for the environmental and social specialists. Suitable national training should also be part of the capacity building of these specialists.

A two-day training workshop on implementation of the ESMF should take place as part of the project launch workshop. This training will ensure that the specialists are able to manage and monitor the environmental and social aspects of the AIRBM activities. The workshop should be conducted by an external consultant with knowledge on the environmental management requirements for Myanmar, including substantial knowledge on World Bank and IFC safeguard policies and requirements (e.g., OHS standards). Other relevant staff members of the CMPUs can be included in the training in order to widen familiarization of the ESMF.

As the investment and their locations have not yet been identified, a lump sum amount has been designated to address the potential number of EIAs and EMPs which will have to be prepared as well as monitoring requirements for the ESMF. This is an estimate (Table 9) and will need to be updated once the project design has been finalized.

Figure 3. ***The AIRBM project implementation arrangements***



Grey shaded area indicates the offices that are located together in the same office space.

Table 9. Proposed budgets for implementation of the ESMF

Budget for implementation of each EIAs and EMPs and monitoring and reporting	Lump sum	$100,000
1-day training for highlighting potential environmental impacts and mitigation measures to everyone involved	$2,000 per training	$2,000

Monitoring and Reporting

During the usual investment supervision activities, the CMPUs will check with local environmental authorities to determine if the project implementation is meeting all specified ESMF, ESIAs and EMP requirements. They will also perform supervision site visits to the various stages of investments construction to confirm the EMPs are being adequately implemented. A supervision report covering the environmental management issues should be included in the overall site visit report. The designated environmental and social specialists will prepare quarterly and annual reports on the key steps, outputs and results of the environmental management actions taken for all investments throughout the project cycle.

As part of the normal reporting, the PDU will request each CMPU to include a section on environmental performance with respect to their respective investments, including any critical mitigating actions taken and any significant environmental incidents. The PDU will include an environmental section in every report prepared for the World Bank. As appropriate, the section will discuss details of any environmental issues that have occurred during the reporting period and the actions taken to resolve them.

Problems and issues arising during the use of the ESMF will be flagged and brought to the attention of Managers and for their action. Copies of the quarterly and annual environmental and social monitoring reports will also be sent to the World Bank. The Bank will also review these reports during the periodic supervision missions.

7 PROJECT CONSULTATIONS PROCESS

Public consultations

According to the OP 4.01, the environmental assessment process should be available to the public, thus the borrower should consult all the involved parts on project safeguard documents at least twice (for category A projects) during the process. The first Public Consultation (PC) should provide a summary of the proposed project´s objectives, and a description and potential impacts. During the second public consultation the borrower will provide a summary of the EA conclusions.

Public consultations are ongoing on the project. A first round of public consultations was carried out by the DWIR May 16 and 19, 2014 in Mandalay and Yangon, respectively. Participants included CSOs, local NGOs, International NGOs, and the River Users' Association, researchers, private sector and the media. The main objectives of the consultations were to (a) provide background information on the proposed AIRBM, (b) obtain feedback on the scope of work of the draft Environmental and Social Management Framework (ESMF) Terms of Reference (TOR), (c) discuss ways to maximize benefits from the proposed Project, and (d) discuss ways to improve the Project consultation processes. The documents used for consultation includedthe Myanmar and English versions of Project Information Document (PID), Integrated Safeguard Data Sheet (ISDS), and the draft Environmental and Social Management Framework (ESMF) terms of reference.

Invitations were issued and documents were circulated and posted on the Directorate of Water Resources and Improvement of River Systems (DWIR) website www.DWIR.coffeecup.com, in both English and Myanmar language two weeks before the meetings. All the meetings were led by the AIRBM Project Director, U Sein Tun. The sessions were conducted in both English and Myanmar language with some simultaneous translation provided. Overall, the consultations were well attended, informative and constructive. The participants highlighted important issues for attention, provided the team with valuable information, and confirmed the need and value of improving the country's capacity to better plan and manage the Ayeyarwady River.Specific comments and suggestions discussed during the first public consultation on AIRBM are attached in Annex 8.

Another round of public consultations will take place on the ESMF shortly.Therefore, this Executive Summary and the ESMF will be revised and updated with any information brought up and discussed by stakeholders that would improve the project design and the sustainable implementation of the project investments. Public consultations will continue and be expanded on specific activities as identified in ESMF during project implementation.

BIBLIOGRAPHY

Aquastat (2010) Myanmar Country Profile FAO

ASEAN (2009) Fourth State of the Environment Report, ASEAN Secretariat

Gass, P., Hove, H., Parry J.E. (2011) Review of Current and Planned Adaptation Action: East and South East Asia. Asian Development Bank and International Institute for Sustainable Development.

ADB (2012) Myanmar in Transition: Oportunities and Challenges. Asian Development Bank

BANCA (2009) Environmental Impact Assessment (Special Investigation) on Hydropower Development of Ayeyarwady River Basin Above Myitkyina Kachin State, Myanmar

BTI Bertelsmann Stiftung´s Transformation Index (2012) Myanmar Country Report. Gütersloh, Bertelsmann Stiftung

Burma Environmental Working Group (2011) Burma´s Environment: People, Problems and Policies. BEWG

Clarke (n.d.) Biodiversity and Protected Areas, Myanmar. Poverty Reduction & Environmental Management in Remore Greater Mekong Subregion

Critical Ecosystem Partnership Fund (2012) Ecosystem Profile. Indo-Burman Biodiversity Horspot. 2011 Update.

Government of Myanmar (2008) Constitution. Retrieved from http://www.burmalibrary.org/show.php?cat=11900

Government of Myanmar (2012) Environmental Conservation Law No.9/2012. Retrieved from http://www.burmalibrary.org/show.php?cat=1190

Government of Myanmar (1994) National Environment Policy of Myanmar. Retrieved from http://myanmar-unfccc -nc.net/index.php?option=com_content&view=article&id=7&Itemid=18

Government of Myanmar (1997) Agenda 21. Retrieved from http://www.un.org/esa/agenda21/natlinfo/countr/myanmar/eco.htm

Government of Myanmar (2009) National Sustainable Development Strategy. Retrieved from http://www.rrcap.ait.asia/nsds/uploadedfiles/file/Publication%201-NSDS%20Myanmar.pdf

Government of Myanmar (2006) Conservation of Water Resources And Rivers Law No.8/2006 Retrieved from http://www.burmalibrary.org/show.php?cat=1190

Government of Myanmar (1991) Freshwater Fisheries Law No.1.91. Retrieved from http://www.burmalibrary.org/show.php?cat=1190

Government of Myanmar (1994) Protection of Wildlife, Wild Plants and Conservation of Natural Areas Law No.6.94. Retrieved from http://www.burmalibrary.org/show.php?cat=1190

Government of Myanmar (1992) Myanmar Forest Law No.8/92. Retrieved

fromhttp://www.burmalibrary.org/show.php?cat=1190

Government of Myanmar (1994) Myanmar Mines Law No. 8/94. Retrieved from http://www.burmalibrary.org/show.php?cat=1190

Inter-Ministry Task Force on Water Resources (n.d.) Strategic Plan on Integrated Water Resources Management in Myanmar. Ministry of Agriculture and Irrigation

Istituto Oikos and Biodiversity and Nature Conservation Organization (2011) Myanmar Protected Areas, Content, Current Status and Challenges. European Union

MOECAF (2011) National Biodiversity Strategy and Action Plan. United Nations Environmental Programme

MSWRR (2012) Myanmar Action Plan on Disaster Risk Reduction. Asian Disaster Preparedness Center (ADPC)

NCEA (2005) Myanmar National Environmental Performance Assessment (EPA) Report Asian Development Bank and United Nations Environmental Programme

NECC (2012) Myanmar´s National Adaptation Programme of Action (NAPA) to Climate Change. United National Environmental Programme

Ni, B. (2012) Water Management in Myanmar. Asia Water Management Forum.

Phuy (2014) Myanmar's wetlands in line for Ramsar inclusion MM times retrieved from http://www.mmtimes.com/index.php/national-news/9453-myanmar-s-wetlands-under-inspection-for-ramsar-inclusion.html

Ra, K. (2011) Water Quality Management at River Basins in Myanmar. Ministry of Agriculture and Irrigation

Ramsar (n.d.) Burma Country Profile Retrieved from http://ramsar.wetlands.org/Portals/15/Burma.pdf

Tin M.L., Prof. Dr. Thein, K. N.N., Dr. Zin, W.W., Kyi, C.C.T. (2011) Environmental Flows in Integrated Water Resources Management (IWRM) for Upper Ayeyawady River
Basin

Tun, T.N. (2003) Arsenic Contamination of Water Sources in Rural Myanmar. 29th WEDC International Conference

WHO (2004) Myanmar Environmental Health Country Profile. World Health Organization

Wildlife Conservation Society http://www.wcs.org/news-and-features-main/looking-for-a-good-catch-ask-the-irrawaddy-olphin.aspx

Win, S.H. (2011) Sediment Dynamics in Irrawaddy River, University of Singapore

Oo, H.P. (2003) Forestry for Community Development in Myanmar: Research Issues. Food and Agriculture Organization

Smith, B. (2006) Looking for a Good Catch? Ask the Irrawaddy Dolphin. Wildlife Conservation Society. Retrieved from http://www.wcs.org/news-and-features-main/looking-for-a-good-catch-ask-the-irrawaddy-olphin.aspx

Smith, J. (2011) Two Rivers: The Change to Export Power Divides Southeast Asia. National Geographic. Retreived from http://news.nationalgeographic.com/news/energy/2011/10/111026-mekong-irrawaddy-hydropower-dams

ANNEXES

Annex 1: World Bank Group Requirements and Operational Policies Triggered

The World Bank Group has ten (plus one) environmental and social policies which are known as safeguard policies. Several of these policies, the Environmental Assessment (OP 4.01), Natural Habitats (OP 4.04), Physical Cultural Resources (OP 4.11), Involuntary Resettlement (OP 4.12), Indigenous People (OP 4.10), and Projects on International waterways (OP 7.50) apply to the prefeasibility and/or feasibility studies and the various infrastructure investments under the AIRBM project. In accordance with the World Bank's safeguard policies and procedures (OP/BP 4.01) the overall impact of the proposed Project is anticipated to be positive, but it is considered Environmental Assessment (EA) category "A" due to its spatial extent, its focus on river basin planning (Component 1) and the civil works to be carried out under Components 2 and 3. Impacts may include temporary changes in river flow and sediment flux during civil works conducted under Component 3. Table 10 summarizes the World Bank Group Operational Policies triggered for and their application to the AIRBM project.

Table 10. Summary of Project Triggered World Bank Safeguards Policies

SAFEGUARD POLICY	DESCRIPTION	Application to AIRBM Project
OP/BP 4.01 on Environmental Assessment	Ensure the environmental and social soundness and sustainability of investment projects, as well as support integration of environmental and social aspects of projects in the decision-making process.	AIRBM project is considered Category A. An ESMF is required at appraisal stage as specific environmental and social impacts of expected works will only be known during implementation. Once specific investments are defined further, respective ESIAs and EMPs will be the EA tools required as investment will be at the level of category "A" and/or "B". The SESA will also be prepared during project implementation to support the development of a long-term basin wide perspective and institutional assessment. The overall environmental impacts of the project are expected to be positive; possible facilities reconstruction or refurbishment (Components 1, 2 and 3), civil works (Component 2), and river engineering works (Component 3) may cause temporary disruption. However, the impact from the construction works is expected to be confined to the river bed. Planned river channel enhancements (to increase the 'least available depth' of the river during the low flow season) are likely to involve the construction of small groins within the riverbed that will serve to concentrate the dry season flow into a narrower and hence deeper section of the river bed in order to facilitate safe ship passage. Access to the river and patterns of seasonal flooding should not be affected. Limited dredging is anticipated to enable the construction of

SAFEGUARD POLICY	DESCRIPTION	Application to AIRBM Project
		groins. Unexploded ordinance clearance works are not expected but if required will be implemented in line with specific international standards of operations. During implementation, before channel enhancements begin, a final feasibility design and Environment and Social Impact Assessment (ESIA) will be carried out and impact mitigations measures will be outlined in site specific EMPs. Terms of Reference for providing technical assistance or supporting studies for the preparation of water resources projects should include, where appropriate, technical expertise to address potential environmental and social implications on a case-by-case basis – depending upon the gravity of potential environmental or social impacts.
OP/BP 4.04 on Natural Habitats	Promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resources management to ensure opportunities for environmentally sustainable development.	AIRBM Project may positively affect the management of natural habitats through the creation of a decision support system to better manage the basin's water resources. Further, expected works could affect aquatic and riparian habitats. The ESMF will include screening procedures to ensure that potential investments will not involve unprecedented or significant conversion of natural habitats. Specific ESIAs and EMPs will address impacts and mitigation options during implementation. The technical assessments and recommendations for possible investments will take into account any potential implications for, or risks to, natural habitats. The Strategic Environmental and Social Assessment carried out during implementation will also look into the IWRM management and natural habitats issues at the basin level.
OP/BP 4.11 on Physical Cultural Resources	The Bank is sensitive about physical cultural properties that might potentially be impacted by project related activities or investments. Impacts produced over physical cultural resources should be avoided or mitigated.	No Physical Cultural Resources (PCRs) impacts are anticipated. Nonetheless, given Myanmar's rich cultural heritage there is a possibility that PCRs could be unearthed or affected during works. This ESMF includes a PCRs assessment and mitigation guidelines including "Chance Finds Procedures". If appropriate, a PCRs Management Plan will be developed if necessary during implementation to provide detailed mitigation measures.
OP/BP 4.12 on Involuntary Resettlement	All efforts should be made to avoid, or minimize Involuntary resettlement exploring all viable alternative project designs. If	It is possible that the Project will finance activities that may cause land acquisition or income loss. Some, such as, the navigation enhancement under component 3, may entail

SAFEGUARD POLICY	DESCRIPTION	Application to AIRBM Project
	unavoidable, resettlement should be executed as sustainable development programs. All Project Affected People (PAPs) will receive compensation that is at least equal to their replacement value. They should be consulted with and participate in the planning and execution of resettlement activities.	temporary occupation of land. Construction of office buildings and other structures will likely be conducted only on public land. Modernization of the observation infrastructure may entail minor land loss. Ayeyarwady River Basin Management and Development Plan including a 10-year investment plan will be developed under component 1 which may require land acquisition that triggers OP 4.12. The SESA to be conducted as propsed in this ESMF will address impacts associated with the preparation of the Ayeyarwady River Basin Management and Development Plan. Projects supported by the PPF of component 1 may have involuntary resettlement impacts, and the project will support the assessment of impacts and preparation of required instruments. A Resettlement Policy Framework (RPF) is included in this ESMF to address land acquisition and other involuntary resettlement impacts financed by the project.
(OP/BP 4.10) on Indigenous Peoples	The policy aims to ensure that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples (ethnic minorities in the Myanmar context). For all projects that are proposed for Bank financing and affect Indigenous Peoples, the borrower is required to engage in a process of free, prior, and informed consultation leading to their broad community support to the project, undertake a social assessment, and prepare an Indigenous Peoples Plan.	The Ayeyarwady basin is home to diverse groups of ethnic minorities covered by OP 4.10 who are dependent on the river for livelihoods and subsistence. Overall, the project is expected to generate a net positive impact on livelihoods. The initial ethnic screening did not find ethnic minority communities in the area where channel enhancement will be carried out; however, more detailed ethnic screening will be carried out during implementation for all financed activities. For project financed activities that will affect ethnic minorities, whether positively or adversely, the borrower will carry out free, prior and informed consultations, undertake a social assessment and prepare an Indigenous Peoples Plan. Project activities will not be financed if broad community support of affected ethnic minorities is not obtained. The procedures and requirements for project implementation are described in the Indigenous Peoples Planning Framework included in the ESMF. The SESA includes procedures to assess risks, impacts and benefits concerning ethnic minorities and to ensure ethnic minorities are adequately consulted with and meaningdully participate in the development of the Ayeyarwady River Basin

SAFEGUARD POLICY	DESCRIPTION	Application to AIRBM Project
		Management and Development Plan.
OP/BP 7-50 on Projects on International Waterways	The Bank pays specific attention to riparian's by facilitating timely information on projects undertaken on international waterways.	AIRBM project scope of impacts covers the Ayeyarwady River Basin, an international river basin shared with China and India. However, the planned investments are not anticipated to involve any adverse impacts on the quality and quantity of waters in the Ayeyarwady River or downstream. Thus, the proposed project falls within the exception to the riparian notification requirement. A Memo to Regional Vice President requesting agreement on the exception to this notification requirement is under preparation by the team by project appraisal.
OP/BP 4.04 on Safety of Dams	The World Bank emphasizes that for the life of any dam, the owner is responsible for ensuring that appropriate measures are taken and sufficient resources provided for the safety of the dam, irrespective of its funding sources or construction status. Because there are serious consequences if a dam does not function properly or fails, the Bank is concerned about the safety of new dams it finances and existing dams on which a Bank-financed project is directly dependent.	While the AIRBM project will not support the construction, expansion or rehabilitation of dams, this policy is triggered as prefeasibility and/or feasibility studies for the construction, expansion or rehabilitation of dams could be financed by the Project. In such situation, the Terms of Reference for the studies (prefeasibility, feasibility studies and other studies) will include an assessment of dam safety measures and the potential environmental and social impacts of the sub-project, as well as the alternatives considered, as stipulated by the Bank's Safety of Dams Policy
Bank Policy on Disclosure of Information	Requires that all those residing in the given areas of a project have the right to be informed of the proposed development project.	A series of free, prior and informed public consultations have been conducted in accordance with World Bank policy requirements, and will continue to do so during implementation. Gender mainstreaming is an integral part of AIRBM stakeholder engagement plan. Prior to the public consultations, AIRBM has and will be disclosing relevant project documents to stakeholders and local non-Government Organizations (NGOs). The Myanmar and English versions of these documents will be disclosed in country and at the World Bank's InfoShop in Washington, DC prior to appraisal.

Annex 2: Guidelines for Environmental Analysis of Small Construction Works

Environmental Screening

Usually, the construction of this type of projects does not pose a serious potential of environmental impacts of high magnitude and importance. Most projects would be classified as Category B for environmental purposes. However, it is advisable to screen subprojects and construction sites in order to ensure that significant issues are identified and proper measures included in project design. The potential issues depend on the type of construction (small rural schools vs. multi-story buildings for instance), area available (congested vs. open area), and the location (urban vs. rural) of the proposed construction. In most cases, construction activities would probably be of some concern especially in urban areas in which inconveniences or nuisances to certain communities during construction will require careful planning of construction activities.

Future project sites and projects should be screened for:

(a) The need for resettlement of families and businesses, the presence of squatters or any other land titling conflicts;
(b) Potential interruption or limitation of accesses to dwellings or businesses either permanently or temporarily (during construction);
(c) Encroachment/reduction of green areas, parks, and other recreational areas;
(d) Demolition of buildings of high architectural or historical value;
(e) Potential deterioration of urban quality and property value in the immediate vicinity of the works or deterioration of unique architectural characteristics in the neighborhood;
(f) The potential for increased accidentality in areas with high density of schools, hospitals, and commercial use;
(g) The effect on urban infrastructure (sidewalks, power and telephone lines, water and sewerage mains, etc.); and
(h) Potentially unacceptable nuisances during construction (dust, wastes, and heavy construction traffic).
(i) Potential issues regarding natural hazards (floods, instability)

On the other hand, some project sites provide excellent opportunities for environmental enhancement and the promotion of environmentally sustainable technologies and concepts. These enhancement opportunities can be built into the design and construction of the project.

Environmental Principles

For programmatic or sectoral projects, in which specific sub-projects are not known in advance, it is recommended that a set of environmental principles for the design and construction of small civil works (buildings, schools, office headquarters, urban overpasses and bridges) be agreed upon and described in the Operational Manual. An example of such criteria is shown in Box 1.

Box 1. Environmental Criteria for the Design and Construction of Small Works

- The designs should avoid or minimize the need for resettlement of population, as well as the impact on green and recreational areas and buildings of historical or architectural value. If above impacts are unavoidable, resettlement plans, mitigation and compensatory measures will be included in project costs.
- Access to dwellings and businesses should be guaranteed for both the construction and operational phases. Any restriction or limitation to accessibility to properties should be properly mitigated or compensated.
- Safe and secure pedestrian and bicycle crossings should be integrated into the design and construction of any road/rail crossings.
- The design should harmonize with urban surroundings including landscaping and planning for other uses for all additionally created spaces (for instance under-bridges, cul-de-sacs, and pedestrian-only streets) in order to minimize negative impacts on environmental quality and property values.
- Alternative solutions and final designs should be subject to public and community consultation with special emphasis on the property owners directly affected, local NGOs and community organizations, and business and professional organizations.
- To minimize public nuisances, construction activities should follow strict environmental guidelines. Construction schedules and the timing of necessary interruption of public utilities (electricity, water and telephone) should be informed to the affected community.
- All areas and infrastructure affected during construction should be restored to their original condition, specially sidewalks, green street dividers, gardens, sidewalk trees, utilities, and side streets impacted by traffic diversion.
- The design should contemplate and stimulate the better integration of surrounding urban areas.

Environmental Management Tools

<u>Environmental considerations for the engineering design</u>

The engineering design of the project should take into consideration: (i) the connection of the building or infrastructure to the potable water system and the capacity of the existing water distribution network or the need to establish a water supply system for buildings (well, storage tank, pumping station, etc.); (ii) the connection to the sewerage network and the need for capacity expansion for receiving collectors or the need for a wastewater treatment system for the building (septic tank, infiltration ditch); (iii) the treatment of wastewater from cafeterias and restaurants before being discharged to the sewerage networks or the wastewater treatment system (iv) the adequate management of runoff and the facilities for its recollection and evacuation, having in mind the existing downstream systems; (iv) the systems of recollection, storage and transportation of solid wastes generated in the building, incorporating the structures for separation and recycling; (v) appropriate access systems for pedestrians, municipal and inter-municipal buses, bicycles , children and handicapped people; (vii) the need to integrate building design with architectonic characteristics of the surrounding neighborhood; and (vii) avoiding the use of materials such as wood from tropical forests, lead-based paints, asbestos, for example.

Environmental Enhancement

The architectural design of some projects could bring many opportunities to incorporate and reinforce the criteria of environmentally friendly buildings. The feasibility of incorporating these aspects into the design should be analyzed during the conceptualization phase of the architectural designs and during the engineering designs. This analysis could include (i) solar panels to satisfy totally or partially the electricity needs; (ii) rain water storage for the irrigation of gardens and green zones; (iii) recycling of wastewater for irrigation; (iv) separation of the potable water systems from irrigation systems; (v) maximizing natural light in order to minimize artificial light needs; (vi) planting of native species in gardens and green areas; (vii) using windmills for groundwater exploitation for irrigation water; (viii) natural ventilation systems, minimizing the necessities of air conditioning; and (ix) the stabilization of slopes using vegetative measures;.

Environmental Management of Construction Activities (See appendix)

Construction activities could cause important impacts and nuisances to surrounding areas. These impacts merit careful planning of construction activities and the application of strict environmental measures during construction. Among the aspects that should be kept in mind are: (i) pedestrian safety and traffic congestion during construction due to the increase of heavy traffic (of the construction itself and from traffic detours) in high traffic avenues and exit ramps; (ii) dust and particulate materials, causing nuisances to surrounding families and businesses, specially to vulnerable people (children, elders); (iii) undesirable noise levels due to the machinery and equipment specially in areas with hospitals, homes for the elderly, schools; (iv) degradation of lateral streets due to heavy equipment machinery and traffic detours; (v) the interruption of services (water, electricity, telephone, bus routes) during construction; (vi) the adequate disposal of garbage, metals, used oils, and excess material, generated during construction; (vii) the need of informing the population about construction and work schedules, interruption of services, traffic detour routes, provisional bus routes, and (viii) pedestrian security measures, specially for school children, during construction. All these measures can be included in an environmental annex (see Annex 1)that would be part of bidding documents.

Some projects may generate substantial amounts of construction waste that requires appropriate environmental handling. The identification of suitable sites for waste disposal, the environmental management necessary (compacting, re-soiling and re-vegetation, drainage control), and the associated transportation costs should be included in project design and cost estimates.

The engineering design will then consider: (i) the preparation of environmental specifications that the contractor should follow during the construction; and (ii) the constructive design and activity programming having in mind the minimization of impacts and nuisances to the population.

Environmental Supervision during Construction

The supervision the construction will include the compliance with the manual and the environmental specifications by the contractor.

Environmental Measures during the Operational Phase

During the operation phase of some type of construction works (large isolated buildings, for instance) adequate provisions should guarantee (i) the maintenance of the systems of collection and treatment of wastewater; (ii) the adequate collection and disposal of solid waste, incorporating recycling systems and the separation of materials; (iii) the maintenance of complimentary systems (solar panels, wind mills,

etc.). The engineering design should include the preparation of operation al manuals and maintenance of all systems.

Public Consultation

The screening exercise could well identify the need for community consultation in the area of influence of particularly sensitive construction sites. If so, a community consultation methodology needs to be designed, which may include an opinion survey and a consultation program encompassing broad and specific areas of influence of the sub-projects. The methodology may include specifically designed questionnaires and strategies for (i) public and community organizations; and (ii) the community in general. The public and community organizations to be consulted include (i) local professional associations (including engineering and architectural associations); (ii) local chambers of commerce and industries; (iii) community organizations (neighborhood organizations) and local NGOs. The public and community in general could further be divided into two groups (i) public at large in the area of influence; and (ii) affected community in the immediate area of the proposed works. The consultation program may involve both formal and informal presentations and meetings with the target groups, information dissemination campaigns through fliers, posters, and radio announcements; and an opinion survey.

ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION ACTIVITIES

General

1. The Contractor and his employees shall adhere to the mitigation measures set down in these specifications to prevent harm and nuisances on local communities, and to minimize the impacts in construction and operation on the environment.

2. Remedial actions which cannot be effectively carried out during construction should be carried out on completion of the works (and before issuance of the acceptance of completion of works):

(a) All affected areas should be landscaped and any necessary remedial works should be undertaken without delay, including grassing and reforestation;

(b) water courses should be cleared of debris and drains and culverts checked for clear flow paths; and

(c) All sites should be cleaned of debris and all excess materials properly disposed;

(d) Borrow pits should be restored

Construction Activities and Environmental Rules for Contractors

The following information is intended solely as broad guidance to be used in conjunction with local and national regulations. Before initiation of construction activities, the Contractor shall present the Project Engineer with a Construction Plan which explicitly states how he plans to abide by these specifications. After approval of such Plan by the Project Engineer, construction activities can proceed.

Prohibitions

The following activities are prohibited on or near the project site:

1. Cutting of trees for any reason outside the approved construction area;
2. Hunting, fishing, wildlife capture, or plant collection;
3. Use of unapproved toxic materials, including lead-based paints, asbestos, etc.;
4. Disturbance to anything with architectural or historical value;
5. Building of fires;
6. Use of firearms (except authorized security guards);
7. Use of alcohol by workers.

Transport

The Contractor shall use selected routes to the project site, as agreed with the Project Engineer, and appropriately sized vehicles suitable to the class of roads in the area, and shall restrict loads to prevent damage to local roads and bridges used for transportation purposes. The Contractor shall be held responsible for any damage caused to local roads and bridges due to the transportation of excessive loads, and shall be required to repair such damage to the approval of the Project Engineer.

The Contractor shall not use any vehicles, either on or off road with grossly excessive, exhaust or noise emissions. In any built up areas, noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the Contractor.

Adequate traffic control measures shall be maintained by the Contractor throughout the duration of the Contract and such measures shall be subject to prior approval of the Project Engineer.

Workforce and Camps

The Contractor should whenever possible locally recruit the majority of the workforce and shall provide appropriate training as necessary.

The Contractor shall provide adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work in the work site. Toilet facilities should also be provided with adequate supplies of hot and cold running water, soap, and hand drying devices.

The Contractor shall install and maintain a temporary septic tank system for any residential labor camp and without causing pollution of nearby watercourses.

The Contractor shall establish a method and system for storing and disposing of all solid wastes generated by the labor camp and/or base camp.

The Contractor shall not allow the use of fuel wood for cooking or heating in any labor camp or base camp and provide alternate facilities using other fuels.

The Contractor shall ensure that site offices, depots, asphalt plants and workshops are located in appropriate areas as approved by the Project Engineer and not within 500 meters of existing residential settlements and not within 1,000 meters for asphalt plants.

The Contractor shall ensure that site offices, depots and particularly storage areas for diesel fuel and bitumen and asphalt plants are not located within 500 meters of watercourses, and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage, especially during periods of rain. This will require lubricants to be recycled and a ditch to be constructed around the area with an approved settling pond/oil trap at the outlet.

The contractor shall not use fuel wood as a means of heating during the processing or preparation of any materials forming part of the Works.

Waste Management and Erosion:

Solid, sanitation, and, hazardous wastes must be properly controlled, through the implementation of the following measures:

Waste Management:

1. Minimize the production of waste that must be treated or eliminated.

2. Identify and classify the type of waste generated. If hazardous wastes are generated, proper procedures must be taken regarding their storage, collection, transportation and disposal.

3. Identify and demarcate disposal areas clearly indicating the specific materials that can be deposited in each.

4. Control placement of all construction waste (including earth cuts) to approved disposal sites (>300 m from rivers, streams, lakes, or wetlands).Dispose in authorized areas all of garbage, metals, used oils, and excess material generated during construction, incorporating recycling systems and the separation of materials.

Erosion Control:

Disturb as little ground area as possible, stabilize that area as quickly as possible, control drainage through the area, and trap sediment onsite. Erect erosion control barriers around perimeter of cuts, disposal pits, and roadways

Conserve topsoil with its leaf litter and organic matter, and reapply this material to local disturbed areas to promote the growth of local native vegetation.

Apply local, native grass seed and mulch to barren erosive soil areas or closed construction surfaces.

Apply erosion control measures before the rainy season begins preferably immediately following construction. Install erosion control measures as each construction site is completed.

In all construction sites, installsediment control structures where needed to slow or redirect runoff and trap sediment until vegetation is established. Sediment control structures include windrows of logging slash, rock berms, sediment catchment basins, straw bales, brush fences, and silt

Control water flow through construction sites or disturbed areas with ditches, berms, check structures, live grass barriers, and rock

Maintain and reapply erosion control measures until vegetation is successfully established.

Spray water on dirt roads, cuts, fill material and stockpiled soil to reduce wind-induced erosion, as needed

Maintenance:

Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes or wetlands). Fuel storage shall be located in proper areas and approved by the Project Engineer.

Ensure that all equipment maintenance activities, including oil changes, are conducted within demarcated maintenance areas; never dispose spent oils on the ground, in water courses, drainage canals or in sewer systems.

All spills and collected petroleum products shall be disposed of in accordance with standard environmental procedures/guidelines. Fuel storage and refilling areas shall be located at least 300m from all cross drainage structures and important water bodies or as directed by the Engineer.

Earthworks, Cut and Fill Slopes

All earthworks shall be properly controlled, especially during the rainy season.

The Contractor shall maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the works.

The Contractor shall complete cut and fill operations to final cross-sections at any one location as soon as possible and preferably in one continuous operation to avoid partially completed earthworks, especially during the rainy season.

In order to protect any cut or fill slopes from erosion, in accordance with the drawings, cut off drains and toe-drains shall be provided at the top and bottom of slopes and be planted with grass or other plant cover. Cut off drains should be provided above high cuts to minimize water runoff and slope erosion.

Any excavated cut or unsuitable material shall be disposed of in designated disposal areas as agreed to by the Project Engineer.

Disposal sites should not be located where they can cause future slides, interfere with agricultural land or any other properties, or cause soil from the dump to be washed into any watercourse. Drains may need to be dug within and around the tips, as directed by the Engineer

Stockpiles and Borrow Pits

Operation of a new borrowing area, on land, in a river, or in an existing area, shall be subject to prior approval of the Project Engineer, and the operation shall cease if so instructed by the Project Engineer. Borrow pits shall be prohibited where they might interfere with the natural or designed drainage patterns.

River locations shall be prohibited if they might undermine or damage the river banks, or carry too much fine material downstream.

The Contractor shall ensure that all borrow pits used are left in a trim and tidy condition with stable side slopes, and are drained ensuring that no stagnant water bodies are created which could breed mosquitoes.

Rock or gravel taken from a river shall be far enough removed to limit the depth of material removed to one-tenth of the width of the river at any one location, and not to disrupt the river flow, or damage or undermine the river banks.

The location of crushing plants shall be subject to the approval of the Engineer, and not be close to environmentally sensitive areas or to existing residential settlements, and shall be operated with approved fitted dust control devices.

In any borrow pit and disposal site, the Contractor shall:

1. Identify and demarcate locations for stockpiles and borrow pits, ensuring that they are 15 meters away from critical areas such as steep slopes, erosion-prone soils, and areas that drain directly into sensitive water bodies
2. Limit extraction of material to approved and demarcated borrow pits.
3. Stockpile topsoil when first opening the borrow pit. After all usable borrow has been removed, the previously stockpiled topsoil should be spread back over the borrow area and graded to a smooth, uniform surface, sloped to drain. On steep slopes, benches or terraces may have to be specified to help control erosion.
4. Excess overburden should be stabilized and revegetated. Where appropriate, organic debris and overburden should be spread over the disturbed site to promote revegetation. Natural revegetation is preferred to the extent practicable.
5. Existing drainage channels in areas affected by the operation should be kept free of overburden.
6. Once the job is completed, all construction -generated debris should be removed from the site.

Disposal of Construction and Vehicle Waste

The Contractor shall establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for construction debris

Debris generated due to the dismantling of the existing structures shall be suitably reused, to the extent feasible, in the proposed construction (e.g. as fill materials for embankments). The disposal of remaining debris shall be carried out only at sites identified and approved by the Project Engineer. The contractor should ensure that these sites (a) are not located within designated forest areas; (b) do not impact natural drainage courses; and (c) do not impact endangered/rare flora. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas.

In the event any debris or silt from the sites is deposited on adjacent land, the Contractor shall immediately remove such, debris or silt and restore the affected area to its original state to the satisfaction of the Project Engineer.

All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris, where necessary, will be considered incidental to the work and should be planned and implemented by the contractor as approved and directed by the Engineer.

Safety during Construction

The Contractor's responsibilities include the protection of every person and nearby property from construction accidents. The Contractor shall be responsible for complying with all national and local safety requirements and any other measures necessary to avoid accidents, including the following:

1. Carefully and clearly mark pedestrian-safe access routes;
2. If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours;
3. Maintain supply of supplies for traffic signs (including paint, easel, sign material, etc.), road marking, and guard rails to maintain pedestrian safety during construction;
4. Conduct safety training for construction workers prior to beginning work;
5. Provide personal protective equipment and clothing (goggles, gloves, respirators, dust masks, hard hats, steel-toed and –shanked boots, etc.,) for construction workers and enforce their use;
6. Post Material Safety Data Sheets for each chemical present on the worksite;
7. Require that all workers read, or are read, all Material Safety Data Sheets. Clearly explain the risks to them and their partners, especially when pregnant or planning to start a family. Encourage workers to share the information with their physicians, when relevant;
8. Ensure that the removal of asbestos-containing materials or other toxic substances be performed and disposed of by specially trained workers;
9. During heavy rains or emergencies of any kind, suspend all work.
10. Brace electrical and mechanical equipment to withstand seismic events during the construction.

Nuisance and Dust Control

To control nuisance and dust the Contractor should:

1. Maintain all construction-related traffic at or below 15 mph on streets within 200 m of the site;
2. Maintain all on-site vehicle speeds at or below 10 mph.
3. To the extent possible, maintain noise levels associated with all machinery and equipment at or below 90 db.
4. In sensitive areas (including residential neighborhoods, hospitals, rest homes, etc.) more strict measures may need to be implemented to prevent undesirable noise levels.
5. Minimize production of dust and particulate materials at all times, to avoid impacts on surrounding families and businesses, and especially to vulnerable people (children, elders).
6. Phase removal of vegetation to prevent large areas from becoming exposed to wind.
7. Place dust screens around construction areas, paying particular attention to areas close to housing, commercial areas, and recreational areas.
8. Spray water as needed on dirt roads, cut areas and soil stockpiles or fill material.
9. Apply proper measures to minimize disruptions from vibration or noise coming from construction activities.

Demolition of Existing Infrastructure

The Contractor shall implement adequate measures during demolition of existing infrastructure to protect workers and public from falling debris and flying objects. Among these measures, the Contractor shall:

- Set aside a designated and restricted waste drop or discharge zones, and/or a chute for safe movement of wastes from upper to lower levels
- Conduct sawing, cutting, grinding, sanding, chipping or
- chiseling with proper guards and anchoring as applicable
- Maintain clear traffic ways to avoid driving of heavy equipment over loose scrap
- Use of temporary fall protection measures in scaffolds andout edges of elevated work surfaces, such as hand rails and toe boards to prevent materials from being dislodged
- Evacuate all work areas during blasting operations, and use blast mats or other means of deflection to minimize fly rock or ejection of demolition debris if work is conducted in proximity to people or structures
- Provide all workers with safety glasses with side shields, face shields, hard hats, and safety shoes

Community Relations

To enhance adequate community relations the Contractor shall:

1. Inform the population about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate.
2. Limit construction activities at night. When necessary ensure that night work is carefully scheduled and the community is properly informed so they can take necessary measures.
3. At least five days in advance of any service interruption (including water, electricity, telephone, bus routes) the community must be advised through postings at the project site, at bus stops, and in affected homes/businesses.

Physical Cultural Property Chance-finds Procedures

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

(a) Stop the construction activities in the area of the chance find;
(b) Delineate the discovered site or area;
(c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the National Culture Administration take over;
(d) Notify the supervisory Engineer who in turn will notify the responsible local authorities and the National Culture Administration immediately (within 24 hours or less);
(e) Responsible local authorities and the National Culture Administration would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archeologists of National Culture Administration. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;
(f) Decisions on how to handle the finding shall be taken by the responsible authorities and National Culture Administration. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage;
(g) Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities; and

(h) Construction work could resume only after permission is given from the responsible local authorities or National Culture Administration concerning safeguard of the heritage.

Hazardous Materials

If the construction site is expected to have or suspected of having hazardous materials (asbestos containing materials in debris from demolished buildings) the Contractor will be required to prepare a Hazardous Waste Management Plan. To be approved by the Project Engineer. The plan should be made available to all persons involved in operations and transport activities. Removal and disposal of existing hazardous wastes in project sites should only be performed by specially trained personnel following national or provincial requirements, or internationally recognized procedures

Health Services, HIV/AIDS Education

The Contractor shall provide basic first aid services to the workers as well as emergency facilities foe emergencies for work related accidents including as medical equipment suitable for the personnel, type of operation, and the degree of treatment likely to be required prior to transportation to hospital.

The Contractor shall be responsible for implementing a program for the detection screening of sexually transmitted diseases, especially with regard to HIV/AIDS, amongst laborers is actually carried out.

The Contractor shall include in his proposal the outline of a Health Plan. The Project Engineer will issue a certificate of compliance to the Contractor prior to the initiation of Construction.

Environmental Supervision during Construction

The Project Engineer will supervise compliance with these specifications. Major non-compliance by the Contractor will be cause for suspension of works and other penalties until the non-compliance has been resolved to the satisfaction of the Project Engineer. Contractors are also required to comply with national and municipal regulations governing the environment, public health and safety.

Annex 3: SESA Terms of Reference

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Terms of Reference for the Strategic Environmental and Social Assessment (SESA) for the Myanmar Ayeyarwady Integrated River Basin Management Project

Introduction and background

Myanmar is a land and water rich country. 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. Many of the opportunities considered most promising for Myanmar's future growth relate directly to water. 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.

The river's mainstream remains undeveloped. Data and decision support tools needed to understand the basin-wide impacts of developments and the tradeoffs of alternative development options are lacking. Increasing agricultural productivity and diversifying production could significantly enhance Myanmar's exports and incomes. Sediment is a major challenge and appears to be compromising navigation on the river. Water quality, especially around mining activities upstream, and quantity, especially in the dry zone, are increasing concerns. Severe weather, storms and floods is another set of concerns in the Ayeyarwady Basin. 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 the Irrawaddy dolphin.

Under the Ayeyarwady Integrated River Basin Management Project (US$100million), an integrated river basin planning and management (IRBPM) will be carried out. The exercise is envisaged to provide immediate guidance on investment options, but also to put in place the arrangements for strategic planning of the Basin's water related developments and to enable the GoM to select development pathways for the Basin rather than being captured by the current incremental and uncoordinated approaches. The IRBPM will include:

(i) Basin-wide diagnostic studies including scoping level analyses of hydropower potential, a basin-wide Strategic Environmental and Social Assessment (SESA), and the creation of a knowledge base for use in the report and future use by the HIC, the future RBO and by line management Agencies

(ii) Development of a set of models and analytic tools for use in the final report and future use by the HIC, the future RBO and by line management agencies

(iii) Stakeholder consultations to define planning scenarios [and establishment of a Panel of Experts to advise the work], and

(iv) An integrated basin master plan report that will include inter alia (i) a range of investment scenarios and recommendations developed in consultation with stakeholders and (ii) proposed institutional arrangements for ongoing basin planning and management in

Myanmar (i.e., how basin investments should be identified, appraised, consulted with stakeholders, approved by government and implemented)

The Master Planning development will also identify "no regrets" projects that could move to feasibility evaluation. It is important that these projects are progressively evaluated as they are likely to be financed in future phases of this program. The GoM has given a high priority to the evaluation of projects in order to progress development in the country in an orderly and well informed way.

Objective of Strategic Environmental and Social Assessment (SESA)

This SESA aims to support an integrated river basin planning and management (IRBPM) by identifying and assessing key environmental and social issues associated with it and developing mitigation measures that will be integrated into the Integrated Basin Master Plan in line with the Environmental and Social legislation of Myanmar and World Bank´s Environmental and social safeguards policies. SESA will be carried out as a process, rather than a one-time impact assessment, as it will create a platform of stakeholder enagement to allow continued engagement with broad stakeholders. Continued and two-way engagement therefore chatracterize SESA processes. SESA will be implemented by the newly created National Water Resources Committee (NWRC).

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. Groundwater resources in the basin are believed to be even greater than surface water resources. The Ayeyarwady river basin is a home to diverse range of ethnic minorities who rely, in a vaying degree, on the natural resources in the Ayeyarwady river basin. Poverty remains high and many vulnerable people also live in the Ayeyarwady river basin. A significant change in the way the Ayeyarwady river basin is managed will therefore likely affect the access to and availability of natural resources among ethnic minorities and vulnerable groups. Also, some investments to be identified under the Master Plan and included in the Ayeyawardy River Basin Management and Development Plan, and for which feasibility studies be financed under the project component 1.3, may well result in displacement of local people, physical or economic, and affect ethnic and vulnerable groups within the Ayeyarwady river basin.

SESA Process

IWRM planning and management exercise	SESA
Model and DSS development (0-3 years) (this should be coordinated with other activities under Component 1)	**Scoping** • Literature Review • Assess preliminary information (development trends, environmental and social issues) • Stakeholder mapping, analysis and engagement plan • Scoping workshops with stakeholders • Scoping report with institutional arrangement, work plan, timeline and deliverables for SESA
Initial Basin Assessment and first draft Ayeyarwady	**Identification of Environmental and Social priorities,**

Basin Master Plan (0-6 months) Scoping Model Basin Development Objectives and indicators Initial Draft Basin Master Plan	**Impacts and Issues and Possible Mitigation measures** <u>Situational Analysis</u> • Stocktaking of existing information (spatial analysis, case studies, or cost of degradation Studies, EIA reports or sector reports) • Cumulative / synergistic / secondary impacts will be considered as well as impacts of individual developments in the sector. • Stakeholder Analysis • Environmental, social, will be identified • Quantifiable criteria to prioritize environmental, social, safety and health issues • Methodologies to set up priorities • Horizontal (sectors) and vertical (issues consulted) by region • Focus groups + community surveys + workshops + interviews • Potential mitigation measures and monitoring requirements will be identified for each potential impact <u>Institutional, Capacity and Political Economy Assessment</u> Formal Institutional Analysis • Compilation of relevant policies, laws, regulations, and guidelines, including national and county legislation associated with environmental and social priorities, water resources management • Assess adequacy of existing institutions to deal with environmental and social priorities (Capacity, stakeholder participation, coordination) • Propose actions to address institutional gaps Non-formal institutional analysis • A first step is a review of available ethnographic information on the cultural attributes of the target population or indigenous group. A second step consists of workshops and focus groups that are carried out in a sample of representative communities of these groups that may be affected by the development of water resources management activities
Intermediate Options Analysis (12-30 months) - Scenario analysis, evaluation of alternative pathways, including more detailed social and environmental analysis - Stakeholder engagement	**Recommendations and Risk Assessment** Recommendations are, generally, framed in an action plan matrix that includes short-term (1-2 years), medium-term (3-5 years), and long-term (more than 5 years) actions, as well as monitoring indicators. In this manner, expected outcomes in each period can be monitored to assess the progress of IRBPM. The SESA concludes with an assessment of the risks associated with

	the recommended actions. Risk analysis includes the potential deliberate actions that certain interest groups may take in order to bend or halt actions or plans included in the IRBPM. Thus, possible mechanisms to safeguard the proposed IRBPM institutional and governance changes should be contemplated in the analysis. The recommendations should be shared with stakeholders by holding a multi-stakeholder workshop. Dialogue, at this stage, builds consensus as to what solutions are achievable, as well as effective and sustainable.
Ayeyarwady Basin Master Plan (ABMP) (24 – 36 months) Detailed options analysis and stakeholder engagement Completion of the models, DSS and knowledge base and the first 10 years Ayeyarwady Basin Master Plan Institutional Strengthening	Final Consultations, Review and Approval
Capacity Building (training) and engagement requirements HIC strengthening and support to NWRC Transfer of all Assets to HIC	

The SESA will be conducted in five phases: Scoping; Identification of key environmental and social issues; Environmental and Social Impact Assessment; Development of Mitigation Measures and their incorporation in the integrated basin master plan. Regulatory and institutional frameworks and capacity to manage environmental and social risks associated with the integrated river basin planning and management of the Ayeyarwady river basin will also be assessed as part of the identification of key environmental and social issues.

Throughout the SESA process, stakeholders will be engaged through Stakeholder Forum to be developed under the project. The National Validation Meeting will be held at least twice, first following the identification of key environment and social issues and then following the development of mitigation measures, while local consultation meetings will be conducted at critical junctions of the SESA process. Separate consultation meetings will be held when Phase 1 and Phase 2 master plans are drafted, and when the draft Ayeyarwady River Basin Management and Development Plan is developed. Inputs received and comments provided during such consultation meetings will be incorporated in SESA. SESA itself will be attached to the Ayeyarwady River Basin Management and Development Plan.

The environmental and social impacts of potential projects which will be identified under the Ayeyarwady River Basin Management and Development Plan and assessed for feasibility under Component 1.3 will be assessed under SESA process, in order to ensure seamless transition from the

identification of such projects under Ayeyarwady River Basin Management and Development Plan to the assessment of their environmental and social impacts.

The implementation of SESA will be managed so that the knowledge of international best practices in integrated river basin management is transferred to all stakeholders in Myanmar and that the capacity of DWIR in environmental and social risk management is developed.

The SESA will be conducted in the following phases:

Scoping

The objective of Scoping is to assess the range and degree of environmental and social risks as well as impacts associated with the development of the Ayeyarwady integrated river basin master management and development plan (IRBMDP), to better frame the content and methodology of the SESA. Both positive and negative impacts will be assessed. The scoping will be carried out with substantial stakeholder inputs which will be collected through the stakeholder forum to be established under the project.

The individual tasks are described below:

- Review the most relevant ESIAs, Environmental Management Plans (EMPs), and Environmental Statements of different projects in the River Basin, as well as any environmental scoping report, study, plan or strategy that involves water resources management during the last 10 years. The consultant will liaise with different institutions (e.g. Department of Water Resources and Improvement of River Systems (DWIR), the Department of Meteorology and Hydrology (DMH), members of the Secretariat and the Expert Group of the National Water Resources Committee (NWRC), as well as NGOs, CSOs, donor partners and private actors)
- Assemble preliminary information relevant to the scope of the SESA, including but not limited to: plans and trends in water resources management and development (e.g. hydro, agriculture, navigation, tourism, etc) that are likely to have environmental or social impacts; and the policy, legal, regulatory and institutional framework for water-related sectors
- The Consultant will identify and map the key stakeholders in the River Basin and analyze their interests, concerns and incentives. The intent of the stakeholder analysis is to identify the main interest groups in the sector, including local communities and vulnerable and marginalized groups, and to formulate a stakeholder engagement work plan, including consultations, that will ensure that their interests, concerns and advice are taken into account in the SESA.
- Prepare a draft report covering the proposed scope of the SESA, the table of contents for the SESA report (including annexes), the schedule and methodology for conducting the work, and plans for stakeholder engagement including consultation.
- Conduct scoping workshops. SESA is a participatory process that will involve relevant stakeholders, both to develop understanding and ownership of the process and to obtain valuable inputs. Accordingly, the consultant shall determine the number and location of stakeholder engagement activities and site visits throughout the River Basin. Locations will be determined in agreement with DWIR, but preliminary information indicates those locations may include XXXX. The Workshops will engage consultations with stakeholders; including sectors of fisheries, agriculture, transport, protected areas, industry groups, interested NGOs, representatives of regional and county governments, local representatives of the communities, and nomadic groups.

- Prepare the final Scoping Report, incorporating workshop results, for review by DWIR and other relevant agencies and the World Bank. The Scoping Report will serve as the consultant's inception report and should therefore include:
    - The institutional arrangements and timing agreed with DWIR, other key counterparts, and the World Bank to carry out the SESA
    - The SESA work plan describing the main activities for data collection and analysis, including consultation/validation with stakeholders, and
    - The expected products / deliverables, and reports schedule to be submitted to DWIR.
- The Scoping Phase would require max. 4 months.

Identification of key environmental and social issues

Based on the result of the approved scoping report, key environmental and social impacts, both positive and negative, as well as risks including climate risks, will be identified in order to inform the selection of environmental and social priorities.

In order to identify key environmental and social issues and risks, appropriate criteria should first be developed to prioritize environmental and social issues in the Ayeyarwady Basin. To the extent possible, criteria should be developed that will allow quantification of risks and issues and objective comparison and categorization of alternatives and tradeoffs. This proposed identification of key issues should be based on analytical work using spatial analysis, and environmental and social priorities of stakeholders. Cumulative/synergistic/secondary impacts will be considered as well as impacts of individual developments in the sector.

The preliminary list of key environmental and social issues will be developed based on the desk review of existing literature and the mapping of available data.

As for the key environmental issues, the following steps will be taken:

1. Construction of a base map (first layer) of the river basin with sub-national boundaries (e.g. state, townships, village tracks) using information on forest cover and salient biodiversity characteristics, including biodiversity hotspots, sensitive areas (e.g. wetland) and protected areas and species of commercial interest.
2. Mapping of main economic activities/land use in the river basin including but not limited to logging, farming, agriculture, mining, fishing, navigation and tourism. The mapping will include information on geological provinces and main production projects under implementation or likely to be implemented in the following three years (second layer).
3. Mapping of existing infrastructure (e.g. dams, navigation aids, navigation infrastructure, weather stations) and identification of proposed road, navigation, and power projects under investigation or implementation (third layer).
4. Mapping of with temperature and rainfall, flooding areas, and identified areas vulnerable to climate change or prone to disasters (e.g. flood, drought) (fourth layer).
5. Mapping of and geological attributes, altitude, sediment load, water quality and water use.
6. Superimposition of these five layers of information to define critical areas under or potential environmental stress in the river basin.
7. Examination of specific environmental issues by using participatory rural appraisal methods and case studies.

Likewise, the following steps will be followed to scope key social issues:

1. Construction of a base map (first layer) of communities in the river basin, including key demographic indicators such as number of inhabitants, gender and age structure, and ethnicity of the populations.
2. Poverty and vulnerability map including income levels of the population (second layer).
3. Mapping of access and land tenure rights that shall include concessions or other existing titling rights for natural resources or extractive industries such as mining (third layer). Mapping presence/number of communities' organizations for water resource management. Mapping of economic activities that use/ are linked to water resources and the degree of local people's dependence on each of them for livelihood
4. Superimposition of these three layers of information to define critical social issues in the river basin.
5. Examination of specific social issues by using rural appraisal methods and case studies to document critical interactions and synergy of these different social factors affecting water resources management in the river basin.

It is important to coordinate the development of the preliminary list of key environmental and social issues with the development of the Phase 1 Basin Master Plan, so the Master Plan will be well informed of potential environmental and social risks. The preliminary list of key environmental and social issues resulting from the mapping and analytical work described above shall be reviewed and prioritized by a representative sample of local stakeholders. The list of stakeholders to be consulted with will be determined based on the stakeholder mapping carried out under the previous phase, however, it will include the following stakeholder groups; sectors of fisheries, agriculture, transport, protected areas, industry groups, interested NGOs, representatives of regional and county governments, representatives of local communities including but not limited to ethnic minority groups, and nomadic groups. Such stakeholder engagement should be carried out in a free, prior and informed manner using local languages/dialects wherever possible, to ensure their meaningful participation in consultation meetings and to establish broad community support to the SESA process.

The key environmental and social issues will be identified for presentation at the First National Validation Meeting within 12 months, in order to coordinate with the development of the Phase 1 Basin Master Plan.

First National Validation/Consultation Meeting

The key environmental and social issues identified based on the results of the desk analyses and free, prior and informed consultations with key stakeholders will be consulted at the national validation meeting. The objective of the national validation meeting is to amend the list of key environmental and social issues and seek for inputs on how potential negative impacts and risks should be addressed, how likely positive benefits be expanded, and how the subsequent SESA process should be managed, so as to establish national ownership to SESA process as well as its conclusions.

In particular, the following issues will be consulted at the national validation meeting:

- overall demographic, ethnographic, socioeconomic baseline of the Ayeyarwady river basin will be described;

- the list of key stakeholders and affected local population and the summary of environmental and social issues facing them
- environmental and social hotspots as well as their main characteristics, risks and developmental potentials will be identified;
- for a sample of key areas, land use trade-offs will be assessed by analyzing the opportunity cost of conserving forests versus developing these areas into alternative land uses such as mining or agriculture; and
- critical institutional, legal, regulatory, policy and capacity gaps underlying key environmental and social issues identified will be assessed; and

Participants from all key stakeholders at the national level should be invited to this workshop including those whose work/livelihoods are likely to impact on or be impacted upon by changes in the Ayeyarwady river basin management and implementation of potential future investments. Care should be taken so women, ethnic communities; vulnerable groups especially those who gain primary livelihoods from natural resources in Ayeyarwady river basin will be invited. The different key stakeholders should organize the validation workshop in such a way that there will be parallel validation, before a plenary session. This will empower "weaker" stakeholders by ensuring they have a chance to freely express and promote their views. Where necessary, a local dialect should be used in the stakeholder specific session, to allow for proper articulation of concerns by all key stakeholders.

Prior to the national validation meeting, institutional stakeholders identified in the SESA work plan such as research and academia, national institutions and organization's related to environmental protection, land, water and forestry resources, mining and hydro power and other civil society coalitions on environment and natural resources management and the private sector will be invited to review environmental and social issues to be discussed at the national validation meeting. Appendix 2 provides further details on institutional stakeholders.

At the national validation workshop, efforts will be made to separately discuss, but find convergence between, the key environmental and social issues identified based on the desk review and local consultations and the inputs of national level institutional stakeholders. Where differences between local and national priorities and perspectives cannot be converged, they will be reported at the plenary and documented separately. The subsequent SESA process to assess environmental and social priority issues as well as to identify steps to mitigate negative impacts, manage risks and enhance positive benefits will be agreed upon and validated at the workshop so as to establish national ownership to the SESA process. The result of the national workshop as well as the key environmental and social issues discussed will be publicly disclosed via appropriate websites and culturally sensitive media.

The first national validation workshop will be conducted in twelve (12) months since the commencement of the SESA process, or when the Phase 1 Basin Master Plan is drafted. The key environmental and social issues verified at the workshop will be attached to the Phase 1 Basin Master Plan.

Strategic Environmental and Social Assessment Report

Further quantitative and qualitative assessment will be carried out on key environmental and social issues validated at the first national validation meeting. Measures to mitigate potential negative impacts and address significant risks as well as steps to enhance positive benefits will be developed. Implementation arrangements for the implementation of SESA, as well as monitoring framework and grievance redress mechanisms will also be developed.

Based on the result, the draft SESA report will be developed, which should include, at minimum:

- A description of the indicative IWRPM strategy option(s), its main social and environmental considerations, and the various risks involved in its implementation.
- An outline of the legislative and regulatory regime that will interact with IRWPM.
- A description of the potential future impacts, both positive and negative, deriving from the implementation of the Ayeyarwady integrated basin master plan and project(s), activity(-ies), or policy(-ies)/regulation(s) associated with the implementation of the IWRPM, and the geographic/spatial distribution of these impacts.
- A description of the arrangements for the screening and environmental and social impact assessment of specific project(s), activity(-ies), or policy(-ies)/regulation(s), with a focus on the procedures for (i) screening and assessment of environmental and social impacts of such specific project(s), activity(-ies), or policy(-ies)/regulation(s); (ii) the preparation of time-bound action plans for reducing, mitigating, and/or offsetting any adverse impacts, such as site specific Environmental Management Plan(s), Resettlement Action Plan(s) and Indigenous Peoples Plan, as appropriate, in line with the relevant World Bank safeguard policies; (iii) the monitoring the environmental and social impacts of specific project(s), activity(-ies), or policy(-ies)/regulation(s) associated with the implementation of the IWRPM as well as of respective action plans.
- An analysis of the particular institutional needs within the IWRPM implementation framework for application of the ESMF. This should include a review of the authority and capability of institutions at different administrative levels (e.g. local, district, provincial/regional, and national), and their capacity to manage and monitor ESMF implementation. The analysis should draw mainly from the IWRPM implementation timeframe.
- An outline of recommended capacity building actions for the entities responsible for implementing the ESMF.
- Requirements for technical assistance to public and private sector institutions, communities, and service providers to support implementation of the ESMF.
- Grievance redress mechanisms with regard to the implementation of the IWRPM
- An outline of the budget for implementing this SESA.

The draft SESA report will be translated into relevant languages and disclosed at suitable locations disclosure and public consultations. Free, prior and informed consultations will be conducted, at least two weeks after the SESA report is made available at respective locations, with local stakeholders including but not limited to those who were invited for consultation when key environmental and social issues were identified. Care will be exercised to ensure that, to the extent possible, local stakeholders are consulted in their local language and in a culturally appropriate and gender inclusive manner. Inputs from local consultations will be reflected in the final draft SESA report.

It is important that this assessment will be well harmonized and coordinated with process through which the Phase 2 Basin Master Plan and the Ayeyarwady integrated river basin master management and development plan (IRBMDP) are developed. This is to ensure that the plans to be developed will be well informed of the environmental and social risk assessment. In particular, it is important that potential environmental and social impacts would be identified for the projects to be identified under the planning process and included in the IRBMDP. The project under Component 1.3 will support the feasibility study of some of the projects identified in the process. Environmental and social issues of the projects that are identified at an early stage of the planning and have been determined to be included in the IRBMDP will be assessed as part of the environmental and social assessment of the IRBMDP. Those projects which are determined to be included in IRBMDP later will be assessed for the environmental and social issues after the completion of the SESA report. SESA process will continue into the implementation phase, using the Stakeholder Forum as the means of stakeholder engagement, to carry out additional environmental and social risk assessment as new projects are identified.
SESA report will be updated as new environmental and social risk assessment is conducted.

Second national validation/consultation meeting
In coordination with the DWIR team the SESA report shall be presented to a national validation workshop.

The generation of a draft ESMF needs to be preceded by the preparation of the ESMF ToR for which inputs are solicited through their public disclosure. In putting together the draft ESMF, extensive stakeholder consultation shall be done, particularly in the critical areas as identified through the prioritization and mapping exercise. The draft document should also be subject to broad stakeholder consultations and inputs. Eventually, a representative sample of communities in the critical areas should be enabled to participate in a public hearing on the ESMF which should be held in a readily accessible community, district or province capital. Community-based organizations and NGOs operating in these areas should participate in the public hearing, which should also be held in the local dialect widely spoken in the specific area.

Consultation and participation for the SESA will include consultations of the ESMF, which should involve community and institutional stakeholders in a manner consistent with Lao regulations and the World Bank safeguard and disclosure policies. Copies of the document should be made available to the public through the websites of the GoM, World Bank, and appropriate third party websites of indigenous peoples, civil society organizations; hard copies should also be made available at district and province offices of the identified critical areas. Copies should also be sent to relevant public sector institutions, civil society and the private sector to solicit inputs and comments.

Second Validation meeting will be held in around the second year of the project, or when the draft IRBMDP is developed.

Schedule and Deliverables – to reflect coordination of the man project activities (component 1)

Table 11. SESA Road Map

Code	Activities	Institution / Organization Responsible	Time	Result Indicator (Deliverable)	Key intersections and comments
1	Preparation/Screening				
1.1	Refinement of ToR		Month 1	Final ToR	
1.2	Hiring of Consultants				A consortium of local and international consultants is recommended
1.2.1	Request for Proposals		Month 1	Public bid issued	Ensure consistency of timing and deliverables with the RFP for the IWRM plan preparation activities.
1.2.2	Short listing and bid evaluation		Month 5	Evaluation report	
1.2.3	Awarding of contract		Month 6	Signed consultancy contract	
2	Scoping				
2.1	Gap assessment of stakeholder analysis	Consultant	Month 7	Progress/inception report submitted to IWRM plan Task Force	SESA C&P activities should be compatible with existing C&P master plan and coordinated with consultation plan for the IWRM plan
2.2	Refinement of SESA consultation & participation (C&P) activities and formulation of SESA Work Plan				
2.3	Validation of SESA Work Plan				
2.3.1	Organization of National Workshop	IWRM plan Task Force with Consultants	Months 8 and 9	Invitation and agenda issued	- Includes participation of representatives of forest communities, women, ethnic groups, districts and relevant institutional stakeholders
2.3.2	National workshop and reporting			Workshop report	
2.3.3	Finalization of SESA Work Plan	Consultant		Final SESA Work Plan that includes C&P SESA activities	
2.3.4	Disclosure of SESA Work Plan	IWRM plan Task		- Plan published in	Communication of the Plan at the local

		Force		websites - Radio announcement/ dissemination of Plan summary	level will be coordinated with the IWRM plan District and Province Offices	
2.4	Scoping of Key E&S issues					
2.4.1	Gathering and technical validation of available spatial data on - environment and, - social issues	IWRM plan Task Force/Consultants	Months 10 -16	Progress report		
2.4.2	Spatial mapping, including community based participatory mapping, of - forest, biodiversity hotspots, river basins, main infrastructure projects - forest dependent communities, activities undertaken in forest areas, use and access rights to forest and land			A GIS data base and progress report that includes maps, case studies and key environmental and social issues	- Key intersection point with preparation of reference scenario	
2.4.3	Case and valuation studies in selected forest areas			Case studies reports		
2.4.4	Report on key environmental and social issues			Report submitted		
2.5	Prioritization of E&S issues					
2.5.1	Review and prioritization by selected communities in critical areas	Consultant/NGO	Months 17 – 19	Community consultation report		- Key intersection point to coordinate consultations with the IWRM plan options
2.5.2	Regional validation by community representatives		Month 20	Regional validation report	Likely to be workshops	
2.5.3	Review and prioritization by institutional stakeholders		Months 21-22	Institutional consultation report	Likely to be focus groups	
2.5.4	Institutional stakeholders workshop			Institutional prioritization report		
2.5.5	Report on E&S priorities	Consultant	Month 23	Prioritization report		

3	Assessment				
3.1	Analysis of IWRM plan options vis-à-vis E&S priorities	Consultant	Months 24 and 25	Progress report	
3.2	Refinement of IWRM plan options				SESA consultants coordinate with IWRM plan consultants
3.3	Assessment of other E&S risks associated with refined candidate strategy options				
3.4	Report on potential IWRM plan options	Consultant IWRM plan	Month 26 – 27	IWRM plan options	
3.5	Stakeholder validation of IWRM plan options				
4	Reporting				
4.1	WB Safeguards Policies Triggered	WB	Month 0	Updated Integrated Safeguards Data Sheet (ISDS)	
4.2	Preparation and disclosure of ToR for Environmental and Social Management Framework (ESMF)		Month 16 -19	ToR	
4.3	ESMF				
4.3.1	Draft ESMF	Consultant	Months 20-26		
4.3.2	Consultation of Initial Draft ESMF	Consultant	Months 27-29	Draft ESMF report and consultation report	- Coordinate with consultations to validate final IWRM plan - Includes consultation with selected local forests communities and at the district, province and national levels
4.3.3	Final Draft ESMF	Consultant	Month 31	Final draft ESMF	- Input to IWRM plan Activities
4.3.4	SESA report	Consultant	Months 32 -33	SESA Report	- Integrates all previous reports including Final Draft ESMF
4.3.5	Disclosure of ESMF	IWRM plan Task Force/World Bank	Month 33	Publication in relevant websites	Executive summaries translated in print/appropriate media and disseminated to all key stakeholders

Annex 4: Guidance On Project Categorization For Selecetd Sevctors (To Be Completed)

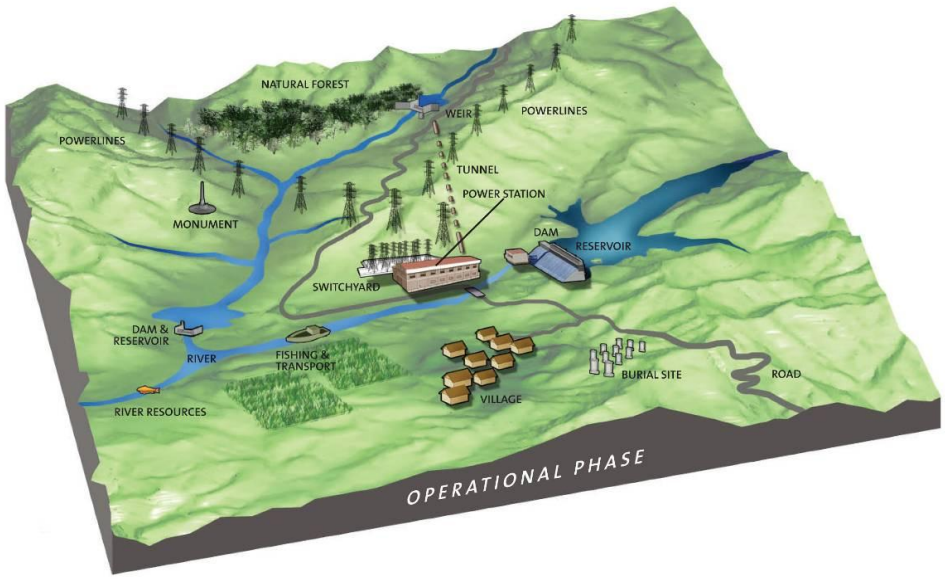
Dams and Reservoirs

The impacts from hydroelectric projects are framed by the type of configuration that the hydroelectric scheme will entail. Hydroelectric projects are usually classified as large, small, mini or micro based on their capacity. According to the International Commission on Large Dams (ICOLD), a large dam is 15 meters or more high (from the foundation). If dams are between 5-15 meters and have a reservoir volume of more than 3 million cubic meters they are also classified as large dams

Typical Hydroelectric Projects

In order to assist with initial screening, the type of hydroelectric development and the components of the project that will be financed needs to be determined. The type of development, the presence or absence of reservoirs, the ancillary infrastructure such as access roads, workers' camps, and transmission lines, all need to be taken into account during the screening.The following Table depicts the main types, components and activities and the potential natural habitats that can be affected by hydroelectric projects.

Dam, Power Station and Associated Infrastructure



Project Typology	Reservoir:Theseprojects impound water behind the dam for seasonal, annual and, in some cases, multi-annual storage and regulation of the river, where flow can be controlled according to power demand. Reservoir-type projects can regulate flow throughout the year on a daily, monthly, annual, or even multi-annual basis. The impacts associated with reservoirs vary according to the size and placement. Run-of-River:dams (weirs and barrages, and run-of-river diversion dams) create a hydraulic head in the river to divert some portion of the river flows to a canal or power station. Run-of-river plants require very small reservoirs (flooded area <20 ha) or no reservoir at all. These plants can be installed in two places: • Where water elevation changes and steady flow rates are high; and • To use tailrace water from an existing hydropower facility. Pumped Storage:Pumped-storage plants pump water into an upper storage basin during off-peak hours using surplus electricity from base load power plants and reverse flow to generate electricity during the daily peak load period. The sites are usually located with high head ranges, normally varying between 300 meters and 800 meters in relatively steep topography. Canal / Off River:These schemes take water from a river and pass it through canals or tunnels with one or more power stations located in the alignment, before discharging the water back into the river downstream. There is no dam or reservoir to create an in-stream barrier, but the natural river flow is reduced for the stretch in between the intake and discharge. Multi-Purpose:These schemes include other infrastructure or water uses as well as electricity generation. Examples include irrigation water supplies, river transport canals and locks, flood control and recreation facilities (such as boating facilities). Upgrading/optimization of Existing Plants:Upgrading includes maintenance or expansion of some components to maintain or increase generating capacity. As part of this work, construction of new infrastructure such as canals, tunnels, penstocks, access roads, powerhouse(s) and transmission lines may be required, or it may need renovation of existing infrastructure.
Project Components	New reservoir-based hydropower project developments include the construction of reservoirs, dams, tunnels, canals, penstocks, access roads and at least one powerhouse. They also include the installation of transmission and distribution lines, and the construction of electrical stations and substations. Regardless of the configuration most hydroelectric projects will include: • Dam or diversion works • Pressure tunnels, canals, tunnels • Power house • Switchyard and transmission lines • Access roads to dam, power house • Quarries, disposal sites • Base camp or maintenance yards • Access roads, routes for heavy equipment, construction materials and debris/solid waste • Concrete batching plants
Project Activities	Main activities include Construction of access roads and power lines for construction • Camp, other ancillary infrastructure and mobilization of workers and equipment • Diversion tunnels • Excavations and earth movement in dam sites, pressure tunnels, switchyards • Installation of electromechanical equipment • Transmission line construction • Preparation of reservoir area (vegetation removal, animal rescue) • Decommissioning and restoration of affected areas

Categorization

The impacts from hydroelectric projects can vary significantly. General guidance to determine the severity of the potential impacts of hydroelectric projects of the project is presented in the following table. The severity is given by the type of hydroelectric project works and the sensitivity of the project site. However, project components such as access roads and transmission lines can exert significant impacts. This table can also be used to determine the level of work that will be required to address natural habitat issues in a given project.

Severity of Potential Impact in Hydroelectric Projects

Type of Project	Low Sensitivity	Medium Sensitivity	High Sensitivity
Reservoir projects Construction, reservoir filling, operation and maintenance, modernization, rehabilitation, upgrading, expansion.	A/B	A	A
Run of the river: Construction, operation and maintenance, modernization, rehabilitation, upgrading, expansion. Cascade development needs cumulative impact assessment.	A/B	A/B	
Transmission lines	A/B	A/B	A
Access roads: rehabilitation, minor improvements to existing roads.	A/B	A/B	A/B
Access Roads: new road construction (where no passable roads existed before), or major road improvements.	A/B	A	A
Upgrading/optimization of Existing Plants	B	B	A/B

	Very severe natural habitat issues. Potential for severe impacts. Most likely there is a need for surveys, mitigation and compensation measures
	Moderate severity. Project specific mitigation measuresneed to be designed.
	Less severe. Standard/generic specifications for design and construction should be applied

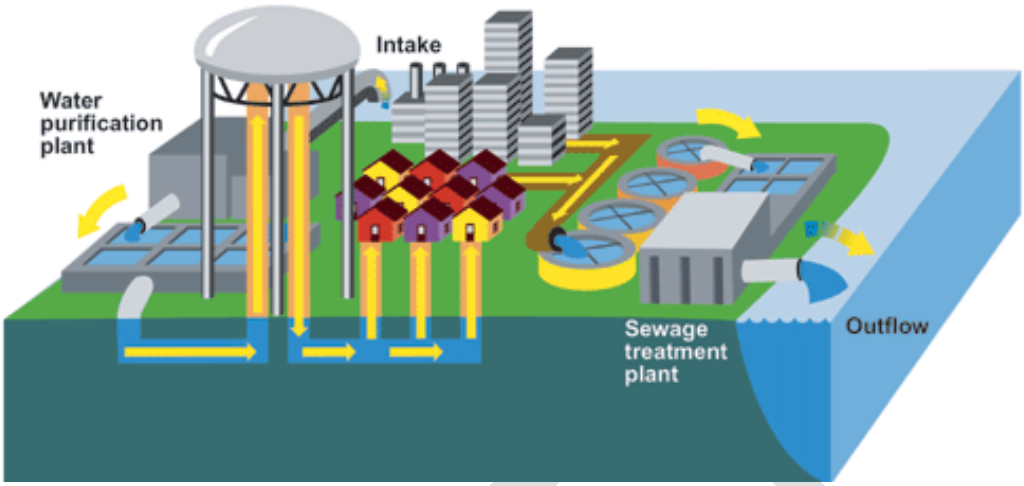
Water and Sanitation Projects

The impacts from water supply systems can vary significantly depending on the project or the setting. The urban and individual household project components usually do not affect natural habitats. However, there is a need to screen all project components, regardless of the setting in order to ensure that natural habitat issues are properly addressed.

Typical Water and Sanitation Works

Water and sanitation projects can include many components and activities. The activities can include trench excavation for pipes, construction of main infrastructure such as water and wastewater treatment plants, and construction of dams and reservoirs. The following table describes the typical project components, activities, and the potential natural habitats that could be affected.

Municipal Water and Sewage System



Project types and Components for water and sanitation

Project Typology	Water and sanitation projects might include a wide range of sub-projects such as: • The provision, transportation, treatment, storage and distribution of water for human consumption in cities and towns. • The collection, treatment and disposal of wastewater from cities and towns. • The provision of storm water and drainage systems in urban areas. • The provision of basic water and sanitation services in rural areas, wells, latrines, etc.
Project Components	Project components might include all or a combination of the different elements of a water and sanitation project such as • water intake • water transmission lines • water treatment plants • distribution networks for water supply including pumping stations and storage tanks • sewage collection systems including major interceptors, pumping stations • wastewater treatment plant • disposal of wastewater • Storm water drainage systems which usually include interceptors, canals and disposal systems. • Some projects include the development of small reservoirs, or groundwater wells for rural water supply systems. In rural areas, water and sanitation systems usually include smaller village-level or individual water supply systems, and individual household sanitation systems such as latrines and septic tanks.
Project Activities	Construction work covers various types of civil and mechanical engineering works in accordance with the detail design drawings, usually using heavy equipment. Construction work usually consists of the following activities: • Laying of pipes and sewers large diameter and deep interceptors are often needed • Construction of main infrastructure such as water and wastewater plants, pumping stations • Construction of storm water drainage canals • Construction of long distance pipes and outfalls • Construction of large and deep interceptors for sewage collection and transport • Outfalls for wastewater discharge • Construction of dams for water supply reservoirs • Groundwater wells

Large water and sanitation projects can have severe impacts, mainly because of siting issues for main infrastructure such as wastewater treatment plants and concerns about water pollution impacts. The disposal of sludge and discharges to rivers or can also raise man concerns. Natural habitat issues can be encountered in water and sanitation project even in urban areas. Issues such urban wetlands, lakes and ocean ecosystems need to be screened in these projects.

Severity of Environmental Issues in Water and Sanitation Projects

Natural Habitats/ Types of Works	Low Sensitivity	Medium Sensitivity	High Sensitivity
Water supply networks, sewerage networks, interceptors, drainage canals	B	A/B	A
Water treatment plants, wastewater treatment plants	B	B	A
Water supply reservoirs	A/B	A/B	A
Water transmission lines	B	A/B	A
Outfalls (both river and ocean outfalls)	A/B	A	A

	Very severe natural habitat issues. Potential for severe impacts. Most likely there is a need surveys, mitigation and compensation measures
	Moderate severity. Project specific mitigation measures are usually needed.
	Less severe. Standard/generic specifications for design and construction should be applied

Annex 5: Generic ToR for EIA and EMP – Category a project

A full EIA report should be concise and should focus on the significant environmental issues. The report's level of detail should be commensurate with the potential impacts. The EIA should contain the flowing:

I. Introduction
This section should state the purpose of the terms of reference, identify the development project to be assessed, and explain the executing arrangements for the environmental assessment.

II. Background Information
Pertinent background for potential parties who may conduct the environmental assessment, whether they are consultants or government agencies, would include a brief description of the major components of the proposed project, a statement of the need for it and the objectives it is intended to meet, the implementing agency, a brief history of the project, (including alternatives considered), its current status and timetable, and the identities of any associated projects. If there are other projects in progress or planned within the region which may compete for the same resources, they should also be identified here.

III. Objectives
This section will summarize the general scope of the environmental assessment and discuss its timing in relation to the processes of project preparation, design, and execution.

IV. Environmental Assessment Requirements
This should identify any regulations and guidelines which will govern the conduct of the assessment or specify the content of its report. They may include any or all of the following: national laws and/or regulations on environmental reviews and impact assessments; regional, provincial or communal environmental assessment regulations; environmental assessment regulations of any other financing organizations involved in the project.

V. Study Area
Specify the boundaries of the study area for the assessment (e.g., water catchment). If there are any adjacent or remote areas which should be considered with respect to impacts of particular.

VI. Scope of Work
In some cases, the tasks to be carried out by a consultant will be known with sufficient certainty to be specified completely in the terms of reference. In other cases, information deficiencies need to be alleviated or specialized field studies or modelling activities performed to assess impacts, and the consultant will be asked to define particular tasks in more detail for contracting agency review and approval.

Task 1. Description of the Proposed Project. Provide a brief description of the relevant parts of the project, using maps (at appropriate scale) where necessary, and including the following information: location; general layout; size, capacity, etc.; pre-construction activities; construction activities; schedule; staffing and support; facilities and services; operation and maintenance activities; required

offsite investments; and life span.

Task 2. Description of the Environment. Assemble, evaluate and present baseline data on the relevant environmental characteristics of the study area. Include information on any changes anticipated before the project commences. [Annotate or modify the lists below to show the critical information for this project category, or that which is irrelevant to it. You should particularly avoid compiling irrelevant data.]

(a) Physical environment: geology; topography; soils; climate and meteorology; ambient air quality; surface and ground- water hydrology; coastal and oceanic parameters; existing sources of air emissions; existing water pollution discharges; and receiving water quality.
(b) Biological environment: flora; fauna; rare or endangered species; sensitive habitats, including parks or preserves, protected areas, wetlands, mangroves, species of commercial importance;
(c) Socio-cultural environment (include both present and projected where appropriate): population; land use; planned development activities; community structure; employment; distribution of income, goods and services; recreation; public health; cultural properties; tribal peoples; and customs, aspirations and attitudes.

Task 3. Legislative and Regulatory Considerations. Describe the pertinent regulations and standards governing environmental quality, health and safety, protection of sensitive areas, protection of endangered species, siting, land use control, etc., at international, national, regional and local levels (The TOR should specify those that are known and require the consultant to investigate for others.)

Task 4. Determination of the Potential Impacts of the Proposed Project. In this analysis, distinguish between significant positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts. Identify cumulative impacts. Identify impacts which are unavoidable or irreversible. Wherever possible, describe impacts quantitatively, in terms of environmental costs and benefits. Assign economic values when feasible. Characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with predictions of impact. If possible, give the TOR for studies to obtain the missing information. [Identify the types of special studies likely to be needed for this project category.]

Task 5. Analysis of Alternatives to the Proposed Project. Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives which would achieve the same objectives. The concept of alternatives extends to siting, design, technology selection, construction techniques and phasing, and operating and maintenance procedures. Compare alternatives in terms of potential environmental impacts; capital and operating costs; suit- ability under local conditions; and institutional, training, and monitoring requirements. When describing the impacts, indicate which are irreversible or unavoidable and which can be mitigated. To the extent possible, quantify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigating measures. Include the alternative of not constructing the project, in order to demonstrate environmental conditions without it.

Task 6. Development of Management Plan to Mitigate Negative Impacts. Recommend feasible and cost effective measures to prevent or reduce significant negative impacts to acceptable levels. Estimate the impacts and costs of those measures, and of the institutional and training requirements to implement them. Consider compensation to affected parties for impacts which cannot be mitigated. Prepare a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures.

Task 7. Identification of Institutional Needs to Implement Environmental Assessment Recommendations. Review the authority and capability of institutions at local, provincial/regional, and national levels and recommend steps to strengthen or expand them so that the management and monitoring plans in the environmental assessment can be implemented. The recommendations may extend to new laws and regulations, new agencies or agency functions, intersectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

Task 8. Development of a Monitoring Plan. Prepare a detailed plan to monitor the implementation of mitigating measures and the impacts of the project during construction and operation. Include in the plan an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to carry it out.

Task 9. Assist in Inter-Agency Coordination and Public/NGO Participation. Assist in coordinating the environmental assessment with other government agencies, in obtaining the views of local NGO's and affected groups, and in keeping records of meetings and other activities, communications, and comments and their disposition.

Report

The environmental assessment report should be concise and limited to significant environmental issues. The main text should focus on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data. Detailed or uninterpreted data are not appropriate in the main text and should be presented in appendices or a separate volume. Unpublished documents used in the assessment may not be readily available and should also be assembled in an appendix. Organize the environmental assessment report according to the following outline

Executive Summary, Policy, Legal and Administrative Framework, Description of the Proposed Project, Baseline Data, Environmental Impacts, Analysis of Alternatives, Mitigation Measures, Environmental Monitoring Plan, Environmental Management and Training, Appendices.

Environmental Management Plan

A mitigation or management plan should include the following items:

- Identification and summary of all the significant adverse environmental impacts that are anticipated;

- Description and technical details for each mitigation measure, including the type of impact to which it relates and the conditions under which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate;
- Institutional arrangements - the assignment of the various responsibilities for carrying out the mitigatory measures (e.g., responsibilities which involve operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training);
- Implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans;
- Monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures, and provide information on the progress and results of mitigation; and
- Integration into the total project cost tables of the cost estimates and sources of funds for both the initial investment and the recurring expenses for implementing the mitigation plan.

Example: Detailed Generic TOR for an EIA and EMP of a Hydroelectric Project

The EA report should include the following, in appropriate levels of detail.

Project Description

The EA should present a brief description of the proposed project and all its main components (construction of water diversion dams, regulation reservoirs,powerhouses**,** transport tunnels or channels**,** penstocks**,** vents**,** wells, pressure drainage,electrical system, wind turbines, kilns, stacks, fuel source and storage sites, steam boilers, transmission lines and access roads).

For hydropower projects, the EA should: (i) say whether it is a run of the river or reservoir; (ii) describe the generation capacity (large is > 10MW; small is <10 MW but >1 MW; mini is <1 MW; micros is< 0.1 MW); (iii) if run-of-the river, describe characteristics of diversion works and the nature of the downstream river (how many km will be effected); and, (iv) if a (new or existing) dam, provide full description of dam and reservoir size and the nature of the downstream river.

The EA should indicate the specific locations (if already known) and approximate surface area of all complementary facilities needed for project construction, such as construction camps, storage yards, parking lots, borrow pits, and waste disposal sites. If the locations of some complementary facilities will be at the discretion of the construction contractor, the bidding documents should identify appropriate environmental restrictions in site selection (avoiding sensitive areas) and facility design (minimizing the disturbed area, post-construction restoration, etc).

Project Site: Precise identification of the project's geographical setting at the screening stage greatly enhances the quality of the screening decision and helps focus posterior EA work on the important environmental issues. Whenever possible, maps of the projects area and layout characteristics should be used at appropriate scales. These maps should include the following key environmental features:

- A general lay-out two scale maps that include a general zone surrounding the project (1:25000) and another project specific site (1:10000), or sketches, indicating: (i) rivers and watersheds where the project will be developed; (ii) project proximity to protected areas, indigenous reserves, national parks and forests, cultural heritage sites, water bodies below and above the hydroelectric

project; (iii) details of the proposed location of the project (Conservation Area, Province, Canton, District, Town, River, nearby human settlements, etc.); and, (iv) location and distance in kilometers from the project structures to the nearest districts, towns and another nearby human settlements;
- Lands that must be acquired prior to project construction and operation;
- Activities in the region that may have a positive or negative impact in the development of the project; and,
- Water sources and land use patterns in the area: irrigation, industry-development, human consumption, washing clothes, recreation, fishing, and tourist or rural traffic.

Project Schedule: The EA should include a project schedule including the following aspects:

- A schedule of all project activities that include road construction, transmission lines, excavations, leveling of land, land cleaning, etc;
- Land acquisition plan of the total area that will be used for the project, including all civil works: machine storage space, works that may cause leakage (dam, landfills), regulation of dams, canals, air locks, roads, towers, pressure drainage, transmission lines, substations;
- A list of all equipment that will be used during the project's construction;
- Types of materials that will be for use during construction as well as necessary volume. Where will the materials be obtained (burrow pits, river extraction) and how will they be transported to the project site and proposed sites for construction wastes (earth cuts, construction waste); and,
- The estimated number of workers that will be contracted at the site or outside the site, during the construction period. Also, the size and location of any temporary or permanent worker's camp, food services (in-house, catering), and sanitary infrastructure for their campsites.

Project Operation: The EA should describe how the project would be operated, with emphasis on:

- Project operation and the type of machinery that will be used to operate the plant, including information in its generation capacity;
- Personnel that will be contracted at the site or outside the site, for the plant's operation and the training that will be offered for construction workers and operators;
- Noise levels that may be expected during construction and if explosives will be used;
- Management of solid wastes (boxes, plastics, tires, pipes, etc.) and liquids (spent oils, paints and solvents, wastewater); and,
- Sources of water for human/plant consumption.

Environmental Setting and Identification of Impacts

The report should discus relevant information on baseline conditions concentrating on those issues identified as critical during the screening exercise. Irrelevant information or that not related to environmental issues should not be included in the report. The following items should be used more as a guide on how to treat issues rather than a list of items to be included in the report. Environmental baseline description should also be adjusted to the type of project that is prepared (hydro, biomass, wind).

Physical Characteristics

Climate. Describe types of climate in the area and temperature, precipitation (average, maximum and minimum per season) and wind (particular direction and speed features per season).

Geology. Describe geomorphic characteristics, topographical and geological features of project areas. Describe land stability, adaptability, distribution and use of land, protected areas, types of soil, structure and texture. Indicate if the project will have an impact on the stability of slopes and roads.

Vulnerability. Indicate if the project is located in an area threatened by volcanic activity; describe seismic activity in terms of frequency and intensity in the area where the project would be located. Assess if project could cause or exacerbate landslides.

Hydrology. Provide information on the region's hydrographic network, covering minimum, maximum and average monthly and yearly water flow of rivers and creeks affected by the project. Include lowest and highest annual averages from the historical registries available. Describe the region's hydrogeology: indicate recharging area for aquifer as well as ground and underground water sources, permeability and depth of ground water levels. Describe the effect of the project on aquifers. Describe the changes in volume of water during the dry season that will be an end product of the project.

Other Hydraulic Infrastructure in the Watershed. Describe all other hydraulic infrastructure in the watershed and assess the cumulative impact. Assess the vulnerability of this project to dam breaks upstream.

Ecological Characteristics

Flora and Fauna. Describe the type of flora and fauna (land and water) that are predominant in the project area.Indicate the presence of protected, rare, and endemic species. Review relevant studies that indicate the presence or absence of these species and how these can be affected by the project. Describe the impacts that the project can have on flora and fauna communities, during the construction as well as the operation period and especially nearby rivers where water flows are likely to decrease. Describe location of any natural habitats in relation to project site.

Migratory Aquatic/Bird Species. Describe migratory species, shrimp habitats, endemic species, migration routes, etc. Describe the potential impacts of migratory species and possible consequences on aquatic ecosystems and on those that depend on these watershed resources. Describe endemic/endangered bird species and migration routes.

Gallery Forests. Describe if it is necessary to cut shrub vegetation as well as trees in the riverbanks or for any of the works (machinery stations, transmission lines and drainage). Indicate area that will be cut.

Social Aspects

Health. Indicate the presence of clinics or health centers that can attend emergencies and illnesses that may emerge during the project's construction phase. Describe the impacts that the project may cause in the transmission of illnesses transmitted through stagnant waters or insects (i.e. dengue, malaria, cholera, and hepatitis).

Cultural Heritage. Describe all significant archaeological, paleontological, or historical items that are found in the project site including cultural values such as local hunting, religion, archeological sites, local medicinal plants or trees, handicrafts, and others.

Land Use. Indicate the total area of the land required for the physical components of the project. Describe the total area that will be purchased by the project owner, disaggregated by main and secondary structures, reservoir, borrow pits, rock deposits and area needed for forestry and watershed protection or other related purposes. Describe the area of right-of-way corridors needed for transmissions lines and project access.

Land Tenure. Indicate the number of properties to be bought and total area of each property. Identify the number of properties partially affected and totally affected, number of totally affected properties that are occupied (e.g., houses) or under production (e.g., crops, cattle, others). Indicate the number of properties to be purchased that hold legal title and number of properties under possession or any other tenure modality. Provide information on ownership of land (e.g., public, private), traditional population, encumbrance details, etc. Describe the current land use in each of the properties to be bought and in the area of influence. Indicate if any change in land use is expected after project implementation.What strategies are being considered for purchasing land (e.g., Government lease, direct purchase, negotiated settlement, exchange (i.e., land by land), etc? Give detailed description of the area falling under each category. Indicate the proposed strategy to define unit land and crop prices – market prices, replacement value prices, others.

Affected Population. Identify the group or groups effected by the project, and identify the most vulnerable people (i.e., vulnerable in terms of poverty, illiteracy, lack of access to information, economic opportunities, etc.), describing the nature and scope of the effect expected**.**

Indigenous Peoples Groups. All indigenous peoples groups directly or indirectly affected by the project should be identified. Describe impact of project on these populations.

<u>Environmental and Social Mitigation Measures</u>

As with the environmental setting, the discussion of environmental issues should be correlated with those relevant issues identified at the screening stage. Each discussion should conclude on the necessary mitigatory, and compensatory measures or plans.

Natural Hazards and Vulnerability. All natural hazards risk should be evaluated including project location with respect to the natural vulnerability map. The report should include a description of all design, construction and operational measures that will be implemented to reduce these risks.

Hydrological impacts. If the impact on freshwater biodiversity is considered sensitive in any given project the proponent would be required to: (i) assess the hydrological balance of the affected river for situations with and without the project for high and low flow seasons; (ii) identify the potential conflicts on water users downstream from the projected imbalance; and (iii) assess the impact on freshwater biodiversity. The project proponent should propose a minimum ecological flow that would maintain the ecological functions of the affected stretch and the mechanisms to ensure appropriate water distribution of water among all users.

Natural Habitats. The EA should specify the project's physical "footprint", i.e. the surface area (ha or m2) and map locations of land to be cleared for the wind turbines, transmission lines, access road, and any other project facilities. The EA should describe the existing vegetative cover at the site of each proposed project facility, indicating whether any highly localized or threatened ecosystems (including critical natural habitats) are involved. Project location with respect to protected areas should be described. The EA should also indicate whether any project facilities are proposed within existing or officially proposed protected areas. If so, the EA should (i) verify that the project sponsors have obtained official permission from the relevant protected area management authority; and, (ii) specify the corresponding planned mitigation or compensation measures (including implementation schedule, budget, and institutional responsibilities).

Dam Safety: Provide a dam safety report, including: (i) inspection and evaluation of the safety status of the existing dam or dam under construction; (ii) review and evaluation of operation and maintenance procedures; and, (iii) provision of a written report of findings and recommendations for any remedial work or safety-related measures.

Power Transmission Lines. The EA should indicate, for each siting alternative considered, how many km of power transmission lines would be built as part of the development. To the maximum extent feasible, the power lines should be sited alongside or fairly close to existing highways, pipelines, or other corridors, so as to avoid creating a new corridor and to minimize the fragmentation of natural habitats. If there are any significant environmental issues related to the power lines, the EA should analyze alternative alignments.

Road Construction or Improvement. The EA should indicate, for each siting alternative considered, how many km of access road would need to be built or improved as part of the development. For some power generation projects, the most important adverse environmental impacts come from the access roads, rather than the facilities themselves. The EA should assess any likely induced impacts (new settlement, hunting, fuelwood cutting, livestock grazing, etc.) attributable to new or improved access roads. For hydropower projects, any roads that give access to reservoirs, water intake structures, or dams should not be inside the 50-meter riparian zone. Also, hydropower projects are often built in areas of high precipitation and altitude and, under these circumstances, opening of new roads is probably the greatest source of erosion and landslides in such areas. If there are any significant road-related environmental issues, the EA should analyze alternative access road alignments; all proposed roads (along with other project works) should feasibly be sited so as to avoid or minimize the potential adverse environmental impacts (including loss and fragmentation of natural

habitats). Any new road works (if needed) should be engineered so as to avoid the sedimentation or blockage of streams or other natural drainages.

Indigenous Peoples. Based on its location, the project should identify if it is likely to affect indigenous lands. If triggered, an indigenous peoples development plan may be required. In projects where adverse impacts are anticipated, the Borrower undertakes a social assessment and prepares an Indigenous Peoples Development Plan (IPDP) in consultation with the affected indigenous groups. The Borrower should consider the views and preferences of indigenous peoples in deciding whether to proceed with the project and what additional measures are required to address adverse impacts and enhance project benefits.

Land Acquisition. The project should establish the need for land purchase. Written evidence should be presented, indicating for each of these families their consensus on selling their lands to the project as well as their preference for assisted rehabilitation or resettlement. The project should describe the grievance redress mechanism legally available in the country and the grievance mechanisms that will be available to solve conflicts at the local level.

Rehabilitation and Resettlement Plan. The project should establish the need for population displacement and the expected number of families to be displaced, explaining why displacement is unavoidable. Written evidence should be presented, indicating for each of these families their consensus on selling their lands to the project as well as their preference for assisted rehabilitation or resettlement. The project should explain the actions taken and proposed to ensure restoration/improvement of living standards. In general, a Rehabilitation and Resettlement Plan should include: (i) a description of the existing national legal framework quoting the relevant provisions and applicability for each specific case; (ii) a flow chart of actions for the entire Resettlement Action Plan along with the detailed budget, time frame and identification of responsibilities of each party; (iii) the entitlement calculations for payment of compensation for dwelling or land losses at replacement value; (iv) a well designed program to ensure continuous consultation with, and participation of each of the displaced families during the entire plan; and (v) a description of the nature of the mitigation and/or compensation measurements that will be put in place to reduce negative impacts and optimize benefits. In particular, the project should describe the grievance redress mechanism legally available the grievance mechanisms that will be available to solve conflicts at the local level.

Cultural Property. If such cultural property is encountered as part of the EA, it should be protected or salvaged (as needed) as part of the project. As part of the Environmental Rules for Contractors (see below), the EA should provide: (i) simple Chance Find Procedures, in case previously unknown cultural property is uncovered during project construction; and, (ii) good behavior rules for contractors and construction workers to help ensure that significant cultural property is not damaged or stolen.

Pollution Issues. Biomass projects should comply with existing regulations regarding water and air emissions. Appropriate treatment of effluents should be incorporated in project design and costs in order to guarantee compliance. Clean technologies, recycling and/or re-use of waste streams should be the guiding principle. Appropriate treatment technologies for wastewater should also be preferred.

Community Participation and Consultation. The screening exercise could well identify the need for community consultation in the area of influence of particularly sensitive sites. A community consultation methodology needs to be designed which may include an opinion survey and a consultation program encompassing broad and specific areas of influence of the projects. The methodology may include specifically designed questionnaires and strategies for (i) public and community organizations directly affected by the projects; and (ii) the civil society (conservation NGOs for instance) in general. The public and community organizations to be consulted include (i) affected families, indigenous groups; (ii) local chambers of commerce and industries; and, (iii) community organizations (water users associations, neighborhood organizations and local NGOs. The public and community in general could further be divided into two groups: (i) public at large in the area of influence, including national level NGOs; and, (ii) affected community in the immediate area of the proposed works. The consultation program may involve both formal and informal presentations and meetings with the target groups; information dissemination campaigns through fliers, posters, and radio announcements; and an opinion survey. The EA should present evidence of consultation events with the participation of the population from the project's area of influence (including not only landowners, but also other local actors) to inform about project's characteristics and impacts expected on both the natural environment and the population. It is important to propose mechanisms/efforts for public consultation and disclosure of information that will be set in motion during construction and operation in the project's area of influence. The proponent should explain how public participation is ensured during project design, construction and implementation. The proponent should also enumerate the compensation measures agreed with the community, and provide evidence of said agreement; the budget for these activities should be included in the project costs.

Institutional Arrangements. The EA should indicate the necessary institutional arrangements for monitoring the implementation of the environmental and social management plan. It may be necessary to design mechanisms to keep surrounding communities informed about the project's construction and operation activities (e.g., through local offices, local promoters and communicators, contracts with NGOs or consultants specialized on participatory action plans, etc.). The project should include the staff and budget needed for the above activities, indicating if the estimated costs have been incorporated in the project costs as well as provisions for contingencies.

Environmental Management of Construction Activities. Construction activities could cause important impacts and nuisances to surrounding areas. These impacts merit careful planning of construction activities and the application of strict environmental measures during construction. The EA should include Environmental Rules for Contractors, which should then be incorporated within all relevant bidding documents, contracts, and work orders. These rules should include specific prohibitions for: (i) cutting of trees outside the approved right-of-way for construction purposes, firewood or for any other purposes; (ii) hunting of birds, mammals or any fauna in the area; (iii) oil changes, maintenance of equipment, vehicles will not be allowed in or near streams and can only be carried out in maintenance yards (the contractor will included his bid how he will deal with contingencies from oil or lubricant spills); (iv) depositing earth cuts and any other construction waste outside the approved disposal sites (greater than 300 m from rivers or other wetlands); and, (v) prohibition of fires and the need to have fire control equipment in each front. Before the closing of any

work front the specifications require the implementation of a site restoration and re-vegetation plan, clean up, repair of any damage to fences or any other infrastructure, re-vegetation of riverine vegetation, decompacting of soils, etc.

For construction in or near populated areas, additional specifications should also be taken. Among the aspects that should be kept in mind are: (i) pedestrian safety and traffic congestion during construction due to the increase of heavy traffic (of the construction itself and from traffic detours) in high traffic avenues and exit ramps; (ii) dust and particulate materials, causing nuisances to surrounding families and businesses, specially to vulnerable people (children, elders); (iii) undesirable noise levels due to the machinery and equipment specially in areas with hospitals, homes for the elderly, schools; (iv) degradation of lateral streets due to heavy equipment machinery and traffic detours; (v) the interruption of services (water, electricity, telephone, bus routes) during construction; (vi) the adequate disposal of garbage, metals, used oils, and excess material, generated during construction; (vii) the need of informing the population about construction and work schedules, interruption of services, traffic detour routes, provisional bus routes; and, (viii) pedestrian security measures, specially for school children, during construction. All these measures can be included in an environmental manual that would be part of bidding documents.

Some projects may generate substantial amounts of construction waste that requires appropriate environmental handling. The identification of suitable sites for waste disposal, the environmental management necessary (compacting, re-soiling and re-vegetation, drainage control), and the associated transportation costs should be included in project design and cost estimates.

Environmental Supervision during Construction. The EA should indicate how compliance with environmental rules and design specifications would be supervised, along with the penalties for non-compliance by contractors or workers. The supervision the construction will include the compliance with the manual and the environmental specifications by the contractor.

Environmental Management Plan

All mitigation and compensation plans and activities should be included in an Environmental Management Plan (EMP) for the project. The EMP should include: (i) a description of all mitigation, compensation and control measures; (ii) implementation schedule coordinated with project design, bidding, construction and operation phases; (iii) institutional responsibilities; (iv) description of monitoring programs; and, (v) cost estimates and sources of funds.

Environmental Measures during the Operational Phase. During the operation phase of some type of construction works (large isolated buildings, for instance) adequate provisions should guarantee (i) the maintenance of the systems of collection and treatment of wastewater; (ii) the adequate collection and disposal of solid waste, incorporating recycling systems and the separation of materials; (iii) the maintenance of complimentary systems (solar panels, wind mills, etc.). The engineering design should include the preparation of operation al manuals and maintenance of all systems.

The report should detail all environmental and social monitoring plans indicating: parameters, frequency, reporting schedules, responsibility and sources of funds. Appropriate parameters could include: water quality, river flows and levels, ecological monitoring, social indicators, etc.

Annex 6: Resettlement Policy Framework

Introduction and project objectives

The Myanmar Ayeyarwady Integrated River Basin Management (AIRBM) Project, implemented by the Directorate of Water Resources and Improvement of River Systems (DWIR), is designed as a multi-phased approach (Series of Projects) to strengthen integrated, climate resilient management and development of the Ayeyarwady River Basin and national water resources. The first phase aims at developing 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. Specific project locations for interventions linked to navigation enhancements and hydromet warning on the Ayeyarwady from Mandalay to Yangon will be selected and identified during project implementation once the relevant modeling and feasibility studies are developed.

The proposed first phase will also lay the groundwork needed to undertake large-scale infrastructure investments in possible second or third phase (yet to be determined). It will provide the government with the capacity to do basin-wide scenario analyses, to properly identify and assess the complex trade-offs that inevitably arise from large long-lived water infrastructure investments, and to follow economic, environmental and social 'good practices'. Therefore, the first phase will also support pre-feasibility, feasibility and other upstream technical studies for priority infrastructure investments that will be primarily identified in the course of a basin planning framework exercise (master plan) for potential funding in subsequent phases. A Strategic Environmental and Social Assessment report will be prepared in parallel with the river basin master plan during project implementation in line with specific ToRs described in this document (Annex 2).

The first phase project includes three inter-related investment components plus a contingency component to allow for rapid reallocation of funds if emergencies arise, as below:

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

Subcomponent 1.1. Institutional Development: This sub-component will support (a) construction or refurbishment of a NWRC Secretariat and Hydro-Informatics Center headquarters facility including provision of office furnishings and equipment, (b) establishment and delivery of the mandates of the newly created NWRC Secretariat, Hydro-Informatics Center and Expert Group, including institutional, legal and regulatory reviews and reforms, (c) creation of a stakeholder forum, communications and outreach, and (d) capacity building.

Subcomponent 1.2. Ayeyarwady Integrated River Basin Master Plan and Decision Support System: 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. Activities include (a) development of the Ayeyarwady Master Plan, basin-wide diagnostic studies, a Decision Support System (DSS), and stakeholder consultations, (b)

implementation of a groundwater survey, and (c) development of Basin-wide Strategic Environmental and Social Assessment.

Subcomponent 1.3. Project Preparation Facility (PPF): The PPF will provide finance to support the preparation of priority projects identified in the Ayeyarwady Basin Master Plan. Funds will be made available to prepare investments to international quality standards and in accordance with basin wide development objectives.

Subcomponent 1.4. Implementation Support: This sub-component will provide incremental running costs and consultant and advisory services for overall project management, financial management, procurement, safeguards and monitoring and evaluation.

Component 2: Hydromet Observation and Information Systems Modernization

Subcomponent 2.1. Institutional and Regulatory Strengthening, Capacity Building and Implementation Support of DMH: This sub-component will support (a) institutional strengthening of the DMH including the development of a robust legal and regulatory framework, (b) capacity building and training for DMH staff, and (c) technical assistance in DMH systems design, integration and operations as well as Component 2 management and monitoring.

Subcomponent 2.2. Modernization of Observation Infrastructure, Data Management Systems and Forecasting: This sub-component will support (a) technical upgrading of the hydro-meteorological observation network, (b) modernization operations centers, data management and communications/IT systems, engineering and calibration facilities, (c) improvements in numerical weather prediction systems and associated hydrological modeling frameworks and (d) reconstruction and/or refurbishment of DMH facilities.

Subcomponent 2.3. Enhancement of the Service Delivery System of DMH: This sub-component will support DMH in strengthening its service orientation in order to ensure project benefits are realized across the range of stakeholders. This will likely include (a) enhancement of Public Weather Services and Hydrological Services and improvement of service delivery to communities, (b) support for DRM operations including expansion of "end-to-end" early warning systems in small river basins with floods and flash floods, (c) development of an Agricultural and Climate Advisory Service (ACAS), and (d) the creation of a National Framework for Climate Services.

Component 3: Ayeyarwady River Navigation Enhancements

Subcomponent 3.1. Ayeyarwady River Navigation Strategy (Mandalay to Yangon): This sub-component will develop (a) a navigation strategy for the full navigable length of the river from Mandalay to Yangon. This strategy will (i) update the currently referenced 1988 feasibility study for the entire river taking into account potential inland port developments to promote multi-modal transport planning in the future, (ii) identify the scope of works for navigational improvement including training works, dredging, bank protection and navigation aids on the two most urgent bottleneck stretches of about 30km each, (iii) provide detailed design for pilot training works at

two stretches, (iv) and recommend a maintenance plan for the river (linked with sub-component 3.2.c.) and (b) a fleet optimization study.

Subcomponent 3.2. Navigation Improvements (Mandalay to Yangon with a focus on the Mandalay - Nyaung Oo section): This sub-component will support navigation improvements to increase the least available draught during the low water season for both passenger and cargo vessels along the busiest stretch of the Ayeyarwady river (Mandalay to Nyaung Oo). Activities will include: (a) 1-dimensional and 2-dimensional river modeling to identify the scope of works for river navigation enhancements, (b) preparation of an EIA, including an EMP for the proposed enhancement works, (c) preparation of detailed design documents and construction supervision, and (d) construction of enhancement works. The scope of works will be focused on the Mandalay – Nyaung Oo stretch of the Ayeyarwady and will be expanded to some other critical stretches on the Nyaung Oo – Yangon reach.

Subcomponent 3.3. Navigation Aids (Mandalay to Yangon with night navigation focused on the Mandalay – Nyaung Oo section): This sub-component will support the purchase and installation of navigation aids such as lighting, signage, mapping and a strengthened river pilot system to enhance safety and facilitate efficient navigation along the Mandalay – Yangon section of the Ayeyarwady. In addition it will support investments, for example in lighting and signage, to enable night navigation on the Mandalay – Nyaung Oo section.

Subcomponent 3.4. Institutional Strengthening and Implementation Support: This component will support (a) Component 3 implementation and management, and (b) capacity building, training and communications and awareness raising activities on river improvements and new information, regulations and procedures.

Subcomponent 3.5, Design and piloting of surface water quality monitoring system: This component will (a) design the possible network of monitoring station for river water quality in the Ayeyarwady River Basin, (b) implement a few pilot stations and (c) include capacity building for water quality monitoring.

B. RPF Objectives, Definitions and Key Principles

This Resettlement Policy Framework covers the first three components described above. The project investments are expected to be designed to have generally positive social and environmental benefits. However, some investments supported by the Project may require relocation, land acquisition or involve other loss of private land or assets. Of all projects components to be supported under the project, the component 3, Navigation enhancement on the Ayeyarwady River, may entail some temporary occupation of land along the river bank during the construction phase. The Ayeyarwady river navigation strategy to be developed under the component would prepare a maintenance plan that will serve as the basis for the maintenance plan for the whole river at the latter stage, which may entail temporary, or permanent land acquisition or asset loss. Component 2 would support modernization of the observation infrastructure which may result in land acquisition of very minor scale. Under Component 1, various studies will be undertaken and the Ayeyarwady River Basin Management and Development Plan including a 10-year investment plan would be developed based on the results. The implementation of the Plan and

investments funded under the PPF may require land acquisition or asset loss that would trigger the Bank's OP 4.12. Component 1 would also support the construction or refurbishment of a NWRC Secretariate and Hydro-Information Center Headquarters, which is expected to be built on state land, however, the exact location is to be determined and some land acquisition cannot be ruled out.

Since the specific activities and detailed location of project financed activities have not been determined before World Bank appraisal of the project, any site-specific resettlement plans cannot be developed until during project implementation. This Resettlement Policy Framework (RPF) is prepared to set out policies and procedures to screen all project financed activities to identify if they entail acquisition of private land or have other impacts covered by the Bank's OP 4.12, and if this is the case, address such impacts in line with OP 4.12.

In World Bank-assisted projects, borrowers are expected to take all necessary measures to mitigate adverse social impacts, including those associated with land acquisition. Every reasonable effort is made in project design to avoid or minimize the need for land acquisition. If land acquisition cannot be avoided altogether, the principle objective of the RPF is to ensure that all persons subjected to adverse impacts ("displaced persons" as defined below) are compensated at replacement cost (as defined below) for land, unharvested crops, and any attached assets or improvements on the land to be acquired.

The World Bank OP 4.12 aims to achieve the following objectives:

(a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.
(b) Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.
(c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

This RPF aims to meet the objectives of the OP 4.12 as described above.

Project Principles for Involuntary Resettlement:
OP 4.12 establishes key principles to be followed in resettlement planning and implementation. Of particular relevance for this RPF are the following:

a) All efforts will be made to avoid, or minimize if unavoidable, involuntary resettlement including involuntary loss of private land. Detailed designs will be adjusted to avoid such impacts. If however land acquisition is unavoidable, a Resettlement Action Plan (RAP) will be developed following measures provided in this RPF; if the project activity or sub-project affects less than 200 persons, an Abbreviated RAP is prepared.
b) Wherever possible, project design and RAPs should be conceived as development opportunities, so that displaced persons may benefit from the services and facilities created for, or by, project activities.

c) All displaced persons are entitled to compensation for land and attached assets, or to alternative but equivalent forms of assistance in lieu of compensation. Lack of legal rights to the assets lost will not bar displaced persons from entitlement to such compensation or alternative forms of assistance.
d) Compensation rates as established in a RAP refer to amounts to be paid in full to the eligible owner or user of the lost asset, without depreciation or deduction for any purpose.
e) When cultivated land is acquired, the borrower should seek to arrange land-for-land replacement if that is the preference of the displaced person.
f) Compensation for land, unharvested crops and attached assets should be paid prior to the time of impact.
g) Any loss of income or assets that results from the temporary occupation of private land will be fully compensated on a net basis. The affected people will be assisted to negotiate with civil works contractors to minimize the duration and impact of temporary occupation by adjusting the location and the construction schedule.
h) Temporarily occupied land will be fully reinstituted to the original state following the completion of civil works.
i) Displaced persons should be consulted during the process of RAP preparation, so that their preferences regarding land acquisition and compensation arrangements are solicited and considered.
j) The draft and final RAPs are publicly disclosed in a manner accessible to displaced persons.
k) The previous level of community services and access to resources will be maintained or improved after land acquisition.
l) The borrower is responsible for meeting costs associated with land acquisition and compensation. The RAP includes a budget for all costs associated with land acquisition, including contingency arrangements.
m) Methods by which displaced persons can pursue grievances will be established and information regarding these grievance procedures will be provided to displaced persons.

Definitions:

“Displaced persons” refers to all the people who, on account of project activities, would have their (i) standard of living adversely affected; or (ii) right, title, interest in any house, land (including premises, agricultural and grazing land) or any other fixed or movable asset acquired or possessed temporarily or permanently; (iii) access to productive assets adversely affected, temporarily or permanently; or (iv) business, occupation, work or place of residence or habitat adversely affected. The term incorporates all potential categories of persons affected by land acquisition and associated impacts; all of those adversely affected are considered “displaced” under this definition regardless of whether any relocation is necessary.

"Replacement cost" is defined as follows: For agricultural land, it is the pre-project or pre-displacement, whichever is higher, market value of land of equal productive potential or use located in the vicinity of the affected land, plus the cost of preparing the land to levels similar to those of the affected land, plus the cost of any registration and transfer taxes. For land in urban areas, it is the pre-displacement market value of land of equal size and use, with similar or improved public infrastructure facilities and services and located in the vicinity of the affected land, plus the cost of any registration and transfer taxes. For houses and other structures, it is the market cost of the materials to build a replacement structure with an area and quality similar to or better than those of the affected structure, or to repair a partially affected structure, plus the cost of transporting building materials to the construction site, plus the cost of any labor and contractors' fees, plus the cost of any registration and transfer taxes. In determining the replacement cost, depreciation of the asset and the value of salvage materials are not taken into account, nor is the value of

benefits to be derived from the project deducted from the valuation of an affected asset. Where domestic law does not meet the standard of compensation at full replacement cost, compensation under domestic law is supplemented by additional measures so as to meet the replacement cost standard. Such additional assistance is distinct from resettlement measures to be provided under other clauses in OP 4.12, para. 6.

C. Legal and Regulatory Framework

The legal framework in Myanmar is evolving. Myanmar does not have a unitary land law but has several laws for different categories of land. All land belongs to the state under the current legal system, and land users receive certificates from the Settlement Land Records Department. The Land Acquisition Act (1894) provides certificates. When private land is acquired or private assets such as trees and standing crops are lost under public or private projects, compensation is paid at market value. The Act also provides that affected people with complaints can bring the case to court.

A new Farmland Law was recently adopted which introduced various reforms such as the recognition that farmland owners are able to sell, mortgage, lease, exchange, inherit or donate all or part of their farmland. There is also the requirement that compensation be paid for both land and buildings attached to it. As for non-agricultural land in rural areas, the Village and Town Act are under revision. The Vacant, Fallow and Virgin Land Management Law, which was recently adopted, define legal provisions on unused land.

The national legislation regarding compensation for loss of land and assets is similar to the key principle of OP 4.12 requiring compensation for lost assets at replacement cost. However, OP 4.12 is more detailed and includes a number of requirements not found in national legislation, such as preparation of a Resettlement Action Plan, consultations and public disclosure. For the AIRBMP, all requirements of OP 4.12 applies and the Government of Myanmar agrees to waive any legal or regulatory provisions in contradiction to the requirements established in this RPF, and to take actions necessary to ensure full and effective implementation of RAPs prepared in accordance with the RPF. More in-depth analysis of the national legal framework in comparison to OP 4.12 will be undertaken during project implementation, and required RAPs will include any new developments in the legal framework.

D. Eligibility Criteria and Entitlements

The purpose of resettlement planning is to ensure that displaced persons have sufficient opportunity to replace assets they will lose, and to improve or at least restore their incomes and living standards. To achieve these objectives, it is essential to ensure that all displaced persons are identified, and to ensure that all displaced persons are deemed eligible for appropriate mitigation measures in the RAP. With regard to minor land acquisition, displaced persons are normally eligible for compensation at replacement cost for:

a) All land to be acquired. If agricultural land is acquired, the project should assist displaced persons in obtaining replacement land of equivalent productive value if that is their preference
b) The market value of any unharvested crops and estimated future value of productive trees (fruit, nut or timber)
c) Any fixed assets or improvements on the land to be acquired;

d) If land is temporarily acquired to facilitate project construction, temporary use compensation is required and the land must be returned to its original condition (or better) after use.

If partial land acquisition would render the remainder of the plot economically unviable, inaccessible, or unsafe for use or habitation, the project should acquire the plot in its entirety at the request of the displaced persons.

For minor land acquisition involving communal or collective land, compensation at replacement cost normally is provided to the community or collective ownership. Displaced persons directly affected by loss of communal or collective land will be compensated for unharvested crops, productive trees and other fixed assets or improvements they have established on the land they use.

Affected persons who have no recognizable legal right or claim to the land they are occupying, e.g. informal users or encroachers on public land, may not be entitled to land compensation, but are compensated at replacement cost for unharvested crops, productive trees, and other assets or improvements they have established on the land they use.

The project design process is intended to identify and mitigate any project-caused obstructions or restrictions on access to lands, water, or other natural resources. Any persons subjected to unmitigated obstructions or restrictions on access are eligible for appropriate project mitigation assistance.

Entitlements:

A detailed Entitlement Matrix will be developed for each required RAP when the exact scope and scale of impacts are known. The following generic Entitlement Matrix provides the principles that will be used during implementation:

Table 12. Generic Entitlement Matrix

Type of Losses	Entitled Persons	Entitlements	Implementation Issues
Loss of private land	Legal owners or occupants identified during census	Cash compensation at replacement cost which is equivalent to the current market value of land within the village, of similar type, category and productive capacity, free from transaction costs (taxes, administration fees)	
	Affected persons who have no recognizable legal right or claim to the land they are occupying	At minimum, rehabilitation assistance to achieve the policy objective (to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher)	

Loss of trees, structures and other private assets	Owners of affected structures, regardless of tenure status	Cash compensation at replacement cost Salvage materials will be handed over to affected people	If remaining parts of the structures are not sufficient for use, compensation will be paid for the entire affected buildings Transportation of salvage materials will be assisted by the project
Temporary land occupation	Legal owners or occupants identified during census	Cash compensation for loss of income or assets on a net basis Reinstitute land to the original state after the completion of civil works	Responsible CMUs will monitor implementation

E. PROJECT PROCEDURES

Responsibility for implementation of this RPF and for preparation and implementation of RAPs for specific activities and sub-projects (including responsibility for meeting all associated costs) rests with the Government of Myanmar. The agency with overall responsibility in this project is DWIR. As necessary, DWIR will exercise its authority to coordinate actions with any other agencies involved to ensure timely and effective implementation.

Component DirectorUnits (CDUs) at the central level that is in charge of reviewing detailed designs and hiring contractors for civil works will determine if any land acquisition or asset loss is necessary. A Land Acquisition Checklist will be developed and attached to the project Operational Manual. The checklist will include the following, at a minimum:

Table 13. Land Acquisition Checklist (sample, to be finalized in the project OM)

Screen / Check for	**Yes/ No**	**Requiremements**
Will the implementation of project financed activities require temporary or permanent land acquisition or result in loss of private assets (e.g. trees, fences, standing crops, etc) that are owned or used by private individuals?		If yes, apply OP 4.12 as described in this RPF. Assess type and scope of impacts to determine appropriate preparation process and mitigation measures
Have affected people been clearly explained that they are entitled to compensation at replacement cost?		If no, ensure efforts are made to inform and consult with affected communities; disclose RPF in a manner and language understandable to local communities
Has alternative technical solutions or design adjustments been explored to avoid or minimize impacts?		If no, assess if alternatives are available to avoid or minimize impacts
Has land been acquired before Bank intervention?		If yes, undertake a due diligence assessment and report to assess if land acquisition has followed national requirements and is consistent with the objectives of OP 4.12. Prepare an action plan to address gaps

		identified in the due diligence process
Are there any conflicts over land and/or titling of land?		If yes, undertake process to resolve issues before financing

If land acquisition or asset loss is unavoidable, after efforts have been made for avoidance, relevant CMU will, in consultation with the Bank, develop a RAP or an abbreviated RAP based on the requirements set out below and in OP 4.12.

Preparation of the RAP begins once it is determined that land acquisition is necessary to complete any of the project activities, and once siting criteria establish the land area to be acquired. The relevant CMU will carry out, or cause to be carried out, a census survey to identify and enumerate displaced persons and to identify and inventory land and other assets to be required. The census survey must cover all of the displaced persons and identify all of their assets affected.

If a RAP is to be prepared, it must be based on the principles, planning procedures and implementation arrangements established in this RPF. The scope and level of detail of the resettlement instruments vary with the magnitude and complexity of resettlement. In preparing the resettlement component, the borrower draws on appropriate social, technical, and legal expertise and on relevant community-based organizations and NGOs. The borrower informs potentially displaced persons at an early stage about the resettlement aspects of the project and takes their views into account in project design.

A RAP normally includes the following contents:[2]

a. Description of the project and identification of affected project areas;

b. Identification of the project components or activities that give rise to resettlement; the zone of impact of such component or activities; the alternatives considered to avoid or minimize resettlement; and the mechanisms established to minimize resettlement, to the extent possible, during project implementation;

c. Objectives of RAP;

d. Socioeconomic studies: baseline information of affected persons (e.g. general characteristics, economic and cultural conditions, existing incomes and use of natural resources, vulnerable groups);

e. Census/survey results: identification and enumeration of all affected persons, identification and inventories of all lost land, structures and other assets (including temporary impacts) through a 100% census and survey;

f. Legal and institutional framework;

g. Eligibility criteria for compensation and all other forms of assistance;

h. Valuation of and compensation for losses, in kind or in cash, at replacement cost;

i. Site selection (including environmental assessment of proposed sites), site preparation, and relocation;

[2] See OP 4.12. See also the Bank's Involuntary Resettlement Sourcebook for more guidance on the preparation and content of a RAP and abbreviated RAP.

j. Replacement or restoration of public infrastructure and social services, if needed;

k. Detailed arrangements for livelihood improvement (or restoration);

l. Identification of vulnerable households, and full description of planning measures for which they are eligible

m. Consultation and participation arrangements, including mechanism for grievance redress

n. A detailed implementation schedule, corresponding as appropriate to the timetable for construction of civil works;

o. Costs and budget, identifying all unit rates for compensation, and including contingencies for price escalation and unanticipated expenses;

p. Arrangements for monitoring and evaluation, including external monitoring if considered necessary by the Bank; and

q. Entitlement Matrix, listing by column all categories of adverse impact including categories of land or other assets lost, eligibility criteria, and entitlements (specified by unit rate, allowance amount, or other measure) for each category.

An abbreviated RAP normally includes the following elements:

a) a census survey of displaced persons and inventory of affected land and assets;
b) description of asset valuation and compensation procedures;
c) eligibility criteria for compensation and any other forms of assistance;
d) compensation rates for all categories of land and other assets
e) consultation and disclosure arrangements;
f) organizational arrangements for implementation
g) timetable and budget; and
h) arrangements for monitoring and implementation, including grievance procedures.

F. Implementation Arrangements

The Project Directors' Unit (PDU) is overall responsible for safeguard compliance under the project, but the day-to-day implementation will be delegated to each Component DirectorUnit (CDU) which will implement this RPF for the respective components. Each CDU will be headed by the Component Director and include designated staff in charge of RPF.

G. Funding Arrangement

DWIR bears responsibility for meeting all costs associated with land acquisition, although financing may come from implementing partners. Any RAP prepared in accordance with this RPF requires a budget with estimated costs for all aspects of RAP implementation. All persons adversely affected by land acquisition are entitled to compensation or other appropriate mitigation measures, regardless of whether these persons have been identified at the time of resettlement planning, and regardless of

whether sufficient mitigation funds have been allocated. For this reason, and to meet any other unanticipated costs that may arise, the RAP budget includes contingency funds, typically 10 percent of estimated total costs.

Compensation rates included in the RAP provide the basis for calculating compensation amounts due to displaced persons. Compensation must be paid in full to the displaced person or persons losing land or other assets. No deductions from compensation will occur for any reason. The RAP should describe the procedures by which compensation funds will flow from DWIR, or implementing partner, to the displaced persons.

H. Consultations and Disclosure Arrangements

Affected people will be consulted during the preparation of the RAP. The draft RAP should be consulted with affected people and their inputs should be incorporated in the final RAP. It should be prepared in Burmese, and relevant local language if affected people are ethnic minorities. Consultations should be conducted in a local language and sufficient lead time (minimum 2 weeks) should be given to ensure all affected people are able to participate in consultations and be fully informed of the RAP.

The RAP must describe measures taken to consult with displaced persons regarding proposed land acquisition and other arrangements, and it summarizes the results of those consultations. The DWIR also ensures public disclosure of the RAP, in draft and final stages, to the displaced persons and the general public in the project area, in a language and location accessible to them. Disclosure of the draft RAP should occur at least one month prior to Bank review and approval. Disclosure of the final RAP occurs following Bank approval.

I. Monitoring and Grievance Procedures

DWIR will monitor the implementation of the RPF and report this monitoring to the Bank on a regular basis. Each required RAP will include detailed monitoring arrangements for the project financed activity / subproject and its RAP measures.

To ensure that displaced persons have avenues for raising complaints relating to land acquisition, compensation payment, construction-related damages, or other aspects of project implementation, a multi-step grievance procedure will be established in the RAP. The SESA will assess in more detail appropriate grievance redress mechanisms for the project and each required RAP will detail the procedures for that paeticular project activity or subproject. Necessary elements of the grievance procedures include:

a) An initial stage, within the local village or town level, in which any person aggrieved by any aspect of the land acquisition process can lodge an oral or written grievance to local authoratives who are involved in project implementation. If the complaint cannot be resolved within 30 days of receipt, it advances to the second step of the process.

b) Stage 2, if the aggrieved person is not satisfied with the outcome of initial stage consideration, or if local level review is unable to reach a proposed solution, the aggrieved person can refer the issue to a grievance committee established by DWIR, the CDU and/or implementing partner for the given project activity or subproject. The grievance committee, which is chaired by the DWIR, the CDU or implementing partner and includes representatives not directly affiliated with any of the implementing agencies reviews issues raised in the initial complaint and any actions for resolution suggested at the lower level and makes recommendations for resolution within 30 days.

c) Stage 3, if the aggrieved person is still dissatisfied following review by the grievance committee, the case may be referred to legal proceedings in accordance with the Government of Myanmar's laws and procedures.

The DWIR, CDU and implementing partner keep a record of all complaints referred to the grievance committee, including a description of issues raised and the outcome of the review process.

APPENDIX 1: SAMPLE Tables for RAP:

Table 14. Property (goods and assets affected)

Household Number[1]	Business Number[2]	Name of Household head or business owner	Plot Area	Description of houses and constructions	Uses of the property (housing, economic activity, other)	Level of effect (total, partial, minimum)[3]	Tenure status (titled owner, owner without documents, tenant, sharecropper etc.)	Employment status of all adults	Comments

[1] Households should be defined as commensal units i.e. people who eat out of the same pot or at the same table.

[2] Business should be defined as any economic activity

[3] "Partial" in cases where family/business can develop activities involving listed goods and assets; "Total" where activities cannot be developed as a result of displacement

[4] If they are not owners, include the name and address of the owner

Table 15. Socioeconomic characteristics of families

Household Number[1]	Name of Household head	Number of persons in household	No. of children <13 years of age	No. of adults +60 years of age	No. of students	Sources of income	Place of work or study and distances	Means of transport to place of study/workplace	Comments

Table 16. Socioeconomic characteristics of business

Business Number	Name of Business owner	Age of business owner	Type of activity	Number of employees	Monthly income average	Destination of production	Place of selling	Duration of existence of business in affected location	Comments

Table 17. Impacts caused by displacement (Households)

Household Number	Loss of land	Loss of house	Loss or decrease of income	Loss or difficulty of access to educational services	Loss of access to health services	Loss of access to public services	Loss of social networks	Comments

Table 18. Impacts caused by displacement (Businesses)

Business Number	Loss of land	Loss of Business place	Loss or decrease of income	Loss of economic networks	Comments

Annex 7: Indigenous People Planning Framework

A. Introduction and project objectives

The Myanmar Ayeyarwady Integrated River Basin Management (AIRBM) Project, implemented by the Directorate of Water Resources and Improvement of River Systems (DWIR), is designed as a multi-phased approach (Series of Projects) to strengthen integrated, climate resilient management and development of the Ayeyarwady River Basin and national water resources. The first phase aims at developing 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. Specific project locations for interventions linked to navigation enhancements and hydromet warning on the Ayeyarwady from Mandalay to Yangon will be selected and identified during project implementation once the relevant modeling and feasibility studies are developed.

The proposed first phase will also lay the groundwork needed to undertake large-scale infrastructure investments in possible second or third phase (yet to be determined). It will provide the government with the capacity to do basin-wide scenario analyses, to properly identify and assess the complex trade-offs that inevitably arise from large long-lived water infrastructure investments, and to follow economic, environmental and social 'good practices'. Therefore, the first phase will also support pre-feasibility, feasibility and other upstream technical studies for priority infrastructure investments that will be primarily identified in the course of a basin planning framework exercise (master plan) for potential funding in subsequent phases. A Strategic Environmental and Social Assessment report will be prepared in parallel with the river basin master plan during project implementation in line with specific ToRs described in this document (Annex 2).

The first phase project includes three inter-related investment components plus a contingency component to allow for rapid reallocation of funds if emergencies arise, as below:

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

Subcomponent 1.1. Institutional Development: This sub-component will support (a) construction or refurbishment of a NWRC Secretariat and Hydro-Informatics Center headquarters facility including provision of office furnishings and equipment, (b) establishment and delivery of the mandates of the newly created NWRC Secretariat, Hydro-Informatics Center and Expert Group, including institutional, legal and regulatory reviews and reforms, (c) creation of a stakeholder forum, communications and outreach, and (d) capacity building.

Subcomponent 1.2. Ayeyarwady Integrated River Basin Master Plan and Decision Support System: 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. Activities include (a) development of the Ayeyarwady Master Plan, basin-wide diagnostic studies, a Decision Support System (DSS), and stakeholder consultations, (b) implementation of a

groundwater survey, and (c) development of Basin-wide Strategic Environmental and Social Assessment.

Subcomponent 1.3. Project Preparation Facility (PPF): The PPF will provide finance to support the preparation of priority projects identified in the Ayeyarwady Basin Master Plan. Funds will be made available to prepare investments to international quality standards and in accordance with basin wide development objectives.

Subcomponent 1.4. Implementation Support: This sub-component will provide incremental running costs and consultant and advisory services for overall project management, financial management, procurement, safeguards and monitoring and evaluation.

Component 2: Hydromet Observation and Information Systems Modernization

Subcomponent 2.1. Institutional and Regulatory Strengthening, Capacity Building and Implementation Support of DMH: This sub-component will support (a) institutional strengthening of the DMH including the development of a robust legal and regulatory framework, (b) capacity building and training for DMH staff, and (c) technical assistance in DMH systems design, integration and operations as well as Component 2 management and monitoring.

Subcomponent 2.2. Modernization of Observation Infrastructure, Data Management Systems and Forecasting: This sub-component will support (a) technical upgrading of the hydro-meteorological observation network, (b) modernization operations centers, data management and communications/IT systems, engineering and calibration facilities, (c) improvements in numerical weather prediction systems and associated hydrological modeling frameworks and (d) reconstruction and/or refurbishment of DMH facilities.

Subcomponent 2.3. Enhancement of the Service Delivery System of DMH: This sub-component will support DMH in strengthening its service orientation in order to ensure project benefits are realized across the range of stakeholders. This will likely include (a) enhancement of Public Weather Services and Hydrological Services and improvement of service delivery to communities, (b) support for DRM operations including expansion of "end-to-end" early warning systems in small river basins with floods and flash floods, (c) development of an Agricultural and Climate Advisory Service (ACAS), and (d) the creation of a National Framework for Climate Services.

Component 3: Ayeyarwady River Navigation Enhancements

Subcomponent 3.1. Ayeyarwady River Navigation Strategy (Mandalay to Yangon): This sub-component will develop (a) a navigation strategy for the full navigable length of the river from Mandalay to Yangon. This strategy will (i) update the currently referenced 1988 feasibility study for the entire river taking into account potential inland port developments to promote multi-modal transport planning in the future, (ii) identify the scope of works for navigational improvement including training works, dredging, bank protection and navigation aids on the

two most urgent bottleneck stretches of about 30km each, (iii) provide detailed design for pilot training works at two stretches, (iv) and recommend a maintenance plan for the river (linked with sub-component 3.2.c.) and (b) a fleet optimization study.

Subcomponent 3.2. Navigation Improvements (Mandalay to Yangon with a focus on the Mandalay - Nyaung Oo section): This sub-component will support navigation improvements to increase the least available draught during the low water season for both passenger and cargo vessels along the busiest stretch of the Ayeyarwady river (Mandalay to Nyaung Oo). Activities will include: (a) 1-dimensional and 2-dimensional river modeling to identify the scope of works for river navigation enhancements, (b) preparation of an EIA, including an EMP for the proposed enhancement works, (c) preparation of detailed design documents and construction supervision, and (d) construction of enhancement works. The scope of works will be focused on the Mandalay – Nyaung Oo stretch of the Ayeyarwady and will be expanded to some other critical stretches on the Nyaung Oo – Yangon reach.

Subcomponent 3.3. Navigation Aids (Mandalay to Yangon with night navigation focused on the Mandalay – Nyaung Oo section): This sub-component will support the purchase and installation of navigation aids such as lighting, signage, mapping and a strengthened river pilot system to enhance safety and facilitate efficient navigation along the Mandalay – Yangon section of the Ayeyarwady. In addition it will support investments, for example in lighting and signage, to enable night navigation on the Mandalay – Nyaung Oo section.

Subcomponent 3.4. Institutional Strengthening and Implementation Support: This component will support (a) Component 3 implementation and management, and (b) capacity building, training and communications and awareness raising activities on river improvements and new information, regulations and procedures.

Subcomponent 3.5, Design and piloting of surface water quality monitoring system: This component will (a) design the possible network of monitoring station for river water quality in the Ayeyarwady River Basin, (b) implement a few pilot stations and (c) include capacity building for water quality monitoring.

Component 4: Emergency Contingency Response

This 'zero component' (initially without any allocations of funding) will allow for the rapid reallocation of funds from other components to provide preparedness and rapid response support to disaster, emergency and/or catastrophic events, as needed. The funds flow and disbursement arrangements will be determined at the time that a contingency response is activated.

B. IPPF Objectives and Principles

Following the requirements of the Bank's policy on indigenous peoples, OP 4.10, the ojectives of the IPPF is to ensure that project financed activities provide culturally appropriate benefits to ethnic minorities and do not have adverse impacts on ethnic minorities or that such impacts, if unavoidable, are minimized and mitigated. It also aims to ensure that project activities affecting ethnic minorities,

whether positively or adversely, are prepared in a participatory manner based on social analysis and free, prior and informed consultations.

The Ayeyarwady river basin is home to diverse groups of ethnic minorities who are dependent on the river for livelihoods and subsistence. The proposed project aims to significantly improve the way in which the river basin is managed, which will likely change their access to natural resources and their livelihoods. While the long term impact should be positive, ethnic minorities are usually more vulnerable in the development process and it is important that affected ethnic minorities are consulted with and participate in the process so that they would gain significant benefit from the improved management of the river basin. Many capital investments will be identified under the project which may negatively impact some ethnic minorities, and minor civil works that will be conducted under the project may also negatively affect ethnic minorities.

Since the exact locations of investments to be financed under the project will only be known during implementation, this Indigenous Peoples Planning Framework (IPPF) provides policy and procedures to ensure that such investments will comply with the World Bank OP 4.10.

Project activities and impacts on ethnic minorities

The project will finance some civil works. The dredging works to be supported under Component 3 will be implemented along the Mandalay – Nyang U section of the Ayeyawardy River. The initial ethnic screening conducted by the Bank did not identify ethnic minorities in the area of influence of the dredging works. However, a thorough ethnic screening will be conducted during the detailed design of the investments and, if ethnic minorities are found to be present, an Indigenous Peoples Plan (IPP) will be developed in line with this ESMF and OP 4.10.

Also, modernization of the observation infrastructure will be supported under the Component 2, and Component 1 would also support the construction or refurbishment of a NWRC Secretariat and Hydro-Information Center Headquarters. The locations where such civil works would be conducted, and thus the potential impact, if at all, on ethnic minorities, are not known during preparation.

Under Component 1, various studies will be undertaken and the Ayeyarwady River Basin Management and Development Plan including a 10-year investment plan would be developed based on the results. The Plan may be implemented in areas where ethnic minorities are present or have collective attachment and the implementation of the general plan may affect ethnic minorities. Investments funded under the PPF may also have social impacts such as land acquisition.

C. Legal, Policy and Insitional Framework

According to official estimates, the population of Myanmar reached almost 60 million in 2010. The Bamar is the largest ethnic group, comprising around two-thirds of the population, and various ethnic minorities accounting for about one third. The majority Bamar population mainly lives in the central and delta regions (divided into seven Regions) while the ethnic minorities live mainly, however not exclusively, in the seven *States* (Kayah, Kayin, Kachin, Chin, Mon, Rakhine, and Shan) along the

borders. The official population estimates of the main ethnic minority groups are roughly: Shan (9%), Kayin/Karen (7%), Rakhine (4.5%), Chin (2%), Mon (2%), Kachin (1.4%), Kayah (1%). The eight "ethnic races," including the majority Bamar, are subdivided into 135 officially recognized ethnic groups and belong to five linguistic families (Tibeto-Burman, Mon-Khmer, Tai-Kadai, Hmong-Mien, and Malayo-Polynesian); there are no population figures for ethnic minority sub-groups.[3]

According to Chapter 1, clause 22 of the 2008 Constitution of Myanmar, the Union Government of Myanmar is committed to assisting in developing and improving the education, health, language, literature, arts, and culture of Myanmar's "national races." It is stated, that the "Union shall assist:

(a) To develop language, literature, fine arts and culture of the National races;
(b) To promote solidarity, mutual amity and respect and mutual assistance among the National races;
(c) To promote socio-economic development including education, health, economy, transport and communication, [and] so forth, of less-developed National races."

The constitution provides equal rights to the various ethnic groups included in the *national races* and a number of laws and regulations aim to preserve their cultures and traditions. This includes the establishment of the University for the Development of the National Races of the Union which was promulgated in 1991 to, among other things, preserve and understand the culture, customs and traditions of the national races of the Union, and strengthen the Union spirit in the national races of the Union while residing in a friendly atmosphere and pursuing education at the University.[4]

There is no central government agency with the responsibility for addressing particular issues pertaining to ethnic minorities. The vast majority of Myanmar's ethnic minorities live in the seven *States* and these are in most cases led by the main ethnic minority in the respective States. In relation to previous ceasefire agreements, ethnic minority groups were granted authority over political and economic affairs in their areas, covering large areas of the States. Social and other public services were developed by ethnic authorities, often with support from NGOs, and are still operating in many areas.

Under the current government, free media is developing and ethnic parties and associations are politically active. Ethnic minority organizations may also play a stronger role going forward through the current Government's decentralization efforts which would afford States and Regions to play a more prominent role in decision-making and implementation of various policies and programs.

D. Preparation Process for Project Activities

OP 4.10 requires that special planning measures be established to address particular issues concerning ethnic minorities. More specifically, the policy requires the undertaking of a social assessment and free, prior and informed consultation process leading to the broad support by ethnic minorities for the project, and the development of an instrument for indigenous peoples in the form of an Indigenous Peoples Plan (IPP) for a particular project financed activity or subproject. Generally an IPP is prepared with

[3] The government with support from the United Nations Population Fund (UNFPA) undertook a census in April 2014 using the official list of 135 ethnic groups; numbers are still to be released.
[4] http://www.burmalibrary.org/docs15/1991-SLORC_Law1991-09-University_for_the_Development_of_the_National_Races_Law-en.pdf

appropriate measures identified during the social assessment and consultation process.

D.1 Determination of policy triggering

The first step is to determine if the policy is triggered. Policy triggering is dependent on the project activities and the presence of ethnic minorities. In contrast to OP 4.01 and OP 4.12, OP 4.10 is not only triggered when a project has adverse impacts, such as land acquisition. It is also triggered to project activities in areas with ethnic minorities that do not have adverse impacts. A first step in the preparation of a project financed activity is therefore to determine whether ethnic minorities will be present in the project areas or otherwise affected by the project.

This determination is made by the Bank, in consultation with the borrower and relevant experts, if needed, and should be done early in the preparation process to allow sufficient time for subsequent social analysis, consultations, and preparation of an IPP and project design measures concerning ethnic minorities. Because ethnic minorities live within varying and changing historical, cultural, political and economic contexts, no precise and coherent term has been found to define them, and operational practices cannot be applied uniformly in all places and under all circumstances. Indigenous peoples, or ethnic minorities, may be referred to in different countries by such terms as "indigenous ethnic minorities," "hill tribes," "minority nationalities," and "tribal groups." Under OP 4.10, the determination as to whether a group is to be defined as indigenous peoples is made by reference to the presence (in varying degrees) of four identifying characteristics:

(a) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;

(b) collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;

(c) customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and

(d) an indigenous language, often different from the official language of the country or region" (OP 4.10, paragraph 4).

Screening for the presence of ethnic minorities for AIRBM Project financed activities will be carried out based on the preliminary review of existing literature and interview with knowledgeable experts for all project activities to be supported under the project during the early phase of the preparation of respective project activities activities to be identified during implementation of AIRBMProject. As for the Component 1.2, Ayeyarwady River Basin Master Plan and Decision Support System, the screening will be conducted as part of Strategic Environmental and Social Assessment (SESA). DWIR will consult with the Bank's Task Team in the screening process to ensure that the Bank is in agreement with the findings.

D.2 Social Assessment

If ethnic minorities are found to be present in or have collective attachment to the area of influence of respective activities, the policy will be triggered to the activities, and a social assessment and free, prior

and informed consultations will be carried out with the affected ethinc minority communities in the preparation of an Indigenous Peoples Plan. Generally, a social assessment (SA) is a process which provides an integrated and participatory framework for prioritizing, gathering, analyzing, and using operationally relevant social information. It commonly involves the following objectives:[5]

- identify key stakeholders and establish an appropriate framework for their participation in project selection, design, implementation, and monitoring and evaluation;
- ensure that project objectives and incentives for change are acceptable to the range of people intended to benefit, and that gender, ethnicity and other social differences are taken into account in project design;
- assess the social impact of investment projects, and where adverse impacts are identified, determine how they can be avoided, minimized, or substantially mitigated;
- provide baseline data—relevant to the project context—that can be used to measure project outcomes;
- assess and define institutional arrangements needed for participation and project delivery; and
- develop the capacity to enable participation, resolve conflict, permit service delivery, and carry out mitigation measures in ways that are socially sound.

Because the concerns and preferences of ethnic minorities are context-specific, no uniform or standardized approach to social assessment can be recommended. The elements, methodology, substance and depth of the social assessment should be proportional to the nature and scale of the proposed project's design, the circumstances of the ethnic minorities and the existing data and knowledge relevant to the country and sector context. Issues that is commonly included in a assessment are:

1. A review, on a scale appropriate to the project, of the legal and institutional framework applicable to indigenous peoples and health. As appropriate, this review should include an assessment of the *implementation* of the legal framework in practice, as it relates to indigenous peoples. Any applicable international agreements or conventions that may apply should also be identified. This analysis will be included in the SESA that will inform the subproject specific analysis and IPPs.

2. Identification of key stakeholders and institutional arrangements in the project relevant health activities and levels.

3. Gathering of baseline information on the demographic, social, cultural and political characteristics of the affected ethnic minority communities, the land and territories that they have traditionally owned or customarily used or occupied, and the natural resources on which they depend..

4. Forms of social infrastructure and services available to ethnic minorities, and analysis of the main factors affecting such access, or lack thereof.

5. Assessment, based on free, prior, and informed consultation with the affected ethnic minorities, of the potential adverse and positive effects of the project.

6. Assessment, based on free, prior, and informed consultation with the affected ethnic minorities, of the potential project design features and, if necessary, mitigation measures to ensure that the project

[5]For more guidance on conducting a social analysis see the World Bank's website: www.worldbank.org/socialanalysis. Key documents include the World Bank's Social Analysis Sourcebook from 2003; A User's Guide to Poverty and Social Impact Analysis from 2003; and the Participation and Social Assessment: Tools and Techniques from 1998.

financed activity/subproject provides culturally appropriate benefits and avoids or provides appropriate mitigation measures for project impacts.

7. Identification and assessment of a culturally appropriate process for consultation and participation during preparation and implementation of a project financed activity/sub-project, including methodologies, technologies, principles, capacity building, empowerment, technical assistance and other support features necessary for a successful consultation and participation process.

D.3 Free, Prior and Informed Consultations

The World Bank's policy on indigenous peoples requires a process of free, prior and informed consultation leading to broad community support from ethnic minorities benefiting from, or affected by, World Bank-financed investment projects. The objectives are to facilitate the design of development interventions that are culturally appropriate from the perspective of ethnic minority communities, that are developed through a transparent and participatory approach, and that obtain broad support from affected communities. The consultations are usually done as part of the social assessment and the same set of issues should be covered, commensurate to the project design and local circumstances.

The *methodology* for the consultations depends on the type of communities affected by or benefitting from the project (e.g. their vulnerability, language and ongoing interactions with the dominant society or neighboring communities). The consultation process should be:

- free from coercion, intimidation and pressure from the implementing agency or other stakeholders;
- integrate customary norms of decision making in the community;
- provide reasonable and understandable information about the project, its potential benefits, adverse impacts and risks, to all community members;
- participatory and facilitate the participation of ethnic minorities in assessing project benefits, opportunities impacts and risks, using methods that are inclusive of vulnerable groups in the community, culturally appropriate, and adapted to communities' language and needs;
- allow sufficient time for information to be interpreted and discussed internally among the affected communities and time for comments and recommendations to be formulated by the communities;
- provide sufficient time for consultations and thereby allow the implementing agency to understand the views, concerns, interests and priorities of the ethnic minority communities;
- facilitate the communities' influence on the project design and measures based on fair and open discussions and good faith negotiations; and
- document and disclose the consultation process (who, when, where, what); including the process and methodology, issues raised, how they have been addressed, and agreements reached demonstrating that broad community support has been obtained..

The arrangements for consultations should be carefully considered and tailored to the project context and the context of the local communities and other stakeholders involved. This may include:

- community meetings, both with the community as a whole and with sub-groups;
- focus group discussions, participatory planning exercises;
- distribution of project information in both full format (project documents, assessment reports etc.) and in simplified formats such as posters and brochures, and audio-visual material using local languages;

- identification of contact persons within the communities (some training may be appropriate to enhance their ability to engage meaningfully in the consultation process);
- involvement of ethnic minority organizations where they exist and have the trust of the local communities; and
- involvement of local NGOs, research institutes, university students (it is important that these are accepted by, and have the trust of, the local communities).

Consultations should be conducted in the relevant ethinc language(s) and sufficient lead time (minimum 2 weeks) should be given to ensure all affected ethnic minority communities organizations are able to participate in consultations fully informed of the draft IPP.

D.4 Preparation of an Indigenous Peoples Plan

Based on the findings of the social assessment and free, prior and informed consultation process, DWIR, CMU or designated implementing partner will prepare an Indigenous Peoples Plan (IPP) for the specific project financed activity / subproject affecting ethnic minorities. The IPP should be prepared in a flexible and pragmatic manner, and its level of detail varies depending on the specific subproject and the nature of effects to be addressed. An IPP should include the following elements, as needed:

(a) Project description and summary description of issues relating to ethnic minorities
(b) A summary of the legal and institutional framework applicable to ethnic minorities.
(c) A summary of the social assessment including baseline information on the demographic, social, cultural, and political characteristics of the affected ethnic minorities, the land and territories that they have traditionally owned or customarily used or occupied, and the natural resources on which they depend.
(c) A summary of results of the free, prior, and informed consultation with the affected ethnic minorities that led to broad community support for the project.
(d) A framework to ensure free, prior, and informed consultation with the affected ethnic minorities during the implementation of respective activities.
(e) Measures to ensure that the affected ethnic minorities receive social and economic benefits that are culturally appropriate; and
(f) Measures to avoid, minimize, mitigate, or compensate for adverse effects.
(g) The cost estimates and financing plan for the IPP.
(h) Grievances redress mechanisms accessible to the affected ethnic minorities.
(i) Monitoring, evaluating, and reporting on the implementation of the IPP.

The IPP should be prepared in English or Burmese, and translated into relevant ethnic minority languages. If the IPP is prepared in Burmese it should be translated into English for Bank review, unless otherwise agreed with the Bank.

D.5 Disclosure of Bank Review

The draft IPP prepared in consultation with the affected ethnic minorities will be publicly disclosed and shared with the local communities in a manner and language appropriate and understandable to the community members.

Once DWIR can confirm that the affected ethnic minorities have provided their broad community support to the project activities affecting them and the draft IPP, DWIR will submit the draft IPP for Bank review and approval before the specific project activity / subproject is approved for financing.

If broad community support cannot be ascertained from affected ethnic minority communities, the project activities will not be financed.

D.6 Implementation Arrangements

The Project Directors' Unit (PDU) is overall responsible for safeguard compliance under the project, but the day-to-day implementation will be delegated to each Component Director Unit (CDU) which will implement this IPPF for respective component. Each CMU will be headed by the Component Manager and include designated staff in charge of IPPF.

D.7 Funding Arrangement

DWIR bears responsibility for meeting all costs associated with preparation and implementation of IPPs for project financed activities, although financing may come from implementing partners. Any IPP prepared in accordance with this IPPF requires a budget with estimated costs for all aspects of IPP implementation.

D.8 Monitoring and Grievance Procedures

DWIR will monitor the implementation of the IPPF and report this monitoring to the Bank on a regular basis. Each required IPP will include detailed monitoring arrangements for the project financed activity / subproject and its IPP measures and agreements.

To assess specific progress for ethnic minorities, particular monitoring and evaluation measures may be developed. This may involve special studies, social monitoring and participatory evaluation mechanisms. The use of monitoring units that are administratively independent of the implementing agency may be appropriate and may involve ethnic minority organizations or NGOs. Participatory and qualitative methods may be needed to measure project benefits and issues for ethnic minorities given their particular issues, including language, culture and social organization. Qualitative data collection methods include more direct interactions with affected ethnic minority communities through workshops, focus group discussions, informal interviews, mapping exercises, and other participatory assessment tools.

To ensure that affected ethnic minority communities have avenues for raising complaints relating to the project financed activity / subproject and its IPP, a multi-step grievance procedure will be established in the IPP. Grievance redress mechanism should built on local systems of conflict resolution and complaint procedures in the respective communities. The SESA will assess in more detail appropriate grievance redress mechanisms for the project and each required IPP will detail the procedures for that particular project activity or subproject. Necessary elements of the grievance procedures include:

a) An initial stage, within the local village or town level, in which any person aggrieved by any aspect of the land acquisition process can lodge an oral or written grievance to local authoratives who are involved in project implementation. If the complaint cannot be resolved within 30 days of receipt, it advances to the second step of the process.

b) Stage 2, if the aggrieved person is not satisfied with the outcome of initial stage consideration, or if local level review is unable to reach a proposed solution, the aggrieved person can refer the issue to a grievance committee established by DWIR, the CMU and/or implementing partner for the given project activity or subproject. The grievance committee, which is chaired by the DWIR, the CMU or implementing partner and includes representatives not directly affiliated with any of the implementing agencies reviews issues raised in the initial complaint and any actions for resolution suggested at the lower level and makes recommendations for resolution within 30 days.

c) Stage 3, if the aggrieved person is still dissatisfied following review by the grievance committee, the case may be referred to legal proceedings in accordance with the Government of Myanmar's laws and procedures.

The DWIR, CMU and implementing partner keep a record of all complaints referred to the grievance committee, including a description of issues raised and the outcome of the review process.

Annex 8: First Public Consultation (May 2014) Comments And Clarifications

ISSUES/COMMENTS	RESPONSE
General	
• Participants were supportive of the project and emphasized the importance of the Ayeyarwady River to riverine communities and to national economic development. • It is that it is important for the DWIR to ensure robust coordination across professionals, experts, research and government agencies, and donors in order to maximize project benefits and avoid overlap of work.	The Project Director clarified that the National Water Resources Committee (NWRC) was established by Presidential decree in July 2013 to function as an apex body to oversee the efforts of the 34 government agencies with current mandates affecting water. With the support of the AIRBM, the NWRC will be equipped with improved capacity and tools needed to effectively coordinate the development and management of the Ayeyarwady River Basin and Myanmar's water resources more broadly.
Watershed and Water Quality	
• Participants highlighted the importance of maintaining and improving water quality and the health of the Basin's forests and watersheds. • Mining activities in upstream watersheds, especially in Kachin State, were identified by participants as a threat to water quality and a source of excessive sedimentation. • Participants called for government action to set regulations and guidelines on water quality and mining practices to ensure the protection of water resources.	The NWRC recognizes the importance of maintaining water quality and improving watershed management in the Ayeyarwady Basin. The Project Director clarified that the NWRC had recently drafted a water framework directive and is currently in the process of drafting a National Water Law. In the medium term, it is envisaged that the NWRC will establish river basin organizations that will be tasked to ensure coordination, regulation, management and development of water resources. Specific to the AIRBM, DWIR and DMH will also be piloting water quality monitoring systems (Component 2) and undertaking a review of the institutional and legal frameworks (under Component 1) to support the development of the Water Law.
Ecosystems and Biodiversity	
• The Ayeyarwady River is home to a wide array of flora and fauna. It is therefore important for the project to remain cognizant of impacts and opportunities relating to ecosystems management, including fisheries and migratory species. • In the upstream area of the Ayeyarwady Basin, deforestation represents a major development challenge. Clarification was solicited as to why the issue of deforestation is not covered in the proposed AIRBM project concept.	It was explained that issues relating to ecosystems, migratory species and fisheries are very important and will be captured in the development of a basin planning activity and the strategic social and environmental assessment both of which will be carried out under Component 1. Furthermore, all activities will comply with appropriate safeguards policies and requirements. The project team welcomed any input and information sharing from the participants in order to make sure the team has the best available data to support project design and activities. Regarding the issues of watershed management, the Project Director added that a number of development partners are currently working on this issue and are coordinating closely with DWIR and the World Bank to ensure synergies.
Groundwater	
• There is a need to increase the knowledge related to groundwater resources in order to sustainably utilize and manage it.	It is believed that the Ayeyarwady Basin is endowed with a great amount of groundwater. However, the actual quantity, quality and distribution are largely unknown. Under Sub-component 1.2, a groundwater survey will be carried out to improve the knowledge and understanding of aquifer characteristics in order help the Government make strategic and informed choices about groundwater management and development pathways.

Consultation Process	
• The participants emphasized the importance of robust consultation and feedback processes. It was suggested that consultation should be expanded to include more remote communities, as well as professional groups and government agencies in order to maximize the project benefits, to ensure that a broad range of views and concerns have been taken into account, and to build trust between the government and the public. • Participants asked the World Bank to clarify apparent inconsistencies in consultation procedures and resources among the ongoing World Bank financed programs/projects.	The World Bank clarified that this particular set of consultations is focused on the development of the draft TORs for the ESMF. The ESMF is a government document that will reflect an initial environmental and social assessment, lay out anticipated issues and provide a framework for impact mitigation at the beginning of a project. Moving forward, in July/August 2014 a second round of consultations will be carried out to solicit further input and feedback for project preparation, particularly on the draft ESMF. Once the AIRBM is formally launched, environmental management and mitigation plans will be developed for specific activities and more targeted community consultations will be carried out. Finally, it was also added that throughout the implementation period of the AIRBM, the project will support a Stakeholder Forum to ensure there is continuous outreach and input from stakeholder groups. The World Bank team clarified the difference between specific project consultations like these, and the other major World Bank-supported consultation process that is now underway in Myanmar which is developing a Systematic Country Diagnostic (SCD) that will help prioritize the portfolio of World Bank-supported activities in Myanmar. The SCD is a program that aims to identify constraints to reducing poverty and increasing inclusive growth at the national level across all sectors, and to identify priorities for World Bank support. The product of the SCD is thus a social prioritization exercise. Given the nature of the SCD, it requires a much greater scope of effort and breath of representation than is required for consultations on specific projects like the AIRBM. In light of this, resources and guidelines for SCD consultations differ from those of project specific consultations. In addition, it was clarified that the SCD consultations are a World Bank run process, whereas the AIRBM ESMF consultation a government owned processed.
International Waterway	
• The designation of the Ayeyarwady as an international river basin was raised as an issue of concern. Specifically, clarifications were sought as to why the International Waterway Policy was triggered in the World Bank ISDS and why the Chinese names of tributaries were used in the TORs of the ESMF.	It was clarified that the designation of the Ayeyarwady as an international river basin relates specifically to the geographic definition applied in the World Bank's safeguards Operational Policy (OP 7.50 - Projects on International River Basin). Geographically, a portion of the catchment area that feeds two of the tributaries of the River (the Maykha and the Malikha) are located in China. The Malikha tributary in turn is fed by a sub-tributary originating within India. The combined flow outside of Myanmar is estimated to be 0.3%. The remaining 99.7% of the flow is accumulated within Myanmar which is the river's lowest downstream riparian. Because of this geographic configuration, the designation of an international waterway applies for the purposes of OP 7.50. It was also clarified that the names of the tributaries were used in accordance with common international practice. Generally, when referring to a river stretch that runs through a specific country, that country's name is used (i.e., the stretch of those tributaries that run within China would normally be identified by their Chinese

	names). However, to the extent that this caused offense, the World Bank team offered its apologies. To respond to these concerns, the relevant project documentation is being revised to clarify the restricted nature of the international waterways designation, and to ensure that Myanmar names are used for all tributaries in future AIRBM project documentation.
Information and Transparency	
• Information collected and generated by the AIRBM should be made available to the public in order to promote data sharing transparency.	It was noted that significant investments will be made under the project to better manage and share water, weather and climate data within government, and that broader data sharing policies will be explored in the context of Component 1. Moreover the establishment of the Hydro-Informatics Center will promote enhanced analysis and greater public awareness on water management in Myanmar.
Component 1	
• Participants asked for clarification on the intended output of the Component 1 basin modeling and planning activity. • Questions were raised as to why there is no mentioning of investments in dams and large-scale infrastructure.	It was clarified that the basin modeling and planning activity will develop a Decision Support System (i.e., a geo-referenced data base, hydrological model and suite of specialized models) that will equip the HIC and the NWRC Secretariat with the tools needed to make informed decisions and assess trade-offs across future management and investments options on the River. In parallel, consultations will be held to identify river basin objectives. This process of research and consultation will deliver, in phases, recommendations for prioritized investments beginning with 'no regrets' activities. Through this process it is possible that dams and large-scale infrastructure could be considered for future investment, but no such investment is planned in the current project and therefore none are referenced.
Component 3	
• Participants questioned why the river stretch between Mandalay to Nyaung Oo was chosen for the pilot channel enhancement work.	It was clarified that the choice of pilot site was identified by the Government because it is the busiest stretch of the river for both passenger and cargo transport and it is a stretch that has numerous points of navigation constriction.
Quality Assurance	
• Participants asked for clarification on safeguards and EIA implementation and quality assurance processes.	The Project Director clarified that National-level Environmental Impact Assessment standards and procedures are currently being developed by the Environmental Conservation Department. For the AIRBM, as the National-level procedures and guidelines have yet to be finalized, the Government will form a committee to review the EIA and ESMF.
• Participants asked what implementation and financial management arrangements for would be made for the AIRBM.	The meeting was informed that the project will be undertaken using all of the World Bank procurement and financial oversight processes to ensure good practice and transparency.