

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

**Myanmar Ayeyarwady Integrated River Basin Management Project**  
**Final Environmental and Social Management Framework**

October 2014

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## ACRONYMS

|      |                                                                     |
|------|---------------------------------------------------------------------|
| ACAS | Agriculture and Climate Advisory Service                            |
| ADPC | Asian Disaster Preparedness Center                                  |
| AWS  | Automated Weather Station                                           |
| CMU  | Component Management 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                             |
| EIA  | Environmental Impact Assessment                                     |
| 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 Planning 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                                         |
| PMU  | Project Management 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 EXECUTIVE SUMMARY**

This Environmental and Social Management Framework (ESMF) was prepared by the Directorate of Water Resources and Improvement of River Systems (DWIR) within the Ministry of Transport (MoT) 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 was developed to (a) identify environmental and social risks and potential social impacts and opportunities, (b) provide for the preparation of appropriate safeguard measures and plans for managing and addressing impacts, (c) assess risks associated with respective activities, address data gaps that have to be filled, and provide measures to mitigate risks and impacts and enhance benefits, and (d) provide stakeholder engagement through public consultation forums and promote communications and outreach. The ESMF also describes processes and procedures for a Strategic Environmental and Social Assessment (SESA) which will be carried out during project implementation under Component 1 as an input to the Ayeyarwady River Basin Master Plan and Decision Support System. The SESA will seek among other things to highlight issues of concern surrounding potential future hydropower development and indicate areas of particular environmental sensitivity and social fragility. This will be done with the understanding that any future hydropower development or other future investments would need project specific screening and assessment as contained in the ESMF.

The ESMF was prepared to ensure that 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 is integrated in the Project Implementation Manual (PIM) and is applicable to all AIRBM project activities as well as to 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 modelling 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 also 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 (no detailed designs) 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 (SESA) will be undertaken in parallel with the preparation of, and to inform, the river basin master plan during project implementation in line with preliminary draft ToRs included in this ESMF (Annex 3).

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

Subcomponent 1.1. Institutional Development: This sub-component will support (a) design and construction of a new NWRC Secretariat and HIC headquarters facility in Mandalay, immediate refurbishment of associated office space in Yangon and Nay Pyi Taw, and provision of office furnishings and equipment; (b) development of the NWRC institutions, mandates, business plans, staffing strategies and operational procedures, as well as institutional, legal and regulatory reviews and reforms relating to water resources management, and (c) capacity building, including possible twinning arrangements.

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 national 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 Basin Development Objectives. Activities will include (a) development of the Ayeyarwady Integrated River Basin Master Plan, the development of a DSS that will become the primary knowledge asset of the HIC, and stakeholder consultations to identify Basin Development Objectives, (b) implementation of groundwater and sediment surveys, and (c) implementation of a Basin-wide Strategic Environmental and Social Assessment (SESA).

Subcomponent 1.3. Preparation of Future Investments (PFI): This sub-component will support preparation activities for priority investments that may be financed under future phases of this Series of Projects. It will finance feasibility studies, procurement and safeguards related activities, workshops and study tours and other activities as agreed between the WBG and GoM. It will not finance detailed design work. This financing will create an incentive to develop projects within the NWRC framework – to identify, and prepare projects to international quality standards, within an integrated basin framework and in accordance with basin wide development objectives. To be eligible for PFI funding, a project must be

consistent with the Ayeyarwady Basin Master Plan (Sub-component 1.2a) and with the Bank's engagement objectives in Myanmar.

Subcomponent 1.4. Implementation Support: This sub-component will provide funds for (a) consultant and advisory services for the Project Management Unit (PMU) including for financial management, procurement, safeguards and monitoring and evaluation, (b) incremental operating costs, and (c) project-related communications and outreach as well as the creation of a Stakeholder Forum that will be an important mechanism for consultation during the implementation of this Project and sustained thereafter as a platform for stakeholder engagement with the NWRC.

## **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 modelling 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 the strengthening and delivery of hydromet information services in order to ensure project benefits are realized across the range of stakeholders. This will likely include (a) creation of a Service Delivery Platform for weather and hydrological services, (b) support for disaster risk management (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**

**3.1 Navigation Improvements (USD 30.35 million):** This sub-component will support navigation improvements to increase water levels during the low water season for both passenger and cargo vessels, primarily along the busiest stretches of the Ayeyarwady river. This sub-components activities will include: (a) 1-dimensional and 2-dimensional river modeling to identify the scope of works for river navigation enhancements, sedimentation modeling which is essential for effective operations and maintenance, preparation of detailed design documents, cost estimates and bidding documents, and supervision of construction work; (b) preparation of an Environmental and Social Impact Assessment (ESIA), including site-specific Environmental and Social Management Plans (ESMPs), and if needed site-specific Resettlement Plans and Indigenous Peoples Plans, for the proposed enhancement works; and (c)

construction of the enhancement works. The scope of works will initially focus on the Mandalay – Nyaung Oo section of the Ayeyarwady River and will be expanded to other critical stretches between Nyaung Oo and Yangon.

**3.2 Navigation Aids (USD 3.4 million):** This sub-component will support (a) the purchase and installation of navigation aids such as buoys, signage, modern GPS mapping, communications systems (requiring survey boats, echo-sounding equipment and radar) and the installation of lighting and signage systems to enable night time navigation on the Mandalay – Nyaung Oo section of the River; and (b) a strengthened river pilot system to enhance safety and facilitate efficient navigation along the Mandalay – Yangon section of the Ayeyarwady.

**3.3 Water Quality Monitoring (USD 2 million).** This component will support the design and piloting of a water quality monitoring system.

**3.4 Institutional Strengthening and Implementation Support (USD 2.1 million):** This component will support (a) Component 3 implementation costs, (b) a fleet optimization study to improve transport efficiency by ensuring that fleet development is well suited to the river, and (c) capacity building, training and communications and awareness raising activities related to the Project-sponsored river improvements and new information, regulations and procedures.

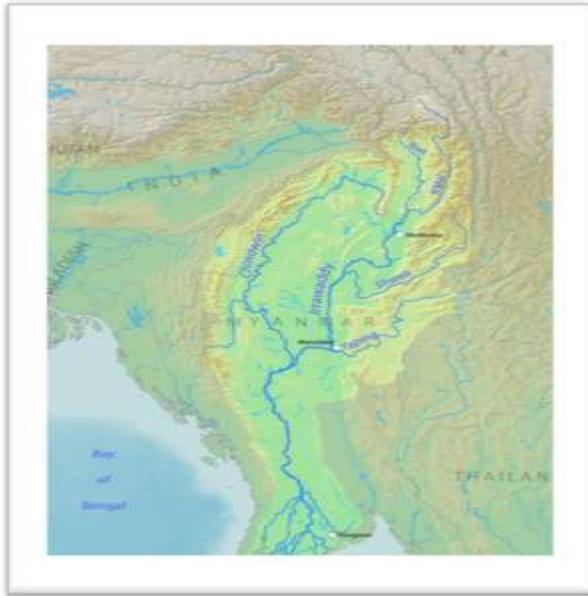
#### **Component 4: Contingent Emergency Response (USD 0 million)**

This ‘zero component’ (initially without any allocated funding) will allow for the rapid reallocation of funds from other components to provide emergency recovery and reconstruction support in the event of a natural disaster, emergency and/or catastrophic event. Funds potentially reallocated to Component 4 would be disbursed either against a positive list of critical goods and/or against the procurement of works, and consultant services required to support the immediate response and recovery needs of GoM. A Contingent Emergency Response Implementation Plan will be developed to guide financial management, procurement, safeguard and any other necessary implementation arrangements and procedures.

### **Brief Project Baseline Information**

#### **The Ayeyarwady River Basin**

The Ayeyarwady River (also known as Irrawaddy; length 2170 km; drainage area 413,710 Km<sup>2</sup>) 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.



The Ayeyarwady basin is an international waterway rising in the Himalayas, bisecting Myanmar from north to south and emptying through a nine-armed delta into the Bay of Bengal. The average discharge of the Ayeyarwady River is 13,000 m<sup>3</sup>/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 in Myanmar language) is situated at a place approximately 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.

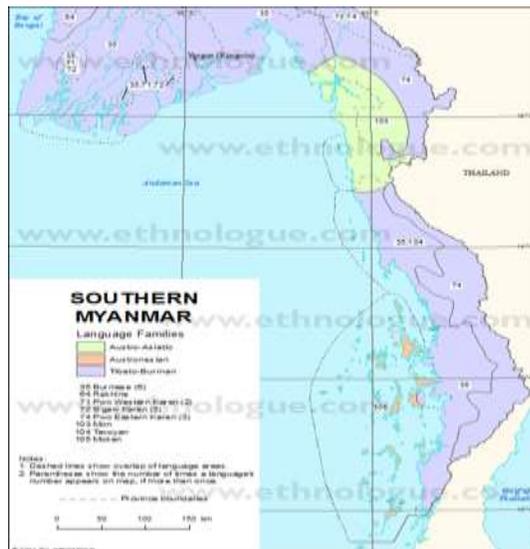
There are an estimated 517,000 ha of mangrove forest in Myanmar, of which 46% are located in Ayeyarwady Delta (Ramsar, n.d.). In the Ayeyarwady Region, mangrove forest has been seriously degraded in recent years due to agricultural conversion and the high demand for firewood and charcoal from Yangon, 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. The River is also home to a number of charismatic and/or endangered species such as the Irrawaddy dolphin.

**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.



While the majority of the population in the Ayeyarwady River Basin is Bamar, the area is also home to many ethnic minority groups. Data does not exist that clearly show the list of ethnic groups present in the river basin. The Strategic Environmental and Social Assessment (SESA) will collect more data on the distribution of ethnic minorities in river basin at an early stage of project implementation.

## **Legal and Institutional Framework**

### *Legal Framework concerning environmental management*

The Government of Myanmar (GoM) is currently in the process of carrying out various reforms that include political, economic, and environmental reforms consequently 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 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.

### *Legal framework concerning land acquisition*

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.

### **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 concerned 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 areas 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). The 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. The National Water Resources Committee, formed by the Presidential Decree in July 2013 and chaired by the Vice President of Myanmar, is an apex body aiming at overseeing the efforts of the 34 government agencies with current mandates affecting water resources management. The AIRBM project implementing unit will report both to the DWIR and the NWRC Secretariat.

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.

**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, (iii) preventing of saline water intrusion, and (iv) 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 triggers the following World Bank policies: *Environmental Assessment* (OP 4.01); *Natural Habitats* (OP 4.04); *Pest Management* (OP 4.09); *Forests* (OP 4.36), *Physical Cultural Resources* (OP 4.11), *Safety of Dams* (OP 4.37), *Involuntary Resettlement* (OP 4.12) and *Indigenous Peoples* (OP 4.10).<sup>1</sup> 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. ESIA are conducted, however, on an ad hoc basis for projects funded by international organizations and some foreign corporations. The ESIA 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 and related policy procedures. Myanmar does not have a unitary law or legislation with regard to land acquisition and compensation or on ethnic minorities.

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<sup>1</sup>The Ayeyarwady rises in the Himalayas, bisects Myanmar from north to south and empties through a nine-armed delta into the Bay of Bengal. A portion of the catchment areas that feed 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. This meets the definition of an International Waterway as stipulated in paragraph 1 of the World Bank’s Operational Policy 7.50 on International Waterways, although the combined flow outside of Myanmar is estimated to be less than 1%. The planned investment activities involve minor additions or alterations to an ongoing scheme of river training and protection, feasibility studies for potential future investments in the river basin and water resource/groundwater surveys. Although modeling and the environmental assessment have yet to be done, it is not anticipated that the construction or rehabilitation works proposed under the project will adversely change the quality or quantity of water flowing in the river and the project will not be appreciably affected by other riparians’ possible water use. On this basis, the Bank has determined that the proposed project does not require riparian notification in accordance paragraphs 7(a) and 7(b) of OP 7.50.

**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 | <p>MOECAAF shall arrange as it deems necessary for Public Participation.</p> <p>In the process of approving the EIA report, MOECAAF 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.</p> | <p>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. If ethnic minorities are present in the project area or the project may include involuntary resettlement additional consultations are held as per OP 4.10 and OP 4.12.</p> |

|            |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disclosure | <p>The Project proponent shall disclose all relevant project information to MOECAAF. No further requirement of disclosure to project affected people or civil society is made in the EIA rules.</p>                                                                                                                          | <p>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.</p> <p>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</p> <p>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.</p> <p>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.</p> <p>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.</p> |
| Screening  | <p>Lists projects that require environmental examination including land use change, exploitation of resources for introduction of new species. MOECAAF shall determine the format and timing of the reports. MOECAAF will determine the type of environmental assessment required based on the environmental examination</p> | <p>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</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| EA Content | <p>MOECAAF 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).</p>                                                                                                                        | <p>The EA needs to include assessment of project alternatives; cumulative impacts; specific mitigation measures and monitoring activities.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|            |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring | <p>MOECAAF shall monitor project performance in accordance to the Environmental Management Plan (EMP).</p> <p>The Project proponent shall comply with the EMP and the terms included in the license throughout the lifetime of a project.</p> <p>If found in non-compliance, MOECAAF shall impose penalties or suspend project construction or operation.</p> | <p>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</p> |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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 (Annex 6) and IPPF (Annex 7) of the ESMF.

## **POTENTIAL PROJECT ENVIRONMENTAL AND SOCIAL IMPACTS**

Impact analysis of the Project at this point can be considered using only the limited available general information on the environmental and social situation in the project's 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 detailed design stage and included in the relevant ESIA's, EMPs and other safeguard instruments as needed. Typical Project Environmental and Social impacts for suggested Project activities are summarized below.

**Small Construction Works:** The Project will finance small construction works related to: (i) the construction or refurbishment of the NWRC Secretariat and Hydro-Informatics Center headquarters, (ii) the Modernization of Observation Infrastructure, Data Management Systems and Forecasting, and (iii) establishing of Navigation Aids from Mandalay to Yangon with night navigation focused on the Mandalay – Nyaung Oo section. The environmental impacts of these small construction works are likely to be localized and prevented or reduced to acceptable levels by applying international construction practices and planning. Such potential impacts are related to: (i) air pollution/dust, noise, vibration, and access restriction, (ii) improper disposal of construction related waste; (iii) temporary pollution of soil and surface waters due to accidental spillage of fuel from construction activities; (v) safety hazards including worker safety; (vi) damage to natural habitats, aquatic fauna, or existing vegetation, and (vii) impacts to physical cultural resources. These impacts should be properly managed during the construction phase by the contractor and closely supervised by the Project Director's Unit (PMU), the Project Implementation Team and the supervision engineer. ESMPs will be carried out in order to assess possible environmental and social impacts. To the extent to which these small construction works could have environmental and social

risk/impacts more significant as those anticipated (e.g. they are located in an area where indigenous peoples or endangered biodiversity is present) a full ESIA or related IPP, Resettlement Plans will be required.

Navigation Enhancements: The Project is expected to build navigation enhancements from Mandalay to Yangon. 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 with limited dredging. It is possible 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 over the years after completion of works. As a result of reduced water flow in the lateral branches and minor flooding, changes in groundwater levels can be expected. This can potentially affect the functioning of wetlands, which are important refuges, hatching grounds and habitats of plants, birds, fish, amphibians and other animals. Dredging and the disposal of dredged materials can also potentially result in turbidity, siltation and sedimentation, reduced primary productivity, substrate disturbance and scouring, all of which can have impacts on downstream users of the river. Therefore, ESIA's prepared in parallel with the detail design will analyze further possible impacts and incorporate where relevant the results of technical studies such as the hydraulic modelling, including ecological flows, with the aim of selecting feasible alternatives with least environmental impact.

Improved navigation transport could increase the pressure over resources and lead to land use changes just as an improved road does. Opening or improving shipping channels will provide new and enhanced access within the river basin. It may lead to changes in existing patterns of transport and commerce which may benefit some communities, local markets, and river transporters, but bypass others. It could change the types of vessels and the mix of local and longer distance vessels plying the river. This aspect, if well understood in the ESIA's and SESA, will help facilitate economic and social development in the project's area of influence. The full ESIA's for the navigation investments will consider land use change modelling and provide mitigation measures.

Project Environmental and Social Assessment efforts (e.g. EISA's and or SESA) will map 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 river basin.

Ayeyarwady River Basin Master Plan and technical studies: The AIRBM project will support the following technical assistance to inform river basin management: (i) the preparation of a River Basin Master Plan and associated investments, and (ii) technical studies such as the basin groundwater survey, fleet optimization study, and Ayeyarwady river navigation strategy. It is envisioned that the Master Plan will suggest priority investment to manage the river basin and the AIRBM Project, under the Preparation of Future Investments sub-component, will finance advisory support for planning or feasibility studies linked to some of those suggested investment. These sub-projects are likely to have environmental and social safeguard impacts, although it is not possible to ascertain at this point their likely environmental and social impacts.

## **PROCEDURES TO ADDRESS ENVIRONMENTAL AND SOCIAL ISSUES**

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

- This Environmental and Social Management Framework (ESMF) prepared prior to appraisal and approval of the AIRBM Project, to inform the overall environmental and social performance of the Project;
- Specific Environmental and Social Impact Assessments (ESIAs) and/or Environmental and Social Management Plans (ESMPs), and other safeguard instruments as required (e.g. involuntary resettlement plans, indigenous peoples plans) will be prepared for all investments/subprojects that are identified or designed during project implementation as well as those prepared under the Preparation of Future Investments (PFI) subcomponent, following the guidance established in this ESMF;
- A Strategic Environmental and Social Assessment (SESA) will be carried out during implementation to inform the Ayeyarwady River Basin Master Plan and other technical studies.

### **ESMF**

The ESMF will be applied to all project activities including the infrastructure investments that are identified during project implementation (see Table 3 below), TAs and those financed by the PFI subcomponent. The PFI will provide finance to support the preparation of priority projects identified in the Master Plan, including 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 the Borrower in the subsequent project phases (i.e., in irrigation, hydropower, navigation, delta management, municipal water supply or wastewater management systems). The Terms of References (TORs) for these studies will include screening of environmental and social safeguard risks, impacts and issues in line with relevant World Bank safeguards policies.

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 Policy Framework for land acquisition and resettlement
- An Indigenous Peoples Planning Framework concerning ethnic minorities
- Guidance on:
  - Terms of Reference for ESIA and ESMP for Category A projects (See Annex 3)
  - Management of environmental impacts for small construction projects (See Annex 2)
  - Terms of Reference for SESA (See Annex 5)

## **ESIA/ESMPs**

An ESIA 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 early warning systems; and (iv) installation of navigation aids along the selected river sections. If needed, social safeguard instruments will also be prepared following the guidance provided in this ESMF and per World Bank policies on indigenous peoples (OP 4.10) and involuntary resettlement (OP 4.12).

## **SESA**

The Ayeyarwady is home to an extraordinary diversity of cultural communities as well as ecosystems, flora and fauna. To understand the environmental and social dynamics of potential development options and projects in the Ayeyarwady Basin, a SESA will be carried out. This will include a basin wide survey of significant ecosystems and habitats as well as the main river use and related livelihoods. The SESA will be developed in parallel with the Master Plan (1.2.a) and its three phases to provide environmental and social inputs to the Master Plan, for example by identifying areas of the basin that are particularly fragile from an environmental or social perspective. In addition, the information and analysis generated in the SESA process will be captured in the DSS to ensure its integration in future planning and monitoring activities. The SESA will be participatory - designed to give voice to affected peoples - and developed in close tandem with the Stakeholder Forum consultation and other participatory mechanisms. The SESA will be carried out as part of technical assistance activities and is relevant 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 safeguard policies.

The ESMF will be applied to all infrastructure projects that are identified during project implementation and those financed by the Preparation of Future Investments (PFI) sub-component. The activities to be supported by the PFI sub-component will be required to have ESIA's and specific safeguard instruments, where needed, based upon the ESMF. The Bank will review and clear all safeguards instruments during implementation including ToRs. The final SESA ToR will also be reviewed and cleared by the Bank.

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                                                            |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <p>ESIA – Environmental and social impact assessment (category “A”)</p> | <ul style="list-style-type: none"> <li>• Executive summary</li> <li>• Policy, legal, and administrative framework</li> <li>• 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 peoples plan. Normally includes a map showing the project site and the project’s area of influence.</li> <li>• 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 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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 and social 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 and social 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.</li> <li>• Environmental and social management plan (ESMP), including resettlement plan and indigenous peoples plan if needed.</li> <li>• Appendixes               <ul style="list-style-type: none"> <li>○ List of EA report preparers—individuals and organizations.</li> <li>○ References—written materials both published and unpublished, used in study preparation.</li> <li>○ Record of interagency and consultation meetings, including</li> </ul> </li> </ul> | <p><b>Component 3.2.</b><br/>Navigation Improvements works from Mandalay to Yangon</p> | <p>Some preliminary assessments have already been carried out.</p> |

| EA Instrument and category                                                            | Content according to the OP/BP 4.01 and relevant safeguard policies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | AIRBMP Component                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Comment                                                           |
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|                                                                                       | <p>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.</p> <ul style="list-style-type: none"> <li>○ Tables presenting the relevant data referred to or summarized in the main text.</li> <li>○ List of associated reports (e.g., resettlement plan or indigenous peoples plan). See ToRs for category A ESIA in Annex 5</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |
| <p>ESMP - Environmental and Social Management Plan including ECoPs (category “B”)</p> | <ul style="list-style-type: none"> <li>• Environmental and Social Impacts: identifies and summarizes all anticipated significant adverse environmental and social impacts (including those involving indigenous peoples or involuntary resettlement). Describes--with technical details--each 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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</li> </ul> | <p><b>Component 1.1</b> Construction or refurbishment of a National Water Resources Committee (NWRC) Secretariat and Hydro-Informatics Center headquarters facility;</p> <p><b>Component 2.2</b> the Modernization of Observation Infrastructure, Data Management Systems and Forecasting; reconstruction and refurbishment of DMH offices and facilities; technical modernization of the observation network;</p> <p><b>Component 2.3</b> - expansion of "end-to-end" early warning systems in several small river basins prone to floods and flash floods</p> <p><b>Component 3.3.</b> establishing of</p> | <p>See Annex 2 for sample ECOPs for small construction works.</p> |

| EA Instrument and category                                                    | Content according to the OP/BP 4.01 and relevant safeguard policies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | AIRBMP Component                                                                                                                                                                                                                                                                                                                           | Comment                                                                                                                                                                               |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                               | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Navigation Aids from Mandalay to Yangon focused on the Mandalay – Nyaung Oo section</p>                                                                                                                                                                                                                                                 |                                                                                                                                                                                       |
| <p>SESA – Strategic Environmental and Social Assessment (Category “A”)</p>    | <ul style="list-style-type: none"> <li>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</li> <li>The Ayeyarwady is home to an extraordinary diversity of 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 ESIA's 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 preliminary draft ToRs for SESA in Annex 3.</li> </ul> | <p><b>Component 1.2.</b><br/>Ayeyarwady Integrated River Basin Master Plan</p>                                                                                                                                                                                                                                                             | <p>ESMF Annex 5 includes ToR and a process for carrying out the SESA</p>                                                                                                              |
| <p>Environmental and Social Management Framework (“A” or “B” investments)</p> | <ul style="list-style-type: none"> <li>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 ESIA's that will be included in project preparation..</li> <li>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 based on policy required procedures such as social assessment and free, prior and informed consultations.</li> <li></li> </ul>                                                                                                                                                                                                                                                                                                    | <p><b>Component 1.3</b> -PFI's - Pre-feasibility studies, technical studies etc.<br/><b>Component 1.2.</b> - Ayeyarwady Basin Groundwater Survey<br/><b>Component 2.2</b> – Design and pilot operation of surface water quality monitoring system<br/><b>Component 3.1</b> – Ayeyarwady River Navigation Strategy (Mandalay to Yangon)</p> | <p>The ESMF process for PFI's subcomponent is presented in Chapter 4.<br/><br/>Resettlement Policy Framework in Annex 6<br/><br/>Indigenous Peoples Planning Framework in Annex 7</p> |

## **General ESMF Implementation Flow Chart for Subprojects:**

The following general procedures apply for all works sub-projects financed through the project, as well as all PFI (preparation of future investments) activities associated with physical works projects. The actual procedural flow may vary depending on the specific nature of the activity. The procedures for the Strategic Environmental and Social Assessment (SESA) are outlined in Annex 3.

### **Screening and Scoping**

1: For every activity (physical sub-project or study) the PMU/CMU analyzes the following: Does the activity have potential for any type of social or environmental impact, or trigger any World Bank safeguard policy?

2: The PMU/CMU screens the activity in more detail for potential impacts, identify the triggered safeguard policies, and propose the general scope of work for safeguard instrument (ESIA, ESMP, RAP, IPP, etc.) Submit to the Bank a screening report for review (typically less than five pages with supporting maps). The

*3: World Bank reviews and approves the screening report and provides comments on general scope of safeguard work.*

### **Safeguard Instrument Preparation**

4: The PMU/CMU prepares detailed scope of work and TOR for the preparation of the necessary safeguard instrument according to the general guidelines of the ESMF.

*5: The World Bank reviews, provides comments, and approves the TOR for the safeguard instrument. Category A sub-projects require the clearance of the Bank's regional safeguard advisor.*

6: The PMU/CMU is responsible for preparing the safeguard instrument. Typically, the PMU/CMU will contract a contractor or consultant to prepare the safeguard instrument. The PMU/CMU contracts the consultant/contractor to prepare the safeguard instrument(s) per World Bank procurement rules.

7: The consultant/contractor prepares the safeguard instrument(s). The PMU/CMU ensures quality and consistency with the ESMF and then submits to the World Bank. Typically public consultations are required in the preparation of the safeguard instrument.

*8: The World Bank reviews, provides comments, and approves the safeguard instrument(s). Category A sub-projects require the clearance of the Bank's regional safeguard advisor.*

### **Safeguard Instrument Implementation**

9: The PMU/CMU is responsible for the implementation of the safeguard instrument. Typically, the PMU/CMU will contract a contractor or consultant to implement the safeguard instrument. The PMU/CMU should prepare a TOR for the contractor/consultant to implement the safeguard instrument and submits to the World Bank.

*10: The World Bank reviews, provides comments, and approves the TOR for the contractor/consultant.*

11: The PMU/CMU contracts the contractor/consultant to implement the safeguard instrument per World Bank procurement rules.

12: The PMU/CMU supervises the implementation of the contractor to ensure successful implementation of the safeguard instrument.

13: If necessary, an independent environmental or social monitor is contracted under a TOR acceptable to the Bank to supervise the implementation of the safeguard instrument.

14: The PMU/CMU includes reporting of safeguard implementation as a chapter of its normal project status reports.

15: *The World Bank supervises the implementation of the safeguard instrument, with specialized environmental and social specialists, to ensure compliance with World Bank safeguard policies. The Bank's Regional Safeguard advisor is kept informed of implementation.*

## **IMPLEMENTATION ARRANGEMENTS, RESPONSIBILITIES AND CAPACITY BUILDING**

### **ESMF Implementation Arrangements**

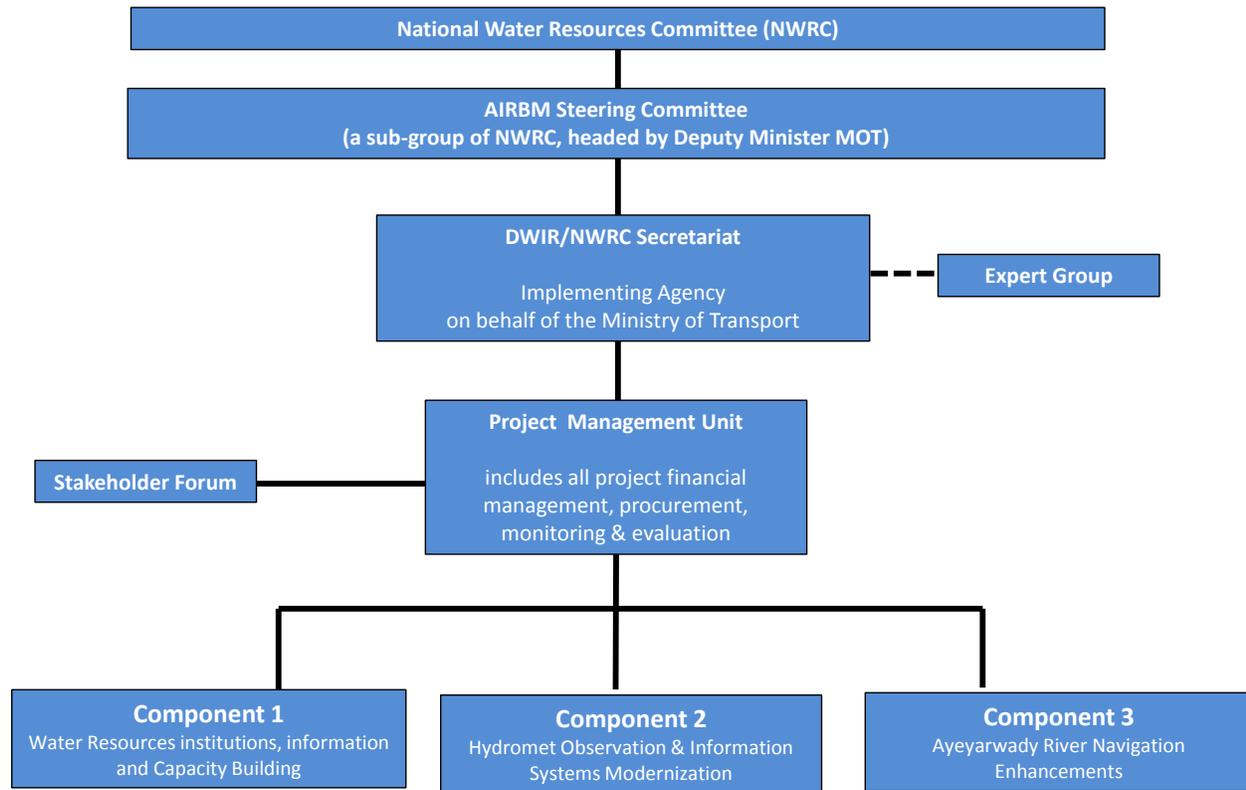
The implementation of the Environmental and Social Management Framework, Environmental and Social Management Plans, Resettlement Policy Framework and Indigenous Peoples Planning Framework will be the responsibility of the Borrower/DWIR and project designer (in the planning phase); the Executors of civil 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 activities during project implementation.

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 CMU 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.

Figure 1. *The AIRBM Project Implementation Arrangements*



### Capacity Building for ESMF Implementation

Safeguard capacity of the institutions involved in project implementation and river basin management will be enhanced through training and learning-by-doing activities. A preliminary safeguards institutional capacity and capacity building plan has been developed and is presented below. This plan will be refined and adjusted throughout project implementation as required.

#### Year 1: Training Activities:

Workshop 1: General Introduction to ESMF and World Bank Safeguard Policies: 2 days  
Audience: All PMU/CMU and other relevant government staff, consultants, and civil society.

Workshop 2: Training on ESIA: 2 days  
Audience: PMU/CMU Environmental and Social Staff and other relevant government staff, consultants, and civil society.

Workshop 3: Training on Environmental and Social Management Action Plan (ESMP): 1 day  
Audience: PMU/CMU Environmental, Social, and Engineering Staff and other relevant government staff, consultants, contractors and civil society.

Workshop 4: Training on Resettlement Action Plans: 1 day

Audience: PMU/CMU Environmental and Social Staff and other relevant government staff, consultants, and civil society.

Workshop 5: Training on Indigenous Peoples Plans: 1 day

Audience: PMU/CMU Environmental and Social Staff and other relevant government staff, consultants, and civil society.

#### Annual Training: Years 2-5

Refresher Course: General Introduction to ESMF and World Bank Safeguard Policies: 2 days

Audience: All PMU/CMU and other relevant government staff, consultants, and civil society.

#### Specialized Training As Need to Consultants and Contractors

Training to Consultants Contracted to Prepare ESIA's: As Needed

Training to Contractors and Construction Supervision Consultant Responsible for EMP: As Needed

Training to Consultants Contracted to Prepare RAPs and/or IPPs: As Needed

In order to ensure that there is adequate capacity to implement and monitor the ESMF provisions, environmental and social experts will be appointed by PMU and 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 such as:

- 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
- Responsibility 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 community representatives to familiarize them with the principles and procedures as set out in the ESMF (this could be applicable to PFI activities as well).

#### **Project Public Consultation Process**

Public consultations are an integral part of the Project. Two sets of consultations were carried out by DWIR during project implementation on May 16 and 19, and again on September 18 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) during the May 2014 consultation and on the draft ESMF itself during the September consultation, (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 included the 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 (in May) and the draft ESMF (in September).

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](http://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. They emphasized the importance of the Ayeyarwady river basin for local communities and national development (see Annex 8 and 9 for summaries of the consultations).

Public consultations will continue and be expanded during project implementation as part of the environmental and social assessment processes, as described in this ESMF, and as part of general Stakeholder Engagement activities. A Stakeholder Forum will be established to support the PMU 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 implementation of the AIRBM project. 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.

### **ESTIMATED ESMF IMPLEMENTATION COSTS**

The table on the following page summarizes the estimated costs for implementing the ESMF, along with a contingency. These costs were extracted from various line items in the overall project cost table (such as capacity building, PFI costs, and the SESA, and assembled below to provide a perspective on environmental and social management costs.

| <b>Estimated Costs for ESMF Implementation</b>                            |            |                         |                          |
|---------------------------------------------------------------------------|------------|-------------------------|--------------------------|
| <b>A. Training Costs</b>                                                  | <b>No.</b> | <b>Unit Cost (US\$)</b> | <b>Total Cost (US\$)</b> |
| A.1 Year One Safeguard Capacity Building                                  | 5          | \$10,000                | \$50,000                 |
| A.2 Annual Safeguard Update Training                                      | 4          | \$5,000                 | \$20,000                 |
| A.3 Specific Training for Consultants/Contractors                         | 8          | \$5,000                 | \$40,000                 |
| Subtotal                                                                  |            |                         | \$110,000                |
| <b>B. ESMF Implementation-Based On Investment/Planning Costs</b>          |            |                         |                          |
| B.1 ESMF Project-Financed Works-2% of \$30 million investment             |            |                         | \$600,000                |
| B.2 ESMF PFI Activities-15% of \$7 million of preparation studies         |            |                         | \$1,050,000              |
| Subtotal                                                                  |            |                         | \$1,650,000              |
| <b>C. Specialized Safeguard Staff:</b>                                    |            |                         |                          |
|                                                                           | No.        | Per year                | 5 Years                  |
| C.1 Environmental Specialists-PMU                                         | 1          | \$ 15,000               | \$75,000                 |
| C.2 Environmental Specialists: CMU                                        | 2          | \$ 7,500                | \$75,000                 |
| C.3 Social Specialists-PMU                                                | 1          | \$ 15,000               | \$75,000                 |
| C.4 Social Specialists: CMU                                               | 2          | \$ 7,500                | \$75,000                 |
| Subtotal                                                                  |            |                         | \$300,000                |
| <b>E. Ayeyarwady Strategic Environmental and Social Assessment (SESA)</b> |            |                         | \$1,000,000              |
| <b>Sub-Total</b>                                                          |            |                         | \$3,060,000              |
| <b>Contingencies</b>                                                      |            | 15%                     | \$459,000                |
| <b>Total</b>                                                              |            |                         | \$3,519,000              |

**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 modelling 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 benefits and will trigger the following World Bank policies: *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).<sup>2</sup> 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 versus their impact) may qualify for category “B” and/or category “A” impact sub projects. 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.

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<sup>2</sup>The project also triggers the policy on *Projects on International Waterways* (OP/BP 7.50). Up to 99.7% of the Ayeyarwady River flow is accumulated 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 notification requirement under para. 7(a) of OP 7.50 and no notification will 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: (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 AIRBM Project and will cover all first three components in line with Terms of References discussed with main stakeholders and approved by the World Bank group. A brief description of all project components is listed below:

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

**1.1 Institutional Development (USD 10.5 million):** This sub-component will support (a) design and construction of a new NWRC Secretariat and HIC headquarters facility in Mandalay, immediate refurbishment of associated office space in Yangon and Nay Pyi Taw, and provision of office furnishings and equipment; (b) development of the NWRC institutions, mandates, business plans, staffing strategies and operational procedures, as well as institutional, legal and regulatory reviews and reforms relating to water resources management, and (c) capacity building, including possible twinning arrangements.

**1.2 Ayeyarwady River Basin Master Plan and Decision Support System (DSS) (USD 10 million):** 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 national 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 Basin Development Objectives. Activities will include (a) development of the Ayeyarwady Integrated River Basin Master Plan, the development of a DSS that will become the primary knowledge asset of the HIC, and stakeholder consultations to identify Basin Development Objectives, (b) implementation of groundwater and sediment surveys, and (c) implementation of a Basin-wide Strategic Environmental and Social Assessment (SESA).

**1.3 Preparation of Future Investments (USD 7 million):** This sub-component will support preparation activities for priority investments that may be financed under future phases of this Series of Projects. It will finance feasibility studies, procurement and safeguards related activities, workshops and study tours and other activities as agreed between the WBG and GoM. It will not finance detailed design work. This financing will create an incentive to develop projects within the NWRC framework – to identify, and prepare projects to international quality standards, within an integrated basin framework and in accordance with basin wide development objectives. To be eligible for PFI funding, a project must be consistent with the Ayeyarwady Basin Master Plan (Sub-component 1.2a) and with the Bank's engagement objectives in Myanmar.

**1.4 Implementation Support (USD 4.5 million):** This sub-component will provide funds for (a) consultant and advisory services for the Project Management Unit (PMU) including for financial management, procurement, safeguards and monitoring and evaluation, (b) incremental operating costs, and (c) project-related communications and outreach as well as the creation of a Stakeholder Forum that will be an

important mechanism for consultation during the implementation of this Project and sustained thereafter as a platform for stakeholder engagement with the NWRC.

## **Component 2: Hydromet Observation and Information Systems Modernization (USD 30.15 million)**

**2.1 Institutional and Regulatory Strengthening, Capacity Building and Implementation Support (USD 6 million):** This sub-component will support (a) institutional strengthening including the development of a robust legal and regulatory framework, (b) capacity building and training for staff, and (c) technical assistance in systems design, integration and operations as well as Component 2 management and monitoring.

**2.2 Modernization of Observation Infrastructure, Data Management Systems and Forecasting (USD 17.1 million):** This sub-component will support (a) technical upgrading of the hydro-meteorological observation network, (b) modernization of operations centers, data management and communications/IT systems, engineering and calibration facilities, (c) improvements in numerical weather prediction systems and associated hydrological modeling systems, and (d) reconstruction and refurbishment of offices and facilities.

**2.3 Enhancement of Hydromet Service Delivery Systems (USD 7.05 million):** This sub-component will support the strengthening and delivery of hydromet information services in order to ensure project benefits are realized across the range of stakeholders. This will likely include (a) creation of a Service Delivery Platform for weather and hydrological services, (b) support for disaster risk management (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 (USD 37.85 million)**

**3.1 Navigation Improvements (USD 30.35 million):** This sub-component will support navigation improvements to increase water levels during the low water season for both passenger and cargo vessels, primarily along the busiest stretches of the Ayeyarwady river. This sub-components activities will include: (a) 1-dimensional and 2-dimensional river modeling to identify the scope of works for river navigation enhancements, sedimentation modeling which is essential for effective operations and maintenance, preparation of detailed design documents, cost estimates and bidding documents, and supervision of construction work; (b) preparation of an Environmental and Social Impact Assessment (ESIA), including site-specific Environmental and Social Management Plans (ESMPs), and if needed site-specific Resettlement Plans and Indigenous Peoples Plans, for the proposed enhancement works; and (c) construction of the enhancement works. The scope of works will initially focus on the Mandalay – Nyaung Oo section of the Ayeyarwady River and will be expanded to other critical stretches between Nyaung Oo and Yangon.

**3.2 Navigation Aids (USD 3.4 million):** This sub-component will support (a) the purchase and installation of navigation aids such as buoys, signage, modern GPS mapping, communications systems (requiring survey boats, echo-sounding equipment and radar) and the installation of lighting and signage systems to enable night time navigation on the Mandalay – Nyaung Oo section of the River; and (b) a strengthened river pilot

system to enhance safety and facilitate efficient navigation along the Mandalay – Yangon section of the Ayeyarwady.

**3.3 Water Quality Monitoring (USD 2 million).** This component will support the design and piloting of a water quality monitoring system.

**3.4 Institutional Strengthening and Implementation Support (USD 2.1 million):** This component will support (a) Component 3 implementation costs, (b) a fleet optimization study to improve transport efficiency by ensuring that fleet development is well suited to the river, and (c) capacity building, training and communications and awareness raising activities related to the Project-sponsored river improvements and new information, regulations and procedures.

#### **Component 4: Contingent Emergency Response (USD 0 million)**

1. This ‘zero component’ (initially without any allocated funding) will allow for the rapid reallocation of funds from other components to provide emergency recovery and reconstruction support in the event of a natural disaster, emergency and/or catastrophic event. Funds potentially reallocated to Component 4 would be disbursed either against a positive list of critical goods and/or against the procurement of works, and consultant services required to support the immediate response and recovery needs of GoM. A Contingent Emergency Response Implementation Plan will be developed to guide financial management, procurement, safeguard and any other necessary implementation arrangements and procedures.

#### **Project Baseline Information**

The Ayeyarwady River (also known as Irrawaddy; length 2170 km; drainage area 413,710 Km<sup>2</sup>) 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 waterway rising in the Himalayas, bisecting Myanmar from north to south and emptying through a nine-armed delta into the Bay of Bengal. The average discharge of the Ayeyarwady River is 13,000 m<sup>3</sup>/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 in Myanmar language) is situated at a place approximately 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. The River is also home to a number of charismatic and/or endangered species such as the Irrawaddy dolphin.

Information about the specific environmental characteristics of the river is somehow fragmented and the system for protecting biodiversity and water bodies is incipient in Myanmar. There is a need to collect specific environmental baseline data during implementation to properly assess project impacts (including cumulative) and mitigation measures. It is envisaged that during the Strategic Environmental and Social Assessment linked to the River Basin Master Plan as well as the specific ESIA for Project-related investments, this information will be gathered.

#### 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.

While the majority of the population in the Ayeyarwady River Basin is Bamar, the area is also home to many ethnic minority groups. Data does not exist that clearly show the list of ethnic groups present in the river basin. The Strategic Environmental and Social Assessment (SESA) will collect more data on the distribution of ethnic minorities in river basin at an early stage of project implementation.

Vulnerability to weather-related hazards is an important obstacle to growth and one that disproportionately affects women, children and vulnerable groups. Myanmar is vulnerable to natural hazards especially the hydro-meteorological hazards such as cyclones, rainfall-induced flooding and storm surges. During 1910-2000, Myanmar had encountered at least 14 major windstorms, 6 earthquakes, and 12 major floods The Post-Nargis Joint Assessment of 2008. Globally, Save the Children has found that women and children are up to 14 times more likely to die in the event of a natural disaster than men. The Post Nargis Joint Assessment of 2008 found that 61 percent of those who died during the Cyclone are female, and in some areas, there were twice as many women aged 18-60 died as men.

The Post-Nargis Disaster Response pointed out weaknesses in the communication infrastructure of national forecasting and early warning systems beyond the township level. Currently, the linkage between VDMCs to the formal village tract and township administration is still limited and needs to be enhanced. Many NGOs, INGOs and UN agencies operating in the areas could provide significant support to the Township Disaster Management Committee in this regard. Some have developed village volunteer programs to provide early warning and DRR related information to villagers. Radio programs seem to be the most effective mode of communication to reach villagers.

Besides limited communication technology at the community level, women in Myanmar especially in rural areas often face difficulties in participating in the village decision making forum where critical information is shared and discussed. Gender norms and practices have limited the opportunities for women to participate in decision making and to get access to essential information, including climate-related information and farm technology and advisory services. Women's participation in village, village tract and township administrations and development committees in Myanmar are rare. Gender awareness and the capacity of government agencies on gender-sensitive information for climate smart agriculture and disaster preparedness are still limited.

In order to promote equity and leverage the positive impacts of enhanced disaster warnings and agricultural advisories, gender considerations will need to be integrated in the project design and activities. Efforts would need to be made to reach out to women and women's groups in the design and implementation of activities related to disaster warnings and agricultural advisories, and capacity building opportunities. The SESA will integrate gender dimensions in the key assessment and planning including for the Initial Basin Assessment, and Ayeyarwady River Basin Master Plan, and gender aspects will be integrated into the implementation of the Stakeholder Forum and all communications and outreach activities including the dissemination of disaster warnings and agricultural advisories. Efforts will be made to ensure that male and female staff of

relevant agencies and communities has equal opportunity to participate in the capacity building and training support from the Project. To the extent possible, gender disaggregated data will be collected.

### **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, their specific impacts are not known by project appraisal, the preparation of this ESMF, including a Resettlement Policy Framework (RPF) and an Indigenous Peoples Planning Framework (IPPF), has been prepared to describe the overall environmental and social safeguard procedures to be undertaken 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 DWIR and other implementers 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.

The ESMF includes an **Indigenous Peoples Planning Framework (IPPF)** as required under the Operational Policy (OP) 4.10 of the World Bank for projects in areas with ethnic minorities. 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 measures; and (iii) preparing an Indigenous Peoples Plan (IPP). 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 describe procedures and requirements for assessing potential project risks, impacts and benefits and preparing required safeguard plans, such as an 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 the World Bank's policy on involuntary resettlement, 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 Ayeyarwady River Basin Management and Development Plan. For projects supported under the PFI subcomponent, the RPF and ESMF describe procedures and requirements for assessing potential impacts and preparing required safeguard plans, such as a Resettlement Action Plan (RAP) in line with OP 4.12.

Stakeholder consultations are key aspects of this ESMF. The SESA will be undertaken in a participatory and consultative manner, and required ESIA and safeguard instruments (e.g. ESMPs, RAPs and IPPs) will be informed by consultations with local communities. The framework approach allows also for screening and mitigation measures by the project implementers to ensure investments are environmentally and socially sustainable and inclusive.

The proposed AIRBM Project will be located 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. Moreover, many poor and vulnerable ethnic Burma, the majority population group, derive a significant livelihood from the Ayeyarwady River Basin and 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 AIRBM Project 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.

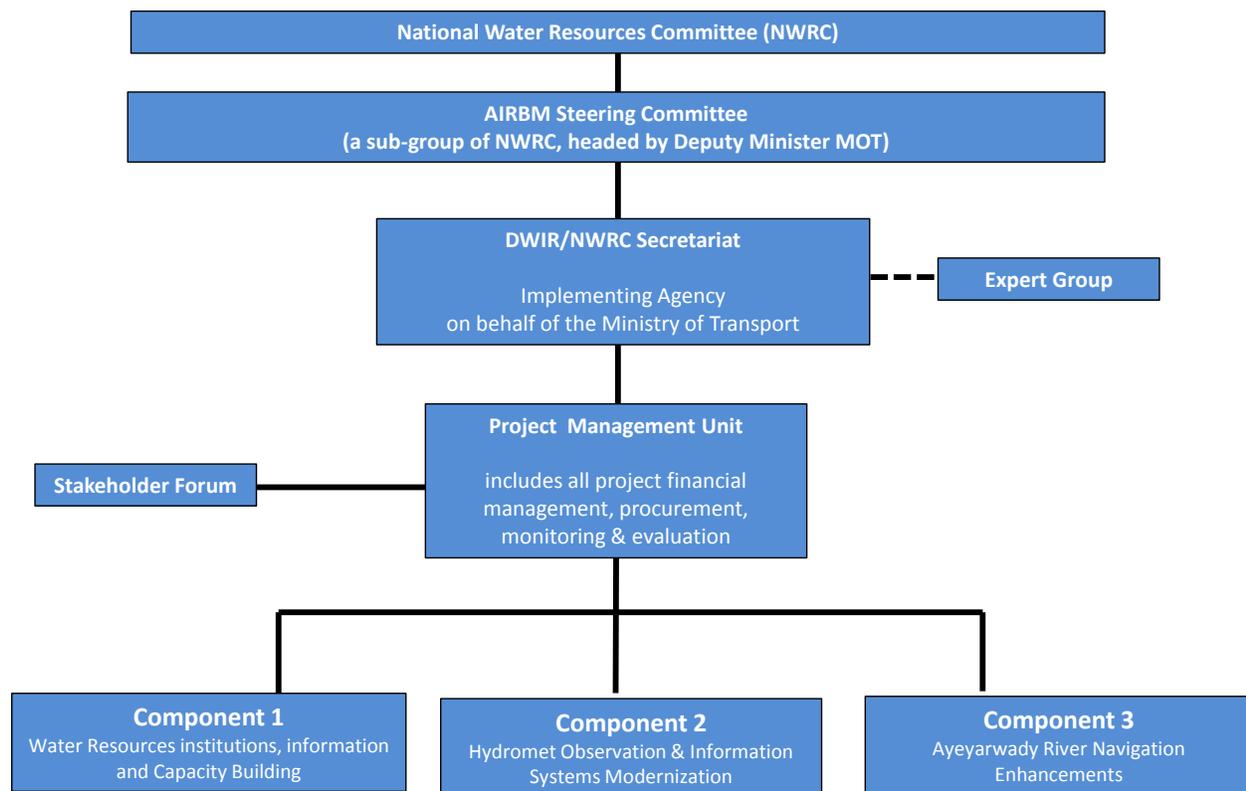
Project Director's Unit (PMU) / Project Management Unit: A full-time Project Director has been appointed, reporting directly to the Secretary of NWRC/DG of DWIR. The Project Director will be responsible for overall project management and technical coordination, as well as procurement and financial management, 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 PMU and CMU offices will be located together in Yangon, with satellite offices at DWIR and DMH in Nay Pyi Taw.

Component Director Units (CMUs): The Project Director will be responsible for the overall management of Components 1, 2 and 3, which each has a government appointed component director. The Component Directors will be supported by additional government staff who will be appointed as Technical Coordinators. Technical specialist consultants may also be hired under the CMUs 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 for the NWRC may be assigned to help provide guidance as necessary.

Stakeholder Forum: A Stakeholder Forum will be created to support the PMU 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).

Figure 1. *The AIRBM project implementation arrangements*



### Project Monitoring Arrangements

The PMU (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.

The PMU 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 PMU will inform the PSC and World Bank task team on the status of the implementation 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 disbursement. The PMU will immediately inform the PSC and World Bank task team of any circumstance or occurrence that could affect the environmental and social performance of the Project. Details on reporting and monitoring of environmental and social management aspects during project implementation are provided later in the document.

## **Legal And Institutional Framework**

### *Legal Framework concerning environmental management*

The Government of Myanmar (GoM) is currently in the process of carrying out various reforms that include political, economical and environmental reforms consequently 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 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.

#### *Legal framework concerning land acquisition*

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.

#### **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.

MOECAAF 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 constraints identified by MOECAAF 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 areas 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). The 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. The National Water Resources Committee, formed by the Presidential Decree in July 2013 and chaired by the Vice President of Myanmar, is an apex body aiming at overseeing the efforts of the 34 government agencies with current mandates affecting water resources management. The AIRBM project implementing unit will report both to the DWIR and the NWRC Secretariat.

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 4 highlights various agencies with different tasks related to water resources management.

**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, and (iv) 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. However, they will also have adverse impacts and the Project triggers the following World Bank safeguard policies: *Environmental Assessment* (OP 4.01); *Natural Habitats* (OP 4.04); *Pest Management* (OP 4.09), *Forests* (OP 4.36), *Physical Cultural Resources* (OP 4.11), *Safety of Dams* (OP 4.37), *Involuntary Resettlement* (OP 4.12) and *Indigenous Peoples* (OP 4.10).<sup>3</sup> Detailed information on these policies applicable to the project is presented in Annex 1.<sup>4</sup>

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

<sup>3</sup>The project also triggers the policy on *Projects on International Waterways* (OP/BP 7.50). Up to 99.7% of the Ayeyarwady River flow is accumulated 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 notification requirement under para. 7(a) of OP 7.50 and no notification will be required. The Project will also comply with the Access to Information Policy.

<sup>4</sup> For more information on World Bank Safeguard Policies please visit <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,menuPK:584441~pagePK:64168427~piPK:64168435~theSitePK:584435,00.html>

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 | MOECAAF shall arrange as it deems necessary for Public Participation. In the process of approving the EIA report, MOECAAF 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. If ethnic minorities are present in the project area or the project may include involuntary resettlement additional consultations are held as per OP 4.10 and OP 4.12. |

|            |                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disclosure | <p>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.</p>                                                                                                                         | <p>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.</p> <p>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</p> <p>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.</p> <p>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.</p> <p>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.</p> |
| Screening  | <p>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</p> | <p>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</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|            |                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EA Content | MOECAAF 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 | <p>MOECAAF shall monitor project performance in accordance to the Environmental Management Plan (EMP).</p> <p>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, MOECAAF shall impose penalties or suspend project construction or operation.</p> | 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 ENVIRONMENTAL AND SOCIAL IMPACTS**

Impact analysis of the Project at this point 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 detailed design stage and included in the relevant ESIA, EMPs and other safeguard instruments as needed. Typical Project Environmental and Social impacts for suggested Project activities are summarized below.

Small Construction Works: The Project will finance small construction works related to: (i) the construction or refurbishment of the NWRC Secretariat and Hydro-Informatics Center headquarters, (ii) the Modernization of Observation Infrastructure, Data Management Systems and Forecasting, and (iii) establishing of Navigation Aids from Mandalay to Yangon with night navigation focused on the Mandalay – Nyaung Oo section. The environmental impacts of these small construction works are likely to be localized and prevented or reduced to acceptable levels by applying international construction practices and planning. Such potential impacts are related to: (i) air pollution/dust, noise, vibration, and access restriction, (ii) improper disposal of construction related waste; (iii) temporary pollution of soil and surface waters due to accidental spillage of fuel from construction activities; (v) safety hazards including worker safety; (vi) damage to natural habitats, aquatic fauna, or existing vegetation, and (vii) impacts to physical cultural resources. These impacts should be properly managed during the construction phase by the contractor and closely supervised by the Project Director's Unit (PMU), the Project Implementation Team and the supervision engineer. ESMPs will be carried out in order to assess possible environmental and social impacts. To the extent to which these small construction works could have environmental and social risk/impacts more significant as those anticipated (e.g. they are located in an area where indigenous peoples or endangered biodiversity is present) a full ESIA or related IPP, Resettlement Plans will be required.

Navigation Enhancements: The Project is expected to build navigation enhancements from Mandalay to Yangon. 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 with limited dredging. It is possible that dredging process and river training works can influence the water regime in rivers and swamp areas in the wider Ayeyarwady river catchment area. As a result of reduced water flow in the lateral branches and minor flooding, changes in groundwater levels can be expected. This can potentially affect the functioning of wetlands, which are important refuges, hatching grounds and habitats of plants, birds, fish, amphibians and other animals. Dredging and the disposal of dredged materials can also potentially result in turbidity, siltation and sedimentation, reduced primary productivity, substrate disturbance and scouring, all of which can have impacts on downstream users of the river. Therefore, ESIA prepared in parallel with the detail design will analyze further possible impacts and incorporate where relevant the results of technical studies such as the hydraulic modelling, including ecological flows, with the aim of selecting feasible alternatives with least environmental impact.

Improved navigation transport could increase the pressure over resources and lead to land use changes just as an improved road does. Opening or improving shipping channels will provide new and enhanced access within the river basin. It may lead to changes in existing patterns of transport and commerce which may

benefit some communities, local markets, and river transporters, but bypass others. It could change the types of vessels and the mix of local and longer distance vessels plying the river. This aspect, if well understood in the ESIA and SESA, will help facilitate economic and social development in the project's area of influence.

The full ESIA for the navigation investments will consider land use change modelling and provide mitigation measures. Project Environmental and Social Assessment efforts (e.g. EISAs and or SESA) will map 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 river basin.

Ayeyarwady River Basin Master Plan and technical studies: The AIRBM project will support the following technical assistance to inform river basin management: (i) the preparation of a River Basin Master Plan and associated investments, and (ii) technical studies such as the basin groundwater survey, fleet optimization study, and Ayeyarwady river navigation strategy. It is envisioned that the Master Plan will suggest priority investment to manage the river basin and the AIRBM Project, under the Preparation of Future Investments sub-component, will finance advisory support for planning or feasibility studies linked to some of those suggested investment. These sub-projects are likely to have environmental and social safeguard impacts, although it is not possible to ascertain at this point their likely environmental and social impacts.

#### **4 PROCEDURES TO ADDRESS ENVIRONMENTAL AND SOCIAL ISSUES**

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

- This Environmental and Social Management Framework (ESMF) prepared prior to appraisal and approval of the AIRBM Project, to inform the overall environmental and social performance of the Project;
- Specific Environmental and Social Impact Assessments (ESIAs) and/or Environmental and Social Management Plans (ESMPs), and other safeguard instruments as required (e.g. involuntary resettlement plans, indigenous peoples plans) will be prepared for all investments/subprojects that are identified or designed during project implementation as well as those prepared under the Preparation of Future Investments (PFI) subcomponent, following the guidance established in this ESMF;
- A Strategic Environmental and Social Assessment (SESA) will be carried out during implementation to inform the Ayeyarwady River Basin Master Plan and other technical studies.

#### **ESMF**

The ESMF will be applied to all infrastructure investments that are identified during project implementation (see Table 3 below) and those financed by the PFI subcomponent. The PFI will provide finance to support the preparation of priority projects identified in the Master Plan, including 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 the Borrower in the subsequent project phases (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 Policy Framework for land acquisition and resettlement
- An Indigenous Peoples Planning Framework concerning ethnic minorities
- Guidance on:
  - o Terms of Reference for ESIA and ESMP for Category A projects (See Annex 5)
  - o Management of environmental impacts for small construction projects (See Annex 2)
  - o Preliminary Terms of Reference for SESA (See Annex 3)

## **ESIA/ESMPs**

An ESIA 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 early warning systems; and (iv) installation of navigation aids along the selected river sections. If needed, social safeguard instruments will also be prepared following the guidance provided in this ESMF and per World Bank policies on indigenous peoples (OP 4.10) and involuntary resettlement (OP 4.12). Particular attention will be given to assessment of cumulative impacts given the potential risks of the river improvement activities as well as other ancillary investments in the Basin.

## **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:

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 interventions will 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) identified based on the modelling 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 feasibility study/detailed design before respective works may commence. Cumulative impacts will be assessed in addition to the site specific ones generated by the respective investments.

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 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 performance standards as well as local laws and regulations. Annex 1 summarizes the applicable national environmental and social regulations and World Bank safeguard policies.

In case the river basin planning process/master plan identifies priority investments for which feasibility studies will be supported by the project, ESIA's 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 and social implications should be assessed (ESMF's 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.

The ESMF will be applied to all infrastructure projects that are identified during project implementation and those financed by the Preparation of Future Investments (PFI) sub-component. The activities to be supported by the PFI sub-component will be required to have ESIA's and specific safeguard instruments, where needed, based upon the ESMF. The Bank will review and clear all safeguards instruments during implementation including ToRs. The final SESA ToR will also be reviewed and cleared by the Bank.

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”) | <ul style="list-style-type: none"> <li>• Executive summary</li> <li>• Policy, legal, and administrative framework</li> <li>• 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.</li> <li>• 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 directly connected to the project. Data should be relevant to decisions about project location, design, operation, or</li> </ul> | <b>Component 3.2.</b><br>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                                                         |
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|                                                                 | <p>mitigation measures. The section indicates the accuracy, reliability, and sources of the data.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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 and social 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 and social 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.</li> <li>• Environmental and social management plan (ESMP), including resettlement plan and indigenous peoples plan if needed.</li> <li>• Appendixes <ul style="list-style-type: none"> <li>○ List of EA report preparers—individuals and organizations.</li> <li>○ References—written materials both published and unpublished, used in study preparation.</li> <li>○ 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.</li> <li>○ Tables presenting the relevant data referred to or summarized in the main text.</li> <li>○ List of associated reports (e.g., resettlement plan or indigenous peoples plan). See ToRs for category A ESIA in Annex 5.</li> </ul> </li> </ul> |                                                                                     |                                                                 |
| ESMP - Environmental and Social Management Plan including ECoPs | <ul style="list-style-type: none"> <li>• 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 relates and the conditions under which it is required (e.g.,</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Component 1.1</b><br>Construction or refurbishment of a National Water Resources | See ESMF Annex 2 for sample ECoPs for small construction works. |

| EA Instrument and category                                          | Content according to the OP/BP 4.01 and relevant safeguard policies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AIRBMP Component                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Comment                                                                  |
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| (category “B”)                                                      | <p>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.</p> <ul style="list-style-type: none"> <li>• <b>Monitoring:</b> 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.</li> <li>• <b>Capacity Development and Training:</b> 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 ESMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.</li> <li>• <b>Implementation Schedule and Cost Estimates:</b> For all three aspects (i.e. mitigation, monitoring, and capacity development), the ESMP 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 ESMP. These figures are also integrated into the total project cost tables.</li> <li>• <b>Integration of ESMP with Project:</b> 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 ESMP within the project so that the plan will receive funding and supervision along with the other components.</li> </ul> | <p>Committee (NWRC) Secretariat and Hydro-Informatics Center headquarters facility;<br/> <b>Component 2.2</b> the Modernization of Observation Infrastructure, Data Management Systems and Forecasting; reconstruction and refurbishment of DMH offices and facilities; technical modernization of the observation network;<br/> <b>Component 2.3</b> - expansion of "end-to-end" early warning systems in several small river basins prone to floods and flash floods<br/> <b>Component 3.3.</b> establishing of Navigation Aids from Mandalay to Yangon focused on the Mandalay – Nyaung Oo section</p> |                                                                          |
| SESA – Strategic Environmental and Social Assessment (Category “A”) | <ul style="list-style-type: none"> <li>• 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</li> <li>• The Ayeyarwady is home to an extraordinary diversity of cultural communities as well as ecosystems, flora and fauna. To understand the environmental and social dynamics of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Component 1.2.</b> Ayeyarwady Integrated River Basin Master Plan</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>ESMF Annex 3 includes ToR and a process for carrying out the SESA</p> |

| EA Instrument and category                                                    | Content according to the OP/BP 4.01 and relevant safeguard policies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | AIRBMP Component                                                                                                                                                                                                                                                                                                                                      | Comment                                                                                                                                                                              |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                               | <p>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 preliminary ToRs for SESA in ESMF Annex 3</p>                                                    |                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                      |
| <p>Environmental and Social Management Framework (“A” or “B” investments)</p> | <ul style="list-style-type: none"> <li>• 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 ESAs that will be included in project preparation..</li> <li>• 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.</li> </ul> | <p><b>Component 1.3</b><br/>-PFIs - Pre-feasibility studies, technical studies etc.<br/><b>Component 1.2.</b> - Ayeyarwady Basin Groundwater Survey<br/><b>Component 2.2</b><br/>– Design and pilot operation of surface water quality monitoring system<br/><b>Component 3.1</b><br/>– Ayeyarwady River Navigation Strategy (Mandalay to Yangon)</p> | <p>The ESMF process for PFIs subcomponent is presented in Chapter 4.<br/><br/>Resettlement Policy Framework in Annex 6<br/><br/>Indigenous Peoples Planning Framework in Annex 7</p> |

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 and social 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 studies.

The PFI subcomponent could finance projects in the following sectors:

- irrigation,
- 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 PMU. 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 studies. Safeguard instruments could include:

- Full Environmental and Social Impact Assessments:
- Environmental and Social Management Plans.
- Resettlement Action Plans
- Indigenous Peoples Plans
- Physical Cultural Resources Plans.

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. | Some land acquisition may be needed. Project site has tenant renters.                                                            | Project site will entail resettlement or land acquisition. Uncertainty over land tenure                                            |
| Indigenous Peoples (OP 4.10)                                  | No ethnic minorities in project area                                                                               | Some ethnic minorities present in project area. Mainly in mixed communities and/or relatively integrated into mainstream society | Ethnic minorities present in project area, including vulnerable communities and/or with little integration into mainstream society |
| 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 risks to 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 sensitivity 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 8** provides a list of required safeguard documents for various types 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 ESMP (Guidance in Annex 5)<br>Specific reports to address issues identified in the screening formats might be necessary.<br>Resettlement Action Plan (Guidance in Annex 6)<br>Indigenous Peoples Plan (Guidance in Annex 7) |

|                                                      | Physical Cultural Resources Plan                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Projects with minor reconstruction or rehabilitation | <p>If Category B: Use site screening criteria to prepare specific assessments and prepare ESMPs for construction. (Guidance in Annex 2)</p> <p>Confirm need for land acquisition and/or resettlement. Abbreviated Resettlement Plans might be sufficient (Guidance in Annex 6).</p> <p>If projects are to be built in areas with ethnic minorities undertake a social assessment and consultation process and prepare an Indigenous Peoples Plan (Guidance in Annex 7)</p> |

**General ESMF Implementation Flow Chart for Subprojects:**

The following general procedures apply for all works sub-projects financed through the project, as well as all PFI (preparation of future investments) activities associated with physical works projects. The actual procedural flow may vary depending on the specific nature of the activity. The procedures for the Strategic Environmental and Social Assessment (SESA) are outlined in Annex 3.

**Screening and Scoping**

- 1: For every activity (physical sub-project or study) the PMU/CMU analyzes the following: Does the activity have potential for any type of social or environmental impact, or trigger any World Bank safeguard policy?
- 2: The PMU/CMU screens the activity in more detail for potential impacts, identify the triggered safeguard policies, and propose the general scope of work for safeguard instrument (ESIA, ESMP, RAP, IPP, etc.) Submit to the Bank a screening report for review (typically less than five pages with supporting maps). The
- 3: *World Bank reviews and approves the screening report and provides comments on general scope of safeguard work.*

**Safeguard Instrument Preparation**

- 4: The PMU/CMU prepares detailed scope of work and TOR for the preparation of the necessary safeguard instrument according to the general guidelines of the ESMF.
- 5: *The World Bank reviews, provides comments, and approves the TOR for the safeguard instrument. Category A sub-projects require the clearance of the Bank’s regional safeguard advisor.*
- 6: The PMU/CMU is responsible for preparing the safeguard instrument. Typically, the PMU/CMU will contract a contractor or consultant to prepare the safeguard instrument. The PMU/CMU contracts the consultant/contractor to prepare the safeguard instrument(s) per World Bank procurement rules.
- 7: The consultant/contractor prepares the safeguard instrument(s). The PMU/CMU ensures quality and consistency with the ESMF and then submits to the World Bank. Typically public consultations are required in the preparation of the safeguard instrument.
- 8: *The World Bank reviews, provides comments, and approves the safeguard instrument(s). Category A sub-projects require the clearance of the Bank’s regional safeguard advisor.*

### Safeguard Instrument Implementation

9: The PMU/CMU is responsible for the implementation of the safeguard instrument. Typically, the PMU/CMU will contract a contractor or consultant to implement the safeguard instrument. The PMU/CMU should prepare a TOR for the contractor/consultant to implement the safeguard instrument and submits to the World Bank.

10: *The World Bank reviews, provides comments, and approves the TOR for the contractor/consultant.*

11: The PMU/CMU contracts the contractor/consultant to implement the safeguard instrument per World Bank procurement rules.

12: The PMU/CMU supervises the implementation of the contractor to ensure successful implementation of the safeguard instrument.

13: If necessary, an independent environmental or social monitor is contracted under a TOR acceptable to the Bank to supervise the implementation of the safeguard instrument.

14: The PMU/CMU includes reporting of safeguard implementation as a chapter of its normal project status reports.

15: *The World Bank supervises the implementation of the safeguard instrument, with specialized environmental and social specialists, to ensure compliance with World Bank safeguard policies. The Bank's Regional Safeguard advisor is kept informed of implementation.*

## **6 INSTITUTIONAL CAPACITY AND CAPACITY BUILDING FOR ESMF IMPLEMENTATION AND MONITORING**

The implementation of the Environmental and Social Management Framework, Indigenous Peoples Planning Framework, Resettlement Policy Framework and related safeguard instruments 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 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 CMUs and appreciate their role in providing supervision, monitoring and evaluation including environmental reporting on the projects activities.

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 PMU as part of each of the three CMUs.

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 implementing agencies have little or no experience with the WBG safeguard policies, nor do they appear to have the capacity to implement and monitor them. This low capacity is expected as this is the first water resources management project the GoM is undertaking with World Bank support after a 20 year hiatus. 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.

Safeguard capacity of the institutions involved in project implementation and river basin management will be enhanced through training and learning-by-doing activities. A preliminary safeguards institutional capacity and capacity building plan has been developed and is presented below. This plan will be refined and adjusted throughout project implementation as required.

#### Year 1: Training Activities:

Workshop 1: General Introduction to ESMF and World Bank Safeguard Policies: 2 days

Audience: All PMU/CMU and other relevant government staff, consultants, and civil society.

Workshop 2: Training on ESIA: 2 days

Audience: PMU/CMU Environmental and Social Staff and other relevant government staff, consultants, and civil society.

Workshop 3: Training on Environmental and Social Management Action Plan (ESMP): 1 day

Audience: PMU/CMU Environmental, Social, and Engineering Staff and other relevant government staff, consultants, contractors and civil society.

Workshop 4: Training on Resettlement Action Plans: 1 day

Audience: PMU/CMU Environmental and Social Staff and other relevant government staff, consultants, and civil society.

Workshop 5: Training on Indigenous Peoples Plans: 1 day

Audience: PMU/CMU Environmental and Social Staff and other relevant government staff, consultants, and civil society.

#### Annual Training: Years 2-5

Refresher Course: General Introduction to ESMF and World Bank Safeguard Policies: 2 days

Audience: All PMU/CMU and other relevant government staff, consultants, and civil society.

#### Specialized Training As Need to Consultants and Contractors

Training to Consultants Contracted to Prepare ESIA: As Needed  
 Training to Contractors and Construction Supervision Consultant Responsible for EMP: As Needed  
 Training to Consultants Contracted to Prepare RAPs and/or IPPs: As Needed

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.

Estimated Budget for ESMF Implementation

The table below summarizes the estimated costs for implementing the ESMF, along with a contingency. These costs were extracted from various line items in the overall project cost table (such as capacity building, PFI costs, and the SESA, and assembled below to provide a perspective on environmental and social management costs.

| <b>Estimated Costs for ESMF Implementation</b>                            |            |                         |                          |
|---------------------------------------------------------------------------|------------|-------------------------|--------------------------|
| <b>A. Training Costs</b>                                                  | <b>No.</b> | <b>Unit Cost (US\$)</b> | <b>Total Cost (US\$)</b> |
| A.1 Year One Safeguard Capacity Building                                  | 5          | \$10,000                | \$50,000                 |
| A.2 Annual Safeguard Update Training                                      | 4          | \$5,000                 | \$20,000                 |
| A.3 Specific Training for Consultants/Contractors                         | 8          | \$5,000                 | \$40,000                 |
| Subtotal                                                                  |            |                         | \$110,000                |
| <b>B. ESMF Implementation-Based On Investment/Planning Costs</b>          |            |                         |                          |
| B.1 ESMF Project-Financed Works-2% of \$30 million investment             |            |                         | \$600,000                |
| B.2 ESMF PFI Activities-15% of \$7 million of preparation studies         |            |                         | \$1,050,000              |
| Subtotal                                                                  |            |                         | \$1,650,000              |
| <b>C. Specialized Safeguard Staff:</b>                                    | <b>No.</b> | <b>Per year</b>         | <b>5 Years</b>           |
| C.1 Environmental Specialists-PMU                                         | 1          | \$ 15,000               | \$75,000                 |
| C.2 Environmental Specialists: CMU                                        | 2          | \$ 7,500                | \$75,000                 |
| C.3 Social Specialists-PMU                                                | 1          | \$ 15,000               | \$75,000                 |
| C.4 Social Specialists: CMU                                               | 2          | \$ 7,500                | \$75,000                 |
| Subtotal                                                                  |            |                         | \$300,000                |
| <b>E. Ayeyarwady Strategic Environmental and Social Assessment (SESA)</b> |            |                         | \$1,000,000              |
| <b>Sub-Total</b>                                                          |            |                         | \$3,060,000              |
| <b>Contingencies</b>                                                      |            | 15%                     | \$459,000                |
| <b>Total</b>                                                              |            |                         | \$3,519,000              |

## Monitoring and Reporting

During the usual investment supervision activities, the PMU will check with local environmental authorities to determine if the project implementation is meeting all specified ESMF, ESIA, ESMP and related safeguard requirements (e.g. RAP, IPP). They will also perform supervision site visits to the various stages of investments construction to confirm the ESMPs and related safeguard instruments are being adequately implemented. A supervision report covering the environmental and social management issues should be included in the overall site visit report. The designated environmental and social experts will prepare quarterly and annual reports on the key steps, outputs and results of the environmental and social management actions taken for all investments throughout the project cycle. The PMU will inform the Project Steering Committee and World Bank Task Team on the status of the environmental and social instruments and the implementation of correspondent action plans on a quarterly and yearly basis in writing, and before every disbursement. The World Bank will review and provide comments and technical advice on the issues included in the reports. The PMU will immediately inform the Project Steering Committee and World Bank Task Team of any circumstance or occurrence that could have a materially adverse impact on the environmental and social performance of the project.

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

## Grievance Redress Mechanism

The PMU will establish a grievance redress mechanism (GDM) early in the project implementation phase, informed by the SESA. The GDM will aim at enabling the PMU to receive and facilitate resolution of specific concerns of affected communities and project participants regarding AIRBM environmental and social performance. The GDM will aim to resolve concerns promptly, in an impartial, understandable and transparent process tailored to the specific community, and at no cost or without retribution to the complainant/s. GDM composition, procedures and functions will be designed early in the project implementation phase based on below principles and made available to the public. The Communication Strategy will establish the specifics by which the GDM will be presented to different stakeholders. The World Bank will provide support as needed in the design and implementation of the GDM.

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 Project can lodge an oral or written grievance to local authorities 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 partners keep a record of all complaints referred to the grievance committee, including a description of issues raised and the outcome of the review process.

## **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 an integral part of the project. Two sets of consultations were carried out by DWIR during project implementation on May 16 and 19, and again on September 18 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) during the May 2014 consultations and on the draft ESMF itself during the September consultations, (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 included the 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 (in May) and the draft ESMF (in September).

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](http://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. They emphasized the importance of the Ayeyarwady river basin for local communities and national development. In addition to questions raised to seek more information about the proposed project, loan conditions and its various activities, the key issues raised during the consultation process include (see Annex 8 and 9 for summaries of the consultations):

- (i) Participants highlighted the importance of maintaining and improving water quality and the health of the Basin's biodiversity, forests and watershed, and noted concerns with mining and other activities affecting downstream communities and leading to bank erosions;
- (ii) Need to increase the knowledge related to groundwater resources in order to sustainably utilize and manage resources;
- (iii) Participants stressed the need for a robust consultation and participation approach that would be open to all interested parties, including representative of local communities and users of the river basin. They encouraged early establishment of the Stakeholder Forum;

- (iv) Similarly, they stressed the need for a thorough and user-friendly dissemination and disclosure approach for project related information, including data collected during project implementation, the ESMF and safeguard plans prepared during project implementation;
- (v) Questions were raised regarding the overlap between national legislation and the World Bank policies concerning ESIA and related safeguard issues and how gaps would be overcome;
- (vi) Some raised concerns about potential future hydropower developments that would affect downstream communities

Public consultations will continue and be expanded during project implementation as part of the environmental and social assessment processes, as described in this ESMF, and as part of general Stakeholder Engagement activities. 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 activities during project implementation.

A Stakeholder Forum will be established to support the PMU 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 implementation of the AIRBM project. 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.

### **Access to Information**

The PMU will disclose relevant project environmental and social information in a manner accessible to affected communities and other stakeholders. Relevant project information includes all environmental and social assessment documents (e.g. ESIA, EMP, SESA) produced under the AIRBM project. The PMU and partners will also provide periodic reports to the affected communities and other relevant stakeholders on the implementation status or any modification to environmental and social management plans (e.g. ESMPs, IPPs, RAPs). Given that Myanmar has a 1% Internet penetration, it is envisioned that the PMU will use a variety of communication tools that will be included in the communication strategy and could include infographics, leaflets and frequent questions and answers to be distributed among different stakeholders, a phone-line to the PMU etc.

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## **ANNEXES**

### **Annex 1: World Bank Group Requirements and Operational Policies Triggered**

The World Bank Group has ten (plus one) environmental and social safeguard policies and an Access to Information Policy. Several of these policies, the Environmental Assessment (OP 4.01), Natural Habitats (OP 4.04), Pest Management (OP 4.09), Forests (OP 4.36), Physical Cultural Resources (OP 4.11), Involuntary Resettlement (OP 4.12), Indigenous Peoples (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. Table 10 summarizes the World Bank Group Operational Policies triggered for and their application to the AIRBMP.

*Table 9. Summary of Project Triggered World Bank Safeguards Policies*

| <b>SAFEGUARD POLICY</b>                                          | <b>DESCRIPTION</b>                                                                                                                                                                                             | <b>Application to AIRBM Project</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>OP/BP 4.01<br/>on<br/>Environmental<br/>Assessment</b></p> | <p>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.</p> | <p>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 ESIA's and ESMPs 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.</p> <p>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. 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. Although modeling and the environmental assessments have yet to be done, construction-related environmental impacts are anticipated to be localized, temporary, and efficiently mitigated by applying good international</p> |

| SAFEGUARD POLICY                             | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                  | Application to AIRBM Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              |                                                                                                                                                                                                                                                                                                                                                              | <p>construction practice and planning. However, these activities may impact downstream water quality and turbidity, aquatic habitats, aquatic flora and fauna, fishery, primary productivity and users of the river. Transport and disposal of dredged materials will also have impacts, and the works may have impacts on navigational traffic and safety. Limited dredging is anticipated to enable the construction of groins, whose number and location will be determined based on 2-dimensional modeling results. Unexploded ordinance clearance works are not expected but if required they will be implemented in line with specific international standards of operations. During implementation, before channel enhancements works begin, a detailed design and ESIA will be carried out and impact mitigations measures will be outlined in site specific ESMPs. The PFI will support the preparation of feasibility and other studies for investments that may be implemented in future phases of this program or financed by others; These potential future investments (i.e., in irrigation, hydropower, navigation, delta management, municipal water supply or wastewater management systems) are likely to have potential adverse environmental and social impacts. The Terms of References (TORs) of studies will include screening of environmental and social safeguard risks, impacts and issues based on the ESMF and relevant World Bank safeguard policies. In cases where the river basin planning process identifies priority investments for which feasibility studies and/or designs will be prepared by the project, ESIA's and other safeguard instruments (e.g. RAPs, IPPs), as needed, will be prepared in accordance with the ESMF and Bank safeguard policies.</p> |
| <p><b>OP/BP 4.04 on Natural Habitats</b></p> | <p>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.</p> | <p>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 includes screening procedures to ensure that potential investments will not involve unprecedented or significant conversion of natural habitats. Specific ESIA's and ESMPs will address impacts and mitigation options during implementation. The technical assessments</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| SAFEGUARD POLICY                                 | DESCRIPTION                                                                                                                                                                                                                                 | Application to AIRBM Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                  |                                                                                                                                                                                                                                             | 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.                                                                                                                                                                                                                                                                 |
| <b>OP/BP 4.09 on Pest Management</b>             | To minimize and manage the environmental and health risks associated with pesticide use and promote and support safe, effective, and environmentally sound pest management.                                                                 | The project activities are not expected to use pesticides, nor lead to increased usage of pesticides. However, the triggering of this policy to specific project-financed activities will be screened for all future investments and appropriate instruments (Integrated Pest Management Plans) would be prepared as needed to, inter alia, promote use of demand driven, ecologically based biological or environmental pest management practices (Integrated Pest Management [IPM] in agricultural/irrigation projects and reduce reliance on synthetic chemical pesticides. |
| <b>OP/BP 4.36 on Forests</b>                     | To realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests.    | No activities financed under this Project (first phase of the series of projects envisioned) are anticipated in forest areas. However, the policy is triggered because projects included in the sub-component for preparation of future investments (PFI), such as irrigation and hydropower, are likely to trigger the policy. Detailed assessment and relevant safeguards instruments will be prepared as part of project implementation (e.g. for feasibility studies supported under the PFI sub-component), if needed in order to comply with this policy provisions.     |
| <b>OP/BP 4.11 on Physical Cultural Resources</b> | The Bank is sensitive about physical cultural properties that might potentially be impacted by project related activities or investments. Impacts on 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.                                                                                                                                      |
| <b>OP/BP 4.12 on Involuntary Resettlement</b>    | All efforts should be made to avoid, or minimize Involuntary resettlement by exploring all viable alternative project designs. Where land acquisition or restriction of access to land and resources is unavoidable, resettlement should be | 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 also entail temporary occupation of land. Construction of office buildings and other structures will likely be conducted only on                                                                                                                                                                                                                                                                       |

| SAFEGUARD POLICY                                     | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Application to AIRBM Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                      | <p>executed as sustainable development programs for sustainable restoration or improvement of income streams of affected people</p> <p>All Project Affected People (PAPs) will receive compensation for land and fixed assets that is at least equal to their replacement value. They should be consulted and participate in the planning and execution of resettlement and income development / restoration activities.</p>                                                                                     | <p>public land. Modernization of the observation infrastructure may entail minor land or property 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 proposed in this ESMF will address impacts associated with the preparation of the Ayeyarwady River Basin Management and Development Plan. Projects supported by the PFI sub-component may have involuntary resettlement impacts, and the project will support the assessment of impacts and preparation of required instruments.</p> <p>A Resettlement Policy Framework (RPF) is included in this ESMF to address land acquisition and other involuntary resettlement impacts financed by the project (Annex 6).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>(OP/BP 4.10)<br/>on Indigenous Peoples</b></p> | <p>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.</p> | <p>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 (Annex 7).</p> <p>The SESA includes procedures to assess risks, impacts and benefits concerning ethnic minorities and to ensure ethnic minorities are adequately consulted with and meaningfully participate in the development of the Ayeyarwady River Basin Management and Development Plan.</p> |

| <b>SAFEGUARD POLICY</b>                                  | <b>DESCRIPTION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Application to AIRBM Project</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OP/BP 7-50 on Projects on International Waterways</b> | 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 waterway 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 portions in China and India. Thus, the proposed project falls within the exception to the riparian notification requirement and no further actions are required during project implementation.                                                                                                                              |
| <b>OP/BP 4.04 on Safety of Dams</b>                      | 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 |
| <b>Bank Policy on Disclosure of Information</b>          | 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 public consultations have been conducted in accordance with World Bank policy requirements, and consultations will continue during implementation. Gender mainstreaming is an integral part of AIRBM stakeholder engagement plan. Prior to the public consultations relevant project documents were disclosed to stakeholders and local non-Government Organizations (NGOs). The Myanmar and English versions of these documents were 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 accidents 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.);
- (h) Potentially unacceptable nuisances during construction (dust, wastes, and heavy construction traffic); and
- (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

### Environmental considerations for the engineering design

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 infrastructure. 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

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 navigation/road traffic congestion during construction due to the increase of heavy traffic (of the construction itself and from traffic detours) in high traffic avenues and boat decks; (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, as well as addressing population questions and grievances, 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, and this 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;

- c. All sites should be cleaned of debris and all excess materials properly disposed; and
- 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**

Siting and operation of work camps should be undertaken in consultation with neighboring communities.

To the extent possible, work camps should not be located in close proximity to local communities.

Local communities should be consulted to identify and pro-actively manage any potential conflicts between an external workforce and local people.

The Contractor should recruit unskilled or semi-skilled workers from local communities to the extent possible. Where and when feasible, worker skills training, should be provided to enhance participation of local people. All employees should be given appropriate training and equipment needed for worker health and safety.

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, install sediment 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 re-vegetated. Where appropriate, organic debris and overburden should be spread over the disturbed site to promote re-vegetation. Natural re-vegetation 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 as well as World Bank Environmental, Health and Safety guidelines 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 and out 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. Consult with local communities on the siting of work camps; especially with respect to potential local-outsider conflicts. (See section on work camps).
2. Raise local community awareness about sexually transmitted disease risks associated with the presence of an external workforce and include local communities in awareness activities.
3. Inform the population about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate.
4. 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.
5. 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 for 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 an awareness program, including a voluntary option for the detection screening of sexually transmitted diseases, especially with regard to HIV/AIDS, amongst employees. Appropriate measures to raise awareness and measures to be taken among

employees, in work camps, and in neighboring local communities about sexually transmitted diseases and the avoidance and mitigation of malaria and dengue fever should be 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 and report to the PMU in writing at least on quarterly basis. 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.

**PRELIMINARY DRAFT<sup>5</sup>**

**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 and an Integrated River Basin Master Plan developed. 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 Master Plan and future use by the Hydro-Informatics Center (HIC), the future River Basin Organization (RBO) and by line management Agencies
- (ii) Development of a set of models and analytic tools for use in the Master Plan and future use by the HIC, the future RBO and by line management agencies
- (iii) Stakeholder consultations to define planning scenarios, and

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<sup>5</sup> The ToR will be finalized, and approved by the World Bank, during project implementation prior to initiation of the SESA.

- (iv) An integrated basin master plan 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 the integrated river basin planning and management (IRBPM) and inform the development of the Master Plan 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. The SESA will be carried out as a process, rather than a one-time impact assessment, and will create a platform for stakeholder engagement to allow continued engagement with a broad set of stakeholders. Continued and two-way engagement therefore characterizes the SESA processes. The 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 of local communities, including 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 will be financed under the project’s sub-component 1.3, may include land acquisition or displacement of local people 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) | <b>Scoping</b> <ul style="list-style-type: none"> <li>• Literature Review</li> <li>• Assess preliminary information (development trends, environmental and social issues)</li> <li>• Stakeholder mapping, analysis and engagement</li> </ul> |

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|                                                                                                                                                                                                          | <p>plan</p> <ul style="list-style-type: none"> <li>• Scoping workshops with stakeholders</li> <li>• Scoping report with institutional arrangement, work plan, timeline and deliverables for SESA</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Initial Basin Assessment and first draft Ayeyarwady Basin Master Plan (0-6 months)</p> <p>Scoping Model</p> <p>Basin Development Objectives and indicators</p> <p>Initial Draft Basin Master Plan</p> | <p><b>Identification of Environmental and Social priorities, Impacts and Issues and Possible Mitigation measures</b></p> <p><u>Situational Analysis</u></p> <ul style="list-style-type: none"> <li>• Stocktaking of existing information (spatial analysis, case studies, or cost of degradation Studies, EIA reports or sector reports)</li> <li>• Cumulative / synergistic / secondary impacts will be considered as well as impacts of individual developments in the sector.</li> <li>• Stakeholder Analysis</li> <li>• Environmental and social opportunities, risks and potential impacts will be identified</li> <li>• Quantifiable criteria to prioritize environmental, social, safety and health issues</li> <li>• Methodologies to set up priorities</li> <li>• Horizontal (sectors) and vertical (issues consulted) by region</li> <li>• Focus groups + community surveys + workshops + interviews</li> <li>• Potential mitigation measures and monitoring requirements will be identified for each potential impact</li> </ul> <p><u>Institutional, Capacity and Political Economy Assessment</u></p> <p>Formal Institutional Analysis</p> <ul style="list-style-type: none"> <li>• Compilation of relevant policies, laws, regulations, and guidelines, including national and county legislation associated with environmental and social priorities, water resources management</li> <li>• Assess adequacy of existing institutions to deal with environmental and social priorities (Capacity, stakeholder participation, coordination)</li> <li>• Propose actions to address institutional gaps</li> </ul> <p>Non-formal institutional analysis</p> <ul style="list-style-type: none"> <li>• A first step is a review of available ethnographic information on the cultural attributes of the target population, including the various ethnic minorities in the river basin. A second step consists of workshops and focus groups that are carried out in a sample of representative communities of these various groups that may be affected by the development of water resources management activities</li> </ul> |
| <p>Intermediate Options Analysis (12-30 months)</p> <p>- Scenario analysis, evaluation of alternative pathways,</p>                                                                                      | <p><b>Recommendations and Risk Assessment</b></p> <p>Recommendations are, generally, framed in an action</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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| <p>including more detailed social and environmental analysis<br/>- Stakeholder engagement</p>                                                                                                                                                                 | <p>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.</p> |
| <p>Ayeyarwady Basin Master Plan (ABMP) (24 – 36 months)<br/>Detailed options analysis and stakeholder engagement<br/>Completion of the models, DSS and knowledge base and the first 10 years Ayeyarwady Basin Master Plan<br/>Institutional Strengthening</p> | <p>Final Consultations, Review and Approval</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>Capacity Building (training) and engagement requirements<br/>HIC strengthening and support to NWRC<br/>Transfer of all Assets to HIC</p>                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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 a 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.

Consultations and the Stakeholder Forum will be inclusive and involve a broad range of stakeholders. Efforts will be made to include women, members of vulnerable groups and ethnic minority communities and their organizations. Local languages may need to be used and material prepared that enables the active involvement of ethnic minorities.

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 the 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 the 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 and other consultation activities.

The individual tasks are described below:

- Review the most relevant ESIA's, Environmental and Social Management Plans (ESMPs), and Environmental Statements of different projects in the River Basin, as well as any environmental scoping report, social assessment, study, plan or strategy that involves water resources management during the last 10 years. The consultant will liaise with DWIR and other relevant institutions (e.g. 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. 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, including ethnic minorities.
- Prepare the final Scoping Report, incorporating workshop results, for review by DWIR, 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 various 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 ethnic minorities and vulnerable groups, and their organizations. 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 Consultation Meeting**

The key environmental and social issues identified based on the results of the desk analyses and 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, local languages should be used 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.

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 and Social Management Plan(s), Resettlement Action Plan(s) and Indigenous Peoples Plan(s), 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

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 consultation meeting**

In coordination with the DWIR team the SESA report shall be presented to a national workshop. Copies of the documents should be made available to the public through the websites of the GoM, World Bank, and appropriate third party websites of ethnic minorities, 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 meeting will be held in around the second year of the project, or when the draft ARBMDP is developed.

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

**Table 10. 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 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              | 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                                                                    | Consultants                            |                | 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                                         |                                                                                                                                            |

|       |                                                                                                                                                                                                                                                                                          |                                     |                   |                                                                                                                             |                                                                               |                                                                                          |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|       |                                                                                                                                                                                                                                                                                          | Force                               |                   | websites<br>- Radio announcement/<br>dissemination of Plan<br>summary                                                       | level will be coordinated with the IWRM<br>plan District and Province Offices |                                                                                          |
| 2.4   | Scoping of Key E&S issues                                                                                                                                                                                                                                                                |                                     |                   |                                                                                                                             |                                                                               |                                                                                          |
| 2.4.1 | Gathering and technical validation of<br>available spatial data on<br>- environment and,<br>- social issues                                                                                                                                                                              | IWRM plan Task<br>Force/Consultants | Months 10<br>-16  | Progress report                                                                                                             |                                                                               |                                                                                          |
| 2.4.2 | Spatial mapping, including<br>community based participatory<br>mapping, of<br>- forest, biodiversity hotspots, river<br>basins, main infrastructure projects<br>- forest dependent communities,<br>activities undertaken in forest areas,<br>use and access rights to forest and<br>land |                                     |                   | A GIS data base and<br>progress report that<br>includes maps, case<br>studies and key<br>environmental and<br>social issues | - Key intersection point with preparation<br>of reference scenario            |                                                                                          |
| 2.4.3 | Case and valuation studies in selected<br>forest areas                                                                                                                                                                                                                                   |                                     |                   | Case studies reports                                                                                                        |                                                                               |                                                                                          |
| 2.4.4 | Report on key environmental and<br>social issues                                                                                                                                                                                                                                         |                                     |                   | Report submitted                                                                                                            |                                                                               |                                                                                          |
| 2.5   | Prioritization of E&S issues                                                                                                                                                                                                                                                             |                                     |                   |                                                                                                                             |                                                                               |                                                                                          |
| 2.5.1 | Review and prioritization by selected<br>communities in critical areas                                                                                                                                                                                                                   | Consultant/NGO                      | Months<br>17 – 19 | Community<br>consultation report                                                                                            |                                                                               | - Key intersection point<br>to coordinate<br>consultations with the<br>IWRM plan options |
| 2.5.2 | Regional validation by community<br>representatives                                                                                                                                                                                                                                      |                                     | Month 20          | Regional validation<br>report                                                                                               | Likely to be<br>workshops                                                     |                                                                                          |
| 2.5.3 | Review and prioritization by<br>institutional stakeholders                                                                                                                                                                                                                               |                                     | Months 21-<br>22  | Institutional<br>consultation report                                                                                        | Likely to be<br>focus groups                                                  |                                                                                          |
| 2.5.4 | Institutional stakeholders workshop                                                                                                                                                                                                                                                      |                                     |                   | Institutional<br>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 16         |                                           | For specific future investments identified in the Master Plan                                                                                                                    |
| 4.2   | Preparation and disclosure of ToR for revising the Environmental and Social Management Framework (ESMF) |                                 | Month 16 -19     | ToR                                       |                                                                                                                                                                                  |
| 4.3   | ESMF                                                                                                    |                                 |                  |                                           |                                                                                                                                                                                  |
| 4.3.1 | Draft revised ESMF                                                                                      | Consultant                      | Months 20-26     |                                           |                                                                                                                                                                                  |
| 4.3.2 | Consultation of Draft revised ESMF                                                                      | Consultant                      | Months 27-29     | Draft ESMF report and consultation report | - Coordinate with consultations to validate final IWRM plan<br>- 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 Selected Sectors**

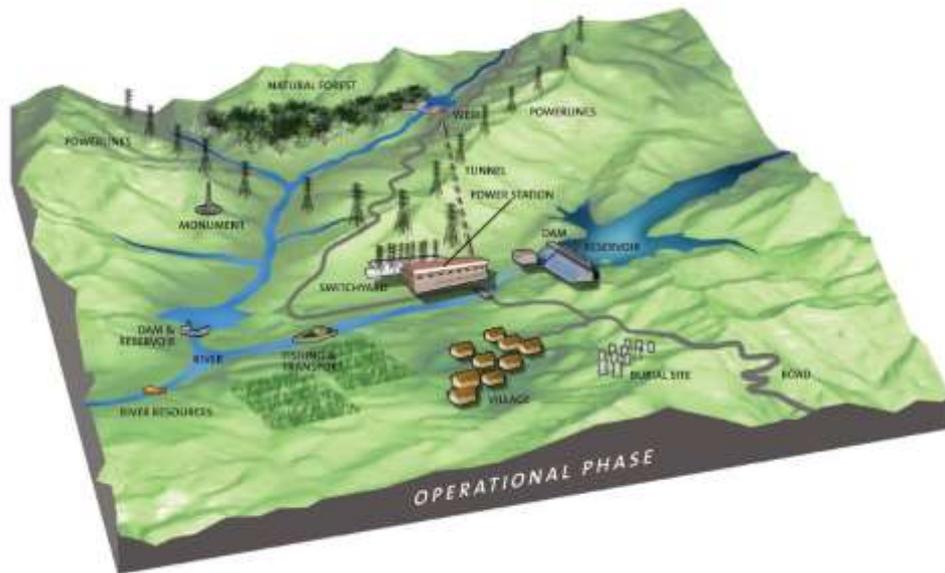
### **Dams and Reservoirs**

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*



|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Project Typology</b></p>   | <p><u>Reservoir:</u> These projects 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.</p> <p><u>Run-of-River:</u> 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 &lt;20 ha) or no reservoir at all. These plants can be installed in two places:</p> <ul style="list-style-type: none"> <li>• Where water elevation changes and steady flow rates are high; and</li> <li>• To use tailrace water from an existing hydropower facility.</li> </ul> <p><u>Pumped Storage:</u> 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.</p> <p><u>Canal / Off River:</u> 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.</p> <p><u>Multi-Purpose:</u> 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).</p> <p><u>Upgrading/optimization of Existing Plants:</u> 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.</p> |
| <p><b>Project Components</b></p> | <p>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:</p> <ul style="list-style-type: none"> <li>• Dam or diversion works</li> <li>• Pressure tunnels, canals, tunnels</li> <li>• Power house</li> <li>• Switchyard and transmission lines</li> <li>• Access roads to dam, power house</li> <li>• Quarries, disposal sites</li> <li>• Base camp or maintenance yards</li> <li>• Access roads, routes for heavy equipment, construction materials and debris/solid waste</li> <li>• Concrete batching plants</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Project Activities</b></p> | <p>Main activities include Construction of access roads and power lines for construction</p> <ul style="list-style-type: none"> <li>• Camp, other ancillary infrastructure and mobilization of workers and equipment</li> <li>• Diversion tunnels</li> <li>• Excavations and earth movement in dam sites, pressure tunnels, switchyards</li> <li>• Installation of electromechanical equipment</li> <li>• Transmission line construction</li> <li>• Preparation of reservoir area (vegetation removal, animal rescue)</li> <li>• Decommissioning and restoration of affected areas</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## 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.<br>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 measures need to be designed.                                                                    |
|  | Less severe. Standard/generic specifications for design and construction should be applied                                                      |

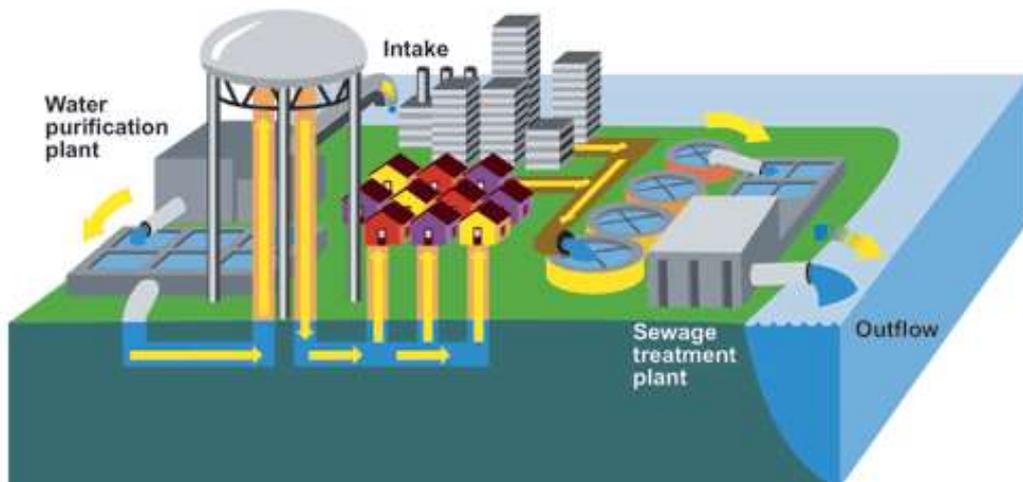
## Water and Sanitation Projects

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

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Typology</b>   | <p>Water and sanitation projects might include a wide range of sub-projects such as:</p> <ul style="list-style-type: none"> <li>• The provision, transportation, treatment, storage and distribution of water for human consumption in cities and towns.</li> <li>• The collection, treatment and disposal of wastewater from cities and towns.</li> <li>• The provision of storm water and drainage systems in urban areas.</li> <li>• The provision of basic water and sanitation services in rural areas, wells, latrines, etc.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Project Components</b> | <p>Project components might include all or a combination of the different elements of a water and sanitation project such as</p> <ul style="list-style-type: none"> <li>• water intake</li> <li>• water transmission lines</li> <li>• water treatment plants</li> <li>• distribution networks for water supply including pumping stations and storage tanks</li> <li>• sewage collection systems including major interceptors, pumping stations</li> <li>• wastewater treatment plant</li> <li>• disposal of wastewater</li> <li>• Storm water drainage systems which usually include interceptors, canals and disposal systems.</li> <li>• Some projects include the development of small reservoirs, or groundwater wells for rural water supply systems.</li> </ul> <p>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.</p> |
| <b>Project Activities</b> | <p>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:</p> <ul style="list-style-type: none"> <li>• Laying of pipes and sewers large diameter and deep interceptors are often needed</li> <li>• Construction of main infrastructure such as water and wastewater plants, pumping stations</li> <li>• Construction of storm water drainage canals</li> <li>• Construction of long distance pipes and outfalls</li> <li>• Construction of large and deep interceptors for sewage collection and transport</li> <li>• Outfalls for wastewater discharge</li> <li>• Construction of dams for water supply reservoirs</li> <li>• Groundwater wells</li> </ul>                                                                                                                                                 |

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 canals can also raise many concerns. Natural habitat issues can be encountered in water and sanitation projects even in urban areas. Issues such as urban wetlands, lakes and ocean ecosystems need to be screened in these projects.

### Severity of Environmental Issues in Water and Sanitation Projects

| Natural Habitats/<br>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 ESIA and ESMP – Category A project**

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

### 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 and social 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 and social assessment and discuss its timing in relation to the processes of project preparation, design, and execution.

### IV. Environmental and Social 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; regulation concerning land acquisition/involuntary resettlement and ethnic minorities.

### V. Study Area

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

### 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.

(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; ethnic minorities; 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 immediate or long-term positive and negative impacts which are direct, indirect, and / or cumulative. Identify impacts which are unavoidable or irreversible. Wherever possible, describe impacts quantitatively, in terms of environmental and social 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.

Task 5. Analysis of Alternatives to the Proposed Project. Describe the 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; suitability 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 an Environmental and Social 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 and Social 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, inter-sectoral 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 and social assessment report should be concise and limited to significant environmental and social 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 un-interpreted 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 and social assessment report according to the following general outline:

Executive Summary,  
Description of the Proposed Project,  
Policy, Legal and Administrative Framework,  
Analysis of Alternatives,  
Baseline Environmental Conditions,  
Environmental and Social Impacts,  
Environmental and Social Management Plan,  
Appendices.

## **Environmental and Social Management Plan**

An environmental and social management plan should include the following items:

- Identification and summary of all the significant adverse environmental and social 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 mitigation 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 ESIA and ESMP for a Hydroelectric Project**

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

#### Project Description

The ESIA should present a brief description of the proposed project and all its associated components which are needed for its construction and operation, regardless of the source of financing. These can include, but are not limited to: temporary water diversion dams, lay-down areas and equipment parks, work camps, water supply 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 ESIA 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 ESIA 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 decision-making and helps focus ESIA work on the important environmental and social 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 and social 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, ethnic minority areas,, 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, 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;
- Land that must be acquired prior to project construction and operation;
- The presence of ethnic minorities (indigenous peoples) or other vulnerable communities in the project's area of influence;
- 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 for domestic water supply, recreation, fishing, and tourist or rural traffic.

*Project Schedule:* The ESIA 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 types of equipment that will be used during the project's construction;
- Types of materials that will be used during construction as well as estimated volumes. Sources of materials be obtained (such as borrow pits and quarries), how will they be transported to the project site, and proposed sites for disposal of 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 ESIA 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 and Social Setting and Identification of Impacts

The report should discuss relevant information on baseline conditions concentrating on those issues identified as critical during the screening exercise. Irrelevant information or that not related to environmental and social 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 and social 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 to emergencies and illnesses that may emerge during the project's construction phase. Describe project-supported measures to ensure worker health and safety and project-related impacts on neighboring communities. This may include transmission of illnesses such as dengue, malaria, cholera, via stagnant waters or insects, and hepatitis and sexually-transmitted diseases, often associated with in-migration of job seekers and project workers..

**Cultural Heritage.** Describe and provide measures for the avoidance, salvage, or mitigation of all significant physical cultural property (including temples and places of worship, graves, sacred areas or structures of cultural significance) which may be affected by the project. Put in place a chance finds procedure to address archaeological, paleontological, or historical items that are found in the project site during construction.

**Land Use.** Indicate the total area of the land required for the physical components of the project. Describe the total area that will be required for all needed components of the project during its construction and operation. This typically includes: main and secondary structures, access roads, electrical sub-stations and transmission lines, pipelines, protective works for reservoir impoundment, borrow pits and quarries and areas needed for forestry and watershed protection .

**Land Acquisition.** Facilitate minimizing involuntary economic and or physical displacement of people by indicating the numbers and types of properties to be acquired in areas needed for the project. 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 if any significant change in land use is expected after project implementation and the strategies being considered for land acquisition.

**Affected Population.** Identify probable types of impacts and identify and describe the salient social, economic, and cultural features of all groups and communities to be affected.

**Ethnic Minorities.** All ethnic minority groups directly or indirectly affected, either positively or negatively, by the project should be identified. Describe the nature of likely project impacts on these populations.

#### Environmental and Social Mitigation Measures

Discussion of environmental issues should be correlated with those relevant issues identified at the screening stage. Each discussion should conclude on the necessary mitigation or compensatory measures to be implemented in the environmental and social management plan.

**Natural Hazards and Vulnerability.** All natural hazard risks 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 ESIA should specify the project's physical "footprint", i.e. the surface area (ha or m<sup>2</sup>) and map locations of land to be cleared for the wind turbines, transmission lines, access road, and any other project facilities. The ESIA 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 ESIA should also indicate whether any project facilities are proposed within existing or officially proposed protected areas. If so, the ESIA 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:** As indicated in the World Bank policy on dam safety (OP/BP 4.04), based on the size of the dam and the capacity of the impoundment area, the ESIA will assess the need for a panel of experts to advise on the design engineering and construction aspects as well as on the management of environmental and social impacts.

**Power Transmission Lines.** The ESIA 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 ESIA should analyze alternative alignments.

**Access Road Construction or Improvements.** The ESIA 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 ESIA should assess any likely induced impacts (new settlements, increased environmental pressures from 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 ESIA 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.

**Ethnic Minorities.** The Borrower should consider the views and preferences of ethnic minorities in deciding whether to proceed with the project and what additional measures are required to address adverse impacts and enhance project benefits. The ESIA should determine if the proposed project interventions are likely to affect ethnic minorities or people identified as “indigenous” as per criteria given in OP/BP 4.10. In projects where adverse or positive impacts are anticipated, the Borrower undertakes a social assessment and with the aid of free, prior and informed consultations with indigenous communities in the project’s area of influence, prepares an Indigenous Peoples Plan (IPP); see also Annex 7.

**Land Acquisition and Involuntary Resettlement.** The ESIA should identify land to be acquired for the project and provide insight into decision-making on final site selections and project footprints with respect to minimizing physical and economic impacts on land owners and land users. The ESIA will indicate the need for a Resettlement Action Plan, as defined by World Bank policy, OP/BP 4.12, where land acquisition triggers the policy either by involuntary acquisition or by the preclusion of peoples’ access to land and resources needed for their economic survival. The objectives and key elements of a Resettlement Policy Framework, which serves as guidance for subsequent development of Resettlement Action Plans, are given in the ensuing Annex 6.

**Cultural Property.** In line with World Bank policy, OP/BP 4.11, an ESMF or ESMP must scope to identify any physical cultural resources in the project's area of influence which may be affected by project activities. Where such property cannot be avoided, it should be protected or salvaged (as needed) as part of the project. In addition, Environmental Rules for Contractors (see below ESIA/ESMP) 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 Stakeholder Consultation.** A community participation and stakeholder consultation methodology needs to be designed which may include an opinion survey. Consultations are held at the outset of the ESIA process to inform stakeholders about project's characteristics and impacts expected on both the natural environment and the population. The public consultation methodology may include specifically designed questionnaires and strategies for (i) public and community organizations directly affected by the projects; and (ii) the civil society organizations (conservation NGOs for instance) in general. The public and community organizations to be consulted should 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 ESIA should maintain records of consultation events, including attendance and the issues discussed. The proponent should explain how public participation is ensured during project design and indicate where and to whom any grievances or problematic issues which may arise should be addressed. Stakeholder feedback should be understood as an input to the ESIA process. At a minimum, the penultimate (draft) report, including draft environmental and social impact management plans (e.g. ESMPs, RAPs, IPPs) should be disclosed and publically consulted before the ESIA is completed.

**Institutional Arrangements.** The ESIA should indicate the necessary institutional arrangements for monitoring and reporting on the implementation of the environmental and social management plans. 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; and, (v) prohibition of fires and the need to have fire control equipment. 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, de-compacting of soils, etc.

For construction in or near populated areas, additional measures 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 especially 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 ESIA should indicate how compliance with environmental rules and design specifications will be supervised, along with the penalties for non-compliance by contractors or sub-contractors. The supervision the construction will include the compliance with the manual and the environmental specifications by the contractor.

### **Work Camps**

Every reasonable effort should be made to provide advance skills training to local people to enable them to participate in the project's labor force and thus reduce the number of outside workers.

Nevertheless, large infrastructure projects which take place over relatively long periods of time frequently necessitate construction of work camps for housing outside workers, especially in the semi-

skilled and skilled categories, (such as machine operators, technicians, etc.) Care should be taken and consultative / cooperative arrangements made with local communities to ensure that the presence of outsiders, especially in remote areas with vulnerable minority or ethnic groups, does not lead to conflicts. Key issues to be managed are land acquisition and access for camps and related facilities; cultural differences, health and safety of local people, (especially with regard to sexually transmitted and communicable diseases), and stress on environmental resources from hunting, gathering of fuel wood, etc. driven by informal demand from the work camp market.

### **Induced migration of job-seekers**

Big infrastructure developments typically attract outsiders who may seek employment directly in the project labor force or offer other services to those already employed. This phenomenon can quickly develop into informal settlements which pose great difficulties for local communities related to land use, public health, local-outsider conflicts, etc. ESIA for such large infrastructure developments must include social management plans for up-stream pro-active management of induced impacts from outside opportunity-seekers.

### **Environmental and Social Management Plans**

All mitigation and compensation plans and activities should be included in an Environmental and Social Management Plans (ESMP) for the project. The ESMP, is essentially a package of more specific plans which typically include: environmental management plans for monitoring and mitigation of environmental impacts, resettlement and income restoration plans (RAPs) to address impacts from land acquisition, indigenous peoples plans, and other action plans for management of induced access and construction camps. These components of the ESMP should include: (i) a description of all mitigation, compensation and control measures; (ii) an implementation schedule coordinated with the project's design, bidding, construction and operation phases; (iii) clearly defined institutional responsibilities; (iv) a description of monitoring programs; (v) reporting arrangements and frequencies; and, (vi) cost estimates and sources of funds.

Environmental and Social Measures during the Operational Phase. During the operation phase of some types 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 all 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 Project (AIRBMP), 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 modelling 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 modelling frameworks, (d) design and piloting of surface water quality monitoring system, and (e) 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 modelling 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.

#### **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. 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 land acquisition causing physical and/or economic displacement of people. Component 3, Navigation enhancement on the Ayeyarwady River, may entail some temporary acquisition and use of land along the river banks during the construction phase. The Ayeyarwady river navigation strategy to be developed under this component will prepare a maintenance plan that will serve as the basis for future maintenance for the whole river at a later stage. Component 2 will support modernization of the observation infrastructure which may result in land acquisition of very minor scale. Under Component 1, various studies will be undertaken for the Ayeyarwady River Basin Management and Development Plan, which includes a 10-year investment plan to be developed based on these studies. Implementation of the Plan and investments to be funded under

the PPF may require land acquisition or restrict or change peoples' current access to land and resources that would trigger the Bank's OP 4.12, on Involuntary Resettlement. Component 1 would also support the construction or refurbishment of a NWRC Secretariat 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.

The precise details of project activities and their locations cannot be determined before World Bank appraisal. Site-specific resettlement plans to address land acquisition will not be developed until the implementation phase. This Resettlement Policy Framework (RPF) is thus prepared to set out policies and procedures to screen all project-financed activities for land acquisition and to assist the project with the preparation of specific resettlement action plans as needed to address physical and or economic displacement caused by project-related land acquisition.

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 to be made in project design to avoid or minimize the need for land acquisition. However, if land acquisition cannot be avoided altogether, the principle objective of the RPF is to ensure that all persons displaced economically and / or physically are compensated for all lost assets at full replacement cost and for standing crops at market value. Importantly, where land acquisition affects the sustainability of their livelihoods and income streams, development interventions must be undertaken to sustainably restore, and where poverty prevails, to enhance their standard of living

Specifically, this RPF aims to meet the objectives of the OP 4.12 as described below:

(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.

#### 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. Detailed designs will be adjusted to the degree feasible 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 to be prepared).

- b) Wherever possible, project design and RAPs should be conceived as development projects, so that displaced persons have opportunities to improve their standard of living and may benefit from the services and facilities created for, or by, project activities.
- c) All persons displaced economically and / or physically are entitled to compensation at market or replacement value (as relevant) for land and lost assets, or to alternative but equivalent forms of assistance in lieu of compensation.
- d) A lack of legal title to land of customary users acquired by the project will not bar displaced persons from entitlement to such compensation or alternative forms of assistance needed to resettle and sustainably restore incomes.
- e) Squatters or those living on or using land without title or recognized customary arrangements at the time of the RAP census survey are entitled to compensation for any structures of improvements made and may be provided with assistance to shift elsewhere.
- f) Compensation rates as established in a specific RAP refer to amounts to be paid in full to the eligible owner or user of the lost asset, without depreciation or deductions for any purpose.
- g) When cultivated land is acquired, the borrower should seek to arrange land-for-land replacement if that is the preference of the displaced person.
- h) Compensation for land, standing crops and lost assets must be paid prior to the time of impact.
- i) Land to be used temporarily must be acquired in consultation with land owners or land users. Full market compensation will be paid for any standing crops. Tree crops or perennial plantations should be avoided to the extent possible. An allowance should be paid to land users for inconvenience and a negotiated rental fee should be paid to titled land owners. Leasing of land from land owners or the use of unused, unoccupied government land is the preferred method. All land used temporarily will be restored to its previous condition.
- j) 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.
- k) The draft and final RAPs are publicly disclosed in a manner accessible to displaced persons.
- l) The previous level of community services and access to resources will be maintained or improved after land acquisition.
- m) 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.
- n) Methods by which displaced persons can pursue grievances will be established and information regarding these grievance procedures will be provided to displaced persons. Grievances are cost-free and easily accessible to project-affected people.

#### 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 apply 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 11. Generic Entitlement Matrix*

| <b>Type of Losses</b>                              | <b>Entitled Persons</b>                                                                       | <b>Entitlements</b>                                                                                                                                                                                                                                                                               | <b>Implementation Issues</b>                                                                                                                                                                        |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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<br>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<br>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<br>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 Director Units (CMUs) 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 12. Land Acquisition Checklist (sample, to be finalized in the project OM)**

| <u>Screen / Check for</u>                                                                                                                                                                                                           | <u>Yes/ No</u> | <u>Requirements</u>                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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:<sup>6</sup>

- 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;
- 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.
- r. An abbreviated RAP normally includes the following elements:
  - a) a census survey of displaced persons and inventory of affected land and assets;

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<sup>6</sup> 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.

- 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 (PMU) is overall responsible for safeguard compliance under the project, but the day-to-day implementation will be delegated to each Component Director Unit (CMU) which will implement this RPF for the respective components. Each CMU 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 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 authorities 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 indirectly, 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 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 modelling 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 modelling frameworks, (d) design and piloting of surface water quality monitoring system, and (e) 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 modelling 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.

#### **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 objectives 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 a social assessment 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 Ayeyarwady 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 Institutional 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.<sup>7</sup>

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.<sup>8</sup>

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 concern 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 appropriate measures identified during the social assessment and consultation process.

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<sup>7</sup> 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.

<sup>8</sup> [http://www.burmalibrary.org/docs15/1991-SLORC\\_Law1991-09-University\\_for\\_the\\_Development\\_of\\_the\\_National\\_Races\\_Law-en.pdf](http://www.burmalibrary.org/docs15/1991-SLORC_Law1991-09-University_for_the_Development_of_the_National_Races_Law-en.pdf)

## **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 AIRBM Project. 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 ethnic 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:<sup>9</sup>

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

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<sup>9</sup>For more guidance on conducting a social analysis see the World Bank's website: [www.worldbank.org/socialanalysis](http://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.

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 ethnic 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.
- (d) 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.
- (e) A framework to ensure free, prior, and informed consultation with the affected ethnic minorities during the implementation of respective activities.
- (f) Measures to ensure that the affected ethnic minorities receive social and economic benefits that are culturally appropriate; and
- (g) Measures to avoid, minimize, mitigate, or compensate for adverse effects.
- (h) The cost estimates and financing plan for the IPP.
- (i) 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 (PMU) is overall responsible for safeguard compliance under the project, but the day-to-day implementation will be delegated to each Component Director Unit (CMU) 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 build 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <b>General</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>• Participants were supportive of the project and emphasized the importance of the Ayeyarwady River to riverine communities and to national economic development.</li> <li>• 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.</li> </ul>                                                                                                             | <p>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.</p>                                                                                                                                                                                                                                                                                                                      |
| <b>Watershed and Water Quality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>• Participants highlighted the importance of maintaining and improving water quality and the health of the Basin's forests and watersheds.</li> <li>• 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.</li> <li>• Participants called for government action to set regulations and guidelines on water quality and mining practices to ensure the protection of water resources.</li> </ul> | <p>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.</p>                                                                             |
| <b>Ecosystems and Biodiversity</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>                         | <p>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.</p> <p>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.</p> |
| <b>Groundwater</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>• There is a need to increase the</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>It is believed that the Ayeyarwady Basin is endowed with a great</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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| <p>knowledge related to groundwater resources in order to sustainably utilize and manage it.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Consultation Process</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"> <li>• 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.</li> <br/> <li>• Participants asked the World Bank to clarify apparent inconsistencies in consultation procedures and resources among the ongoing World Bank financed programs/projects.</li> </ul> | <p>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.</p> <p>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.</p> |
| <p><b>International Waterway</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"> <li>• The designation of the Ayeyarwady as an international waterway 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.</li> </ul>                                                                                                                                                                                                                                                                                                                   | <p>It was clarified that the designation of the Ayeyarwady as an international waterway relates specifically to the geographic definition applied in the World Bank’s safeguards Operational Policy (OP 7.50 - Projects on International Waterways). 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</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

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|                                                                                                                                                                                                                                                                                                | <p>OP 7.50.</p> <p>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.</p> <p>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.</p>                                                                                               |
| <b>Information and Transparency</b>                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>Information collected and generated by the AIRBM should be made available to the public in order to promote data sharing transparency.</li> </ul>                                                                                                       | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component 1</b>                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>Participants asked for clarification on the intended output of the Component 1 basin modelling and planning activity.</li> <li>Questions were raised as to why there is no mentioning of investments in dams and large-scale infrastructure.</li> </ul> | <p>It was clarified that the basin modelling 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.</p> |
| <b>Component 3</b>                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>Participants questioned why the river stretch between Mandalay to Nyaung Oo was chosen for the pilot channel enhancement work.</li> </ul>                                                                                                               | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Quality Assurance</b>                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>Participants asked for clarification on safeguards and EIA implementation and quality assurance processes.</li> </ul>                                                                                                                                   | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>Participants asked what implementation and financial management arrangements for</li> </ul>                                                                                                                                                             | <p>The meeting was informed that the project will be undertaken using</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

would be made for the AIRBM.

all of the World Bank procurement and financial oversight processes to ensure good practice and transparency.

## **Annex 9: Second Public Consultation (Draft ESMF, September 2014) Comments And Responses**

| ISSUES/COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | RESPONSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <b>General</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Participants were generally supportive of the project and the approach to dealing with safeguards issues as described in the draft ESMF.</p> <p>But it was also noted that some activities need to be done cautiously, and GoM and WB need to make sure that local people will benefit.</p> <p>Many enquired about the terms of the loan, questioning how it might affect GoM's debt burden and how it might provide economic benefits given the Project's focus on institutional strengthening and long-term planning.</p>                                                                                                                                                                                                                                                                                                                                                                                    | <p>The Project Director, Mr. U Sein Tun, stressed the importance of the Project supporting the development of the water sector in Myanmar. WB cannot finance this project as a grant according to its policy.</p> <p>The World Bank's Country Manager, Mr. Abdoulaye Seck, explained that the loan conditions are favorable with very low interest/service fees, a maturity period of 38 years with 6 years grace period. The rate of return is expected to be high with long-term economic and social benefits from improvements to water resource management, institutions, decision support system, and river transportation.</p>                                                                                                                                                                                                                                                       |
| <b>Navigation enhancements</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Some participants asked why the navigation enhancements only included a few sections of the river and how the exact sites were or will be chosen.</p> <p>A participant asked how the WB and DWIR will ensure a good quality navigation strategy and navigation improvement on the stretch between Mandalay and Nyaung-U.</p> <p>One participant noted that bank erosion is a problem, threatening the natural and physical cultural resources along the river. He welcomed the AIRBM Project and the ESIA process, stressing that this should be done before construction and should include protection of the river bank. The importance of assessing and addressing impacts from dredging activities was stressed.</p> <p>Another participant welcomed the navigation and transportation improvements, but also suggested considering supporting the livelihoods of local people living along the river.</p> | <p>The Project Director explained that the navigation stretch between Mandalay and Bagan has been chosen because it is the busiest area and it captures the most complicated river system where Chindwin River meets Ayeyarwaddy.</p> <p>Dr Khin Ni Ni Thein, Secretary of the NWRC Expert Group, explained that experts and civil society organizations, including participants at the consultations, would be invited to participate in consultations, assessments of safeguard impacts, and policy research during project implementation.</p> <p>.<br/>She also explained that the Project will finance a sedimentation study to prevent sedimentation issues as part of watershed management.</p> <p>Dr. Ni Ni noted that DWIR will do social survey and action research to improve the benefits for local communities. She invited participants to participate in these efforts.</p> |
| <b>World Bank Safeguards</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| <p>Why is the World Bank's policy on Safety of Dams triggered to the Project. Will the Project finance dams?</p> <p>How will the ESMF be implemented? Who will ensure the quality of ESIA's and related plans?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>The Project Director explained that the AIRBM Project, which is the first of a series of staged projects, will not support the construction, expansion or rehabilitation of dams. However, the policy is triggered because the sub-component for preparation of future investments may include support to prefeasibility and/or feasibility studies for the construction, expansion or rehabilitation of dams.</p> <p>Dr. Ni Ni said that DWIR will have overall responsibility for ESMF implementation and stressed that the Project ESIA's will be impartial, thorough and strategic according to WB safeguard policies and GoM environmental policies.</p>                                                                    |
| <p><b>Coordination with other government entities</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>How would DWIR coordinate with other line ministries such as Ministry of Health, MoAI, Ministry of Forestry and the private sector?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>The Project Director explained that DWIR will coordinate with all line agencies and expert groups under the umbrella of NWRC.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>Watershed and Water Quality</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>Several participants encouraged the Project to address wider watershed management issues to improve water quality and address adverse impacts from mining, logging and agricultural practices affecting the river, causing pollution and decreasing water levels of the Ayeyarwaddy. They also gave examples of bank erosion causing displacement of villagers.</p> <p>DWIR is carrying out dredging and construction of groins but this is not enough. We need to find the root cause. We need to do proper enforcement upon extraction of natural resources. How would DWIR make sure proper coordination between ministries e.g. Ministry of Mining, Ministry of Electric Power, Ministry of Agriculture and Irrigation to address such issues?</p> | <p>Dr Ni Ni explained that the NWRC includes all line ministries. The NWRC recognizes the importance of maintaining water quality and improving watershed management in the Ayeyarwady Basin. She said that the Dutch government is assisting in the Integrated Water Resources Management strategy and building blocks for the future plan.</p> <p>The Project Director clarified that the NWRC is addressing broader watershed management issues, but that these efforts are not being led by DWIR. While the AIRBM Project will not directly finance watershed management activities, the development of the Integrated River Basin Master Plan and Decision Support System will assess broader watershed management issues.</p> |
| <p><b>Consultations</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

Participation expressed appreciation of the efforts to consult with stakeholders, but some also noted dissatisfaction with the number of attendants and wanted more time for discussion.

Participants requested continued consultation and disclosure of project documentation. While MoT/DWIR will receive the loan, the public will have to help pay back the loan and should benefit from the project and participate in its implementation. The project should be transparent and should involve the public.

For knowledge production activities, DWIR and WB will also need to consult with CSO and experts. There is a need to increase the knowledge related to groundwater resources in order to sustainably utilize and manage it.

One participant suggested to get more response from other people not attending the consultation and would call a meeting with experts and activists on the river. Some NGO and media representatives promised to participate and closely monitor the Project.

One participant asked if the government was really ready to implement the proposed bottom-up approach and give consideration to the views of community members.

Dr Ni Ni acknowledged that more efforts could have been done to encourage participation in the consultations. However, invitations were sent to a large number of stakeholders. She requested to accept this meeting as Target Group Consultation, and promised that the Project will be transparent and consultative. She welcomed continued suggestions and feedback through various means, and noted that minor errors along the way could not be avoided. We will learn by doing, and work together with all ministries and external experts.

A Stakeholder Forum will be formed to seek input from a broad range of stakeholders during project implementation, and a Communication Strategy will be developed for project and ESMF implementation.

The Project includes a Groundwater Survey under Component 1 that will help build essential knowledge on the nature and location of groundwater resources and their potential for sustainable utilization.