The Republic of the Union of Myanmar
Ministry of Agriculture and Irrigation

Myanmar Agricultural Development Support Project

Environmental and Social Management Framework

Final Report

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Abbreviations

ACC	Agricultural Coordination Committee
AMD	Agricultural Mechanization Department, MOAI
ASDP	Agricultural Development Support Project
Bank	World Bank
CSQA	Construction Supervision and Quality Assurance
CITIES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
EIA	Environmental Impact Assessment
ES	Environmental Assessments
ESIA	Environmental and Social Impact Assessments
DAP	Department of Agricultural Planning, MOAI
DAR	Department of Agricultural Research, MOAI
DOA	Department of Agriculture, MOAI
ECOP	Environmental Codes of Practice
EMP	Environmental Management Plan
EPP	Emergency Preparedness Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FS	Feasibility Study
GOM	Government of Myanmar
ID	Irrigation Department, MOAI
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
IPP	Indigenous Peoples Plan
IPPF	Indigenous Peoples Planning Framework
LAAP	Land Acquisition Action Plan
LRPF	Land Acquisition and Resettlement Policy Framework
LUC	Land User Right Certificate
M&E	Monitoring and Evaluation
MOECAF	Ministry of Environmental Conservation and Forestry
MOAI	Ministry of Agriculture and Irrigation
NBSAP	National Biodiversity Strategic Action Plan

NECCC	National Environmental Conservation Coordination Committee
NPSC	National Project Steering Committee
O&M	Operations and Maintenance
OP	Operational Policy
PCR	Physical Cultural Resources
PIC	Project Implementation Committee
PIM	Project Implementation Manual
PMU	Project Management Union
SA	Social Assessment
SLRD	Settlement and Land Record Department, MOAI
TOR	Terms of Reference
UNFCCC	United Nations Convention on Climate Change
WBG	World Bank Group
WUG	Water User Group

1. Background

Since democratic reform started in 2011, the Union Government of Myanmar (GOM) has paid attention to improvement of socioeconomic condition of the country. In particular, the Framework of Economic and Social Reform was formulated in 2012 for setting up the development priorities and guiding principles for fulfilling the immediate and long term development needs of the country. In the pursuit of development measures strategized in the Framework of Economic and Social Reform, it is expected that absolute poverty accounting of 26 percent of entire population could be reduced down to 15 percent by year 2015. Improving food security and agriculture growth is also seen as important bold step for uplifting the rural poor from the poverty line. This is to be done through boosting agriculture productivity with the increased farmer's access to extension service, government loan, agriculture inputs such as quality seed, fertilizer and pesticide, while removing barriers throughout the supply chain and promoting demand-oriented market support mechanisms, which will pave the way for long-term structural and institutional reforms needed in the sector.[1]

Alongside its dynamic socio-political changes in Myanmar, the relationship with international communities has been diplomatically improved in recent years. It results the increase of development cooperation with international development agencies such as International Monetary Fund, World Bank (Bank), Asia Development Bank, etc. Considering the development need of the country and the plight of the poor, most of the development agencies resume their development aids and loans particularly for development intervention conducive to poverty reduction. With regard to agriculture and rural development that might have greater impact to 70 percent of country population residing in rural area the Agriculture Development Support Project (ADSP) is proposed through a Bank credit of US$100 million. Ministry of Agriculture and Irrigation (MOAI) is the implementing agency for this project with the objective of increasing crop yields and cropping intensity in the selected existing irrigation systems in Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions. This objective will be achieved through improved irrigation and drainage management and complementary farm advisory and technical services. The project intends to support modification, rehabilitation and modernization of existing irrigation systems that are located in the target regions and meet certain technical, environmental and socio-economic criteria. Specific sites for investments will be selected and identified during project implementation once the relevant feasibility studies and technical details and assessments are developed and available.

The ADSP project includes four components with activities detailed as follows:

Component 1: Irrigation and Drainage Management. The component aims to enhance more responsive and reliable provision of irrigation and drainage services in the project areas to enable an increase in irrigation area coverage, a resulting better farm productivity and better

[1] Government of Myanmar (2013), "Framework for Economic and Social Reforms", Policy priorities for 2012-2015 towards Long-Term Goals of the National Comprehensive Development Plan; http://www.themimu.info/sites/themimu.info/files/documents/Ref%20Doc_FrameworkForEconomicAndSocialReform2012-15_Govt_2013%20.pdf

distribution of benefits between upstream and downstream users. It would address irrigation and drainage management through the following approach.

Firstly, it would focus on institutional change required for the provision of farmer-responsive irrigation services. This is needed for the development of a new management paradigm which would include a more elevated role for water user groups (WUGs), combined with development and gradual introduction of more responsive water delivery systems, data collection and management information systems. The ADSP will support the development of irrigation and drainage management institutions, their human resources, data collection and management information systems and infrastructure. The project will support the establishment and development of about 280 WUGs in 8 irrigation sites, utilizing facilitators from civil society organizations. Capacity building and training will be provided at all levels of service delivery agencies, including WUGs and township-level government agencies. Facilitators will be trained in development of WUGs and creation of bridges between farmers and government agencies. WUGs and agency officials will be trained in new technologies and management approaches for improved service delivery and scheme management. In order to facilitate better information sharing and more reliable provision of irrigation and drainage services, the project will also strengthen the management capacity of the Department of Irrigation (ID) of MOAI through provision of management information and decision support systems, improvement of infrastructure and facilities and enhancing mobility of field staff.

Secondly, the component would finance the improvement and rehabilitation of irrigation and drainage infrastructure covering about 35,000 ha in up to 8 selected schemes in the selected regions. It would finance rehabilitation and improvement of main conveyance, flow control and sediment management systems and de-siltation of irrigation and drainage systems and dam safety enhancement measures. The project would also support improvement of farmer managed water management infrastructure and pilot land improvement in 2-3 selected systems, which is needed for creating cropping flexibility for the farmers, more equitable water distribution between upstream and tail end farmers, and ending their mutual dependence which exists in the traditional field to field (and plot to plot) water conveyance systems. The infrastructure rehabilitation investments will be based on special studies targeted at the selected irrigation schemes. These could include, inter alia, feasibility studies, environmental and social assessments, options for improved cost recovery, performance assessment benchmarking and scheme management improvement potential, asset management, disaster risk management, dam safety and drainage master planning.

Finally, the project will pay particular attendance to clarity of land tenure issues in the targeted irrigation and land improvement sites. The component would support inclusive land administration activities in the targeted irrigation sites. It will support production of new digital cadastral maps for the targeted irrigable areas based on international best practices in renewing cadastral maps and creating digital land records. New land user right certificates (LUCs) will be issued to the farmers based on these maps. International best practice approaches in land improvement will be piloted, starting from community engagement in order to generate rights-sensitive parcel layout plans, which minimize needs for transactions and land acquisition. Finally, the project will support community awareness raising campaigns to educate beneficiary farmers on operating in market economy with tradable land rights by educating farmers about the farmland values and options that the market economy provides. The aim is to protect farmers against uninformed or duress land transactions.

Component 2: Farm Advisory and Technical Services. This component seeks to enhance MOAI technology development and farm advisory services at target townships which host selected irrigation schemes to increase farm productivity. An improvement of the selected irrigation schemes under Component 1 will result in improved water availability and water control. The production and extension of improved technologies and agronomic practices supported under Component 2 will enhance the economic and financial viability of farming systems on these schemes. Farmers will have the capacity to improve cropping intensity and where feasible diversify to more water efficient crops such as legumes, oil seed crops and vegetables. Increasing awareness of costs and benefits of improved varieties, good seed, and upgraded fertilizer recommendations to take advantage of improved water conditions will also raise productivity as will the introduction of other agronomic and farm mechanization practices. These technologies will need to be adapted to the new agro-ecological environments in target irrigation schemes.

The component would support technology development and adoption activities in targeted irrigation schemes, which would increase farm productivity and reduce production costs of farming systems. It will build on the existing public extension system, which is relatively well staffed but lacks operational funds, knowledge in modern technologies and farm practices, and interaction skills with farmers. The component will address these weaknesses.

Functionally, it will support quality seed production (mainly rice, beans and pulses, and oil crops that are not produced by the private sector) by developing farmer-based seed multiplication infrastructure and facilities and strengthen seed supply chains. This will foster improvements in varietal development, on-farm seed multiplication, and distribution of improved seed to farmers. Improved fertilizer applications which will be adapted to the variability in soil types in targeted irrigation schemes are expected to increase yield response rates to appropriate nutrient applications to reach full potential of new varieties, while reducing fertilizer costs. The potential risk of crop losses due to insect pest and disease outbreaks will be addressed by improving the capacity of the MOAI and farmers to protect both public health and the environment through the adoption of Integrated Pest Management (IPM) techniques based on the specimen problem identification collections of pests in project townships. All these agricultural technology development activities and knowledge of improved farming practices will be disseminated to target farmers through improved farm advisory services which are based on farmers' needs and technical constraints, farming systems and market opportunities. The project will support rehabilitation of village extension education centers, establish field demonstration sites of improved technologies, expand training programs and provide operational and mobility support to MOAI extension staff and subject matter specialists.

The rising rural labor costs and increasing scarcity of hired labor is evidenced in the project locations at peak season times of planting and harvesting. The farmers experience also high post-harvest losses. The relatively large farm sizes of Myanmar smallholders create good preconditions for profitable farm mechanization in targeted irrigation schemes. However, Myanmar farmers lag significantly behind their peers in neighboring countries in the use of machinery. The private sector rarely provides mechanization services. The country does not have a strong vocational training system for farm machinery or engineering. The component would support training of MOAI mechanics, test and demonstrate new climate-smart technologies suitable for smallholder farming systems, and provide mechanization services in the target irrigation systems. It would upgrade the capacity of the Meikhtila Mechanization Training

Center in Mandalay region through the introduction of modern training methodologies, materials, and upgrade repair workshops, in order to provide more and better vocational training to the staff of MOAI Mechanization Service Stations, farmers, and the private sector. It will also support four MOAI Mechanization Service Stations in the project areas, through procurement of machine packages and mobile repair workshops selected in collaboration with the private sectors in order to promote climate-smart mechanization technologies to farmers, provide cost-effective services suitable for smallholder farming systems in Dry Zone, and carry out farmer training.

Component 3: Project Coordination and Management. The Project Management Unit (PMU) will be established in the MOAI. It will include technical and fiduciary MOAI staff who will be seconded to PMU at a full-time basis from the relevant implementing departments. The PMU will be responsible for the overall coordination of the project implementation and fiduciary arrangements, including procurement, financial management, management of safeguards issues, internal and external auditing and the establishment of the project Monitoring and Evaluation (M&E) system. Outside consultants will be recruited in areas which require strengthening of MOAI implementation capacity. The component would finance establishment of the M&E and Management Information Systems and associated Technical Advisory services; communication and consultation program; salaries of the externally recruited staff, related office equipment and mobility.

Component 4: Contingent Emergency Financing. The objective of this zero component is to allow a rapid reallocation of loan proceeds from other components to provide emergency recovery and reconstruction support following an adverse natural event. The component would finance public and private sector expenditures on a positive list of goods and/or specific works, goods, services and emergency operation costs required for Myanmar's emergency recovery. A Contingency Emergency Response Component Implementation Plan will apply to this component, detailing financial management, procurement, safeguard and any other necessary implementation arrangements.

2. Project Overview

2.1 Project investments and coverage

The proposed project will use a phased approach which allows flexible identification of the number and size of target gravity irrigation perimeters (Table 14 in Appendix I provides the details of the site selection criteria). It is suggested that the project implementation will start with smaller and technically relatively simple irrigation sites. It would be gradually scaled up to potentially larger systems or systems with more complex problems as the lessons from the initial pilot areas become available. Given the level of complexities inherent in historical displacement issues in Myanmar and the considerable costs to address active disputes that will likely far exceed the direct benefit of the project, the project will not include sites which have serious land disputes as determined through the Social Assessment (SA).

The targeted irrigation schemes are located in well-established agricultural production areas in the Nay Pyi Taw, Bago-East, Mandalay, and Sagaing regions. These regions account for about 75 percent of the country's areas equipped with irrigation and drainage infrastructure. The project would target about 8 irrigation schemes which cover some 35,000 ha of net irrigable area and which may span over 16 townships. However, the specific boundaries and features of the irrigation schemes within these sites will be determined during project implementation as an output of the technical feasibility studies, which include relevant environmental and social assessments to be prepared during the first year of the project implementation in line with provisions of this document.

The proposed project investments are expected to be designed to have positive social and environmental benefits and will trigger the following Bank Operational Policies (OP): *Environmental Assessment* (OP 4.01); *Natural Habitat* (OP 4.04); *Physical Cultural* Resources (OP 4.11); *Safety of Dams* (OP 4.37); *Pest Management* (OP 4.09), *Involuntary Resettlement* (OP 4.12) and *Indigenous People* (OP 4.10).[2] The project has been classified as environmental category "B" in accordance with the Bank policy OP/BP 4.01 on Environmental Assessment primarily due to the rehabilitation nature of the proposed irrigation works, which will take place within footprint of existing irrigated systems on established agriculture lands, as well of the dam safety and operation improvement linked to existing irrigation dams (e.g., typical works on dam body will include repair of slopes and dam crest covers; repair of existing spillways; installation of monitoring equipment; repair of gate devices and provision of infiltration blankets to reduce seepage; and surfacing of access road where necessary). The impacts of these proposed activities on the environment are expected to be overall positive as the project, by design, puts strong emphasis on the development of sustainable and climate resilient agricultural production

[2] The project also triggers the policy on *Projects on International Waterways* (OP/BP 7.50) since some of the irrigation systems use the Ayeyarwady River as water source. Up to 99.7 percent of the Ayeyarwady River flow is accumulated within Myanmar, the river's downstream most riparian. Given the rehabilitation nature of the project activities, it is envisaged that the project 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, it qualifies for an exception to the riparian notification requirement under para. 7(a) of OP 7.50 and no notification will be required.

systems. Temporary negative impacts are related to small scale construction activities, which are limited to the rehabilitation and improvement of existing irrigated agriculture infrastructure.

The project will also finance small-scale constructions such as those of breeder seed store room, storage facilities for seed farms, and other relevant storage depot, which are all located on existing seed farms or land owned by Department of Agricultural Research (DAR) and Department of Agriculture (DOA). Further, the project will rehabilitate existing village extension education centers within the existing locations or newly established centers by rehabilitating or retrofitting existing government buildings on the state land.

Other activities supported by the project, such as the piloting of irrigation technologies; piloting of international best practices approaches in land consolidation, registration and property valuation systems; and the undertaking of feasibility study and design of irrigation schemes and dam safety feasibility as well as other studies will review and assess potential environmental and social impacts of the activities and alternatives considered on a case-by-case basis; such studies will be developed based on TORs cleared by the Bank.

The project is known to utilize only surface water resources (reservoirs), from which water is delivered through gravity fed irrigation systems. While the project will not finance construction of new dams or structural changes in the existing ones, the irrigation systems financed by the project would draw water directly from specialized irrigation reservoirs formed by a number of existing dams. The project will not use groundwater resources. Due diligence on the operation and safety of dams linked to the project funded irrigations schemes has been done independently based on separate TORs during project preparation; findings of this diligence are included in a separate project safeguard document prepared to meet the Bank's *Safety of Dams Policy* (OP 4.07), based on which corrective measures will be developed to address any safety risks of these dams during project implementation.

2.2 Environmental and Social Management Framework (ESMF): Scope and Objectives

As the technical evaluation (e.g., proper site characterization, feasibility studies, detailed designs) and specific intervention locations under the project will not be ready and their specific impacts will not be known by project appraisal, the preparation of this ESMF, including a Land Acquisition and Resettlement Policy Framework (LRPF) and an Indigenous Peoples Planning Framework (IPPF) describes the overall environmental and social safeguard procedures to be undertaking during project implementation. The purpose of this ESMF is to manage the potential adverse impacts by establishing a guide consisting of a set of procedures and measures to facilitate adequate environmental and social management, including risk management of environmental and social impacts, directed to the group of activities to be financed by the project and whose specific location is unknown and may change over project implementation.

Consequently, given that the detailed technical feasibility studies for the pre-selected sites in Mandalay, Sagaing, and Bago East regions will not be carried out by the project appraisal, the ESMF is the tool required for environmental and social assessment process to be undertaken during project implementation once the respective technical details are available (e.g., principles, rules and procedures to screen, assess, manage and monitor the mitigation measures of possible project environment and social impacts). The ESMF provides guidance to MOAI and other implementers (e.g., ID, DOA, AMD, DAR, SLRD, farmers) to ensure the environmental and

social assessments 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 Bank's Environmental Assessment (EA) and social policies and procedures as specified in the Bank safeguard policies. Finally, this ESMF will be an integrated part of the Project Implementation Manual (PIM) and is applicable to all linked investments financed in the project areas regardless of their funding source or implementing agency.

2.3. General description of the project area and existing irrigation schemes

At the time of preparing this document, four irrigation schemes are initially pre-selected for rehabilitation of irrigation canals in administrative division of Mandalay, Sagaing and East Bago, areas located in the central dry zone of Myanmar. Another two irrigation schemes are also reserved for consideration for project financing if the technical selection criteria (including environmental and social considerations) are met for these sites. The following paragraphs include succinct description of the above noted irrigation schemes.

Sin The Irrigation Scheme (Appendix Ia)

Sin The dam is located 16 miles far from Tutkone township at the west near the Mae Za Lee Kyin village. The irrigation scheme of this dam covers administrative area of Tatkone township in Ottara District of Nay Pyi Taw Special Region. The dam was built across the Sinthe creek that is originated from the upper Begu Yoma (hill range) and merged with Ngalite creek at downstream near to Naung Pin Thar. The construction was started in 1994-1995 and completed in year 1999 – 2000. The type of dam is earth fill dam and total catchment area of the dam is estimated as 308 square mile. Dam storage capacity is estimated as 143,090 acre-feet with dead storage of 17303 acre-feet. At the downstream of Sinthe Dam near to Da Hat Kone village, a weir was constructed and water from dam is released for distribution of water to designated irrigated area. There are two main canals at the left and right of the weir for irrigation with the length of 41 miles in total. Irrigation scheme is designed for total net irrigable area of 32400 acres but due to lower rainfall during the last decade, actual irrigated areas in summer were merely around 10,000 acres in 2008, 2009 and 2011 accounting for one third of the total. There was also the case of no irrigation for summer growing period in 2010. From the data provided by Irrigation Department, it was found that the amount of designed inflow was fully received only in 5 years out of last 15 years. According to field observation and consultation with technical persons from Sin The dam, the low inflow and sliding along the Left Main Canal that cause siltation and breaching the canal are considered the major technical problems for improving its irrigation efficiency in addition to increased sediment in the reservoir due to land degradation in upper catchment area. Therefore, proposed action of the project is to rehabilitate the Left Main Canal by cross-drainable provision, canal re-sectioning and improving canal structures.

North Yamar Irrigation Scheme (Appendix Ib)

North Yamar irrigation scheme is administratively located within Pale township of Yinmarbin District in Sagian Division (Map reference 84J/12K-010779). The source of water for this irrigation scheme is from North Yamar dam that was built in 1995 and completed in 1999. Dam construction was made across North Yamar creek that flow from western mountain range to northeastern direction where is merged with Chindwin river. The type of dam is earthen dam and total catchment area is 191 square mile. Upper North Yamar dam that was 6 miles far from North

Yamar dam along the upstream water course near to Aint Ma village was also constructed in 2007 in order to store the excessive water for multipurpose uses. Dam storage capacity is estimated as total 136,957 acre-feet by combining 14,057 acre-feet of lower North Yamar and 122,900 acre-feet of upper North Yamar. Total net irrigable area for North Yamar at the downstream is 11,320 acres but actual irrigated area was reportedly 5,900 acres. There is only one main canal for irrigation and total length of main canal is 15.87 miles. Although water storage capacity is sufficient for irrigating all targeted area, the poor drainage system prevent for doing it. Small canal size, frequent breakage and sedimentation along the main canal are the main problems of low actual irrigated areas. To maximize its irrigation potential, improving canal structure and drainage system are also required.

Swa Chaung Irrigation Scheme (Appendix Ic)

Swa Chaung Irrigation Scheme is located in administration area of Yedashe township within Taungo District of East Pago Division (Map Reference of 93(B-2) S-R-853018). Main source of water for this irrigation scheme is from Swar Chaung Dam, an earth-fill dam built in 2004 across Swar creek that flows from PeguYoma to Sittoun river at the east. Total catchment area of the dam is 403 square miles. According to engineering design, dam storage capacity is 216,350 acre-feet and it reached its maximum storage capacity as overflow from the spillway was annually reported. There is only one main canal with total length of 16.7 miles for irrigation. Net irrigable area is estimated as 23,467 acres but actual irrigated area was reportedly 20,670 acres accounting for 88 percent of its designated irrigable area. Erosion along the canal is considered main technical obstacle for increasing its irrigation efficiency. According to assistant engineer of the dam, there is also intention to construct a new canal for increasing coverage of irrigated agriculture area.

Male Nattaung Irrigation Scheme (Appendix Id)

This irrigation scheme is located in administration area of Singu township within PyinOoLwin district of Manadalay Division. The dam (earth) was built in 2008 over the Male Nattaung creek that is originated from Shan Plateau at the east and flows to the flood plain area of Irrawaddy area at the South of Singu. Catchment area of the dam is 75 square miles and it was reported that there are several mining operations done by government and local people in the catchment area. Dam storage capacity is estimated as 57,470 acre-feet for net irrigable area of 6,500 acres of which its 89 percent (5,755 acres) were realized for irrigation. There are two main canals for irrigation at the left and right of the dam and total length is approximately 15 miles. Dam seepage, bank erosion along the canal and water quality due to mining operation in catchment area are considered as major problem for improving the efficiency of this irrigation scheme.

Additional technical information and parameters known for the above pre-selected 4 irrigation schemes are included in Appendix I (Table 14).

2.4. Brief Project area environmental and social baseline conditions

Bio-physical and socioeconomic conditions of proposed project sites vary one from another at micro-level although common elements include location in semi-arid ecosystem and the presence of homogenous Buddhist-Burmese agrarian society. Site-specific secondary data available for biophysical conditions are very limited but this section attempts to capture those based on available information and direct observation during the ESMF preparation. Therefore,

further data is subject to be updated when more accurate assessments are provided during project implementation.

Physical environment

Proposed project irrigation schemes for Sin The and Swa are situated within Sittoun basin area while Male Nattaung and North Yamar are lying under Irrawaddy basin area and Chindwin basin area, respectively. Therefore, physical environment of proposed sites are attributed by geology and soil formation of those river basins. Topographically, irrigation schemes are lying under undulated hill and plain area that are located between the Main River and adjacent mountain range where tributaries of those rivers are originated and the dams were built. Existence of undulated landform with gentle slopes within irrigated area make irrigation difficult in some irrigation scheme such as North Yamar and Sin The.

Soil of irrigated area in the proposed project sites could be generally characterized by the observation of Fluvilsol and Gleysol though slight variations exist site by site. Irrigated agriculture lands in Male Nattaung area are mostly sandy so that water-holding capacity appears to be low. None of the dams were reported about existence of Sodic soil in upper catchment area that affects quality of irrigated water. However, there are a few spots reportedly in North Yamar and northern part of Sinthe irrigated area for having salt and alkali in subsoil, which requires further investigation during project implementation.

Water resource used by irrigation schemes of proposed project sites are tributaries of Sittoung river (Sin The and Swa Chaung schemes), Chindwin river (North Yamar scheme) and Irrawaddy river (Male Nattaung scheme). Except for Swa Creek, hydrological characteristic of these tributaries are seasonal and only there is torrential rainwater flow during the wet season from May to October. From the available statistics from Irrigation Department, hydrological data related to dams are given in Appendix II (Table 15) and fluctuation of inflow appears to be sharpening in some years (Figure 3). If comparison is also to be made between annual inflow and maximum storage capacity of the dam, significant shortfalls are frequently observed for Sinthe dam and Male Nattaung dam indicating hydrological insufficiency for irrigation.

Water samples were collected during field observation and tested for some parameters such as pH, Turbidity, Hardness, Arsenic, Aluminum, Potassium, Iron, Chloride, Nitrite and Zinc concentrations. According to laboratory results (Appendix V), it was found that the pH value is relatively high in Sinthe irrigated area, while arsenic level appears to be high in Male Nattaung irrigated area. Although irrigated water is not for drinking, local community tends to collect it sometime for household use which could have some long-term adverse effect on human health.

Meteorology

The weather situation in irrigated areas of Sinthe, North Yamar and Male Nattaung are typical to the semi-arid condition of higher temperature and erratic rainfall, whereas Swa irrigated area is characterized by higher rainfall. All of the proposed areas have three distant seasons throughout the year as Myanmar does. These are the summer season from March to May, the rainy season from June to October and the cold season from November to February. According to Irrigation Department's statistic, annual average rainfall is reportedly 34 inches in Sinthe and North Yamar, 84 inches in Swa and 44 inches in Male Nattaung. Available data suggests that rainfall pattern is binomial in term of having rainfall decline during the late July for

short dry spell period and increase again in late August. Please see data related to seasonal rainfall, temperature and humidity in the project area (Appendix II).

Local weather condition is also subjective to climate change that affects Myanmar as a whole. According to climate scenario analysis of National Communication Report prepared by Department of Meteorology and Hydrology, average temperature is going to increase approximately with one degree Celsius within next 30 years (2010 – 2040) in most parts of the country that include proposed project location. Variably, the rainfall is also estimated to increase. However, the increased rainfall has to occur during shortening period of rainy day because total length of Monsoon period would be also reduced from 145 to 105 days. This may result in increase of rainfall intensity during the rainy season (more rainfalls by lesser rainy days) as well as of longer hot and dry period during the off-rainy seasons that would cause higher evaporation in the dam structure. Particularly, extreme weather like severe drought is likely to happen quite frequently, while heavy rain and thunderstorm would occur due to sudden atmospheric changes during the pre-monsoon period (mid-April to end-May) and post-monsoon period (late September to end-October). Average annual rainfall in irrigated area of proposed project sites is reported in Table 17 (Appendix II).

Biological environment

The brief field visit revealed that there is no forest or any protected vegetation in irrigated area although different forest types are variably observed in upstream catchment area of each irrigation scheme such as the Moist Upper Mix Deciduous Forest, Dried Upper Mix Deciduous Forest and Dry Forest and Scrubland. These catchment forests are legally protected as forest reserve under the jurisdiction of Forest Department. From the available remote sensing data, rapid assessment was made to observe the forest cover changes in those catchment areas and forest losses are found to be high (e.g., 50 percent in Sin The (1990 vs. 2013); 45 percent in North Yamar (2000 vs. 2013); 19 percent in Swa (2000 vs. 2013) and 12 percent in Male Nattaung (2002 vs. 2013). Deforestation rate in the catchment areas of the existing irrigation schemes are presented in Appendix II (Table 18) and in related map (Appendix IV). This deforestation would cause higher erosion and siltation in the reservoir area of given irrigation scheme and irrigation efficiency would be also significantly affected. In addition, under the circumstances of extreme weather like heavy rain, the consequence of this deforestation is the risk for flooding the downstream area.

Fauna and flora

With regard to rare and endangered species, rapid assessment was made based on interview during the field visit and species information previously compiled by National Biodiversity Strategic Action Plan. The following observations are relevant to the project irrigated area: no plant, including aquatic and mammal species were reported; seasonally migratory birds could be found in the area; no insects, amphibian and reptile species were reported but this needs to be confirmed for known rare species such as star turtle, frog and lizard; no endangered fish species are known in the irrigated areas, however, commercially important freshwater species like Nga were found in North Yamar creek although population is declined already. Also, since Swa irrigated areas are interconnected with Sittoung river basin known for wetland areas where diversity of freshwater fish species is rich, precautionary approach is required for conserving those species to the extent possible. Appendix VI includes a list of globally endangered species known in Myanmar.

There are no ecologically sensitive areas in the proposed project area so far as it was observed but reservation is to be made in case of Male Nattaung irrigated area where a flood plain area connecting with Irrawaddy river is located at the end of Male Nattaung creek in Singu township. As flood plain area is important wetland for its ecosystem services, this requires further assessment during project implementation.

There are no forested areas in irrigation command areas so that the loss of forest biodiversity is not relevant nor conservation of large wild mammal in project area. According to limited available secondary data, none of the commercially important or globally endangered species of bird, reptile, rodent, insect, fish and aquatic plants are found so far in the areas of proposed project. Yet, some local villagers indicated the presence of fish species and birds that require further assessment during project implementation. However, North Yamar is sharing the border of nationally prioritized bio-corridor of National Biodiversity Strategic Action Plan and Swa is part of the Sittoung river basin area that is ecologically crucial for species diversity of fishery and migratory birds.

Socio-economic status

There are 276 villages in irrigation area of pre-identified project sites according to statistics provided by Irrigation Department. Approximately, half a million people are living in the project area and population breakdown by each irrigation scheme is presented in Table 19 (Appendix II). Majority of people living in the area is Burmese but there are a few Karen people living in Swa irrigation command area.

Major economic activity of the project area is agriculture and out of 57,159 total households 27,784 households are farming household with the average land holding of 5 acres in Sin The, 4 acres in North Yamar, 2.5 acres in Swa and 3 acres in Male Nattaung. However, average size of each farm plot hold by farmer is ranging from 0.2 (in Male Nattaung) to 1.5 acre per plot (North Yamar). It is considered small so that it may impose difficulty to farmers when they have to manage their farmland for irrigation drainage.

According to Farm Land law that was promulgated in 2012, all farmers in Myanmar need to apply for land use registration again. As being instructed by procedure in the law, minimum of 134 days are required for issuing land use registration by concerned government department, Settlement and Land Record Department (SLRD). The status of issuing land use certificate was also shown in Table 18 and as of data, above 90 percent of farmers had already received the certificate in project area. One obstacle in getting certificate is the requirement of having national registration card prior to application of land certificate.

Multiple cropping is now done by local farmers as a result of increase access to agriculture water under existing irrigation scheme in project area. At least, double cropping is practiced for growing monsoon paddy from July to December and summer paddy from January to April/May. The yield was reportedly ranged from 80 to 100 baskets for monsoon paddy and from 85 to 115 baskets for summer paddy. Depending on the availability of water, some place like the village in North Yamar also grow pre-monsoon crop such as green gram or sesame in between of summer paddy and monsoon paddy. The situation might be varied from one place to another however what is common in project area is that agriculture production was significantly boosted resulting increased household income and assets when access to irrigation water was not constraint. In particular, improvement of socio-economic wellbeing appears to be significant comparing to other sites. Out-migration from the village to other area for employment is

considerably less in the village of irrigation command area unlikely to those adjacent villages that were not benefited from irrigation scheme.

According to the SA, the proportion of landless household to total households is high representing of 39 percent (8,766 households) in Sinthe, 65 percent (8,100 households) in North Yamar, 35 percent (5,780 households) in Swa and 59 percent (3,336 households) in Male Nattaung. On average, it accounts of 45 percent for the whole project area. On the other hand, farmers complained about their difficulty in hiring farm labor for some seasonal farming work. While there is lack of alternative income opportunities in many of these villages, agriculture development alone could not solve the problem of rural unemployment in the long run and it needs to be integrated with other development potentials.

During field observation in villages, views were expressed on possible speculation of land price which might become higher if agriculture fields alongside the accessible asphalted road are more accessible to irrigation. This point is important in respect with the farmer legal right given by Farmland Law (2012) to sale cultivated land to others according to prevailing market price.

Physical Cultural Resources (PCRs)

Archaeological and cultural heritage sites have not been found in the project area, although there are religious buildings such as monasteries and pagodas in project villages. Relevant officials confirmed that there are no sacred sites, graveyards and/or burial places along the canal in the project areas. Further impact assessment on PCRs will be undertaken during site specific ESIAs for each of the irrigated schemes considered for financing under the project.

Other project background relevant aspects

At present, most of the irrigation schemes are facing sedimentation problem due to poor design and maintenance. Most of the canals are poorly constructed and there is seepage from irrigation canals to adjacent farmland causing water logging in irrigation command area. Due to lack of proper drainage ditches from irrigated farmland to natural watercourses, it was also observed water logging in depression area. Change in stream morphology (bank erosion, change in flow direction, etc.) observed in North Yamar creek and Swa creek (water source for the respective irrigation schemes) has been associated with the impact on abstraction of water for domestic use and stream ecology downstream.

2.5 Existing Legal and Institutional Framework

Legal Framework concerning environmental management

The environmental law, its regulation and implementation are weak in Myanmar although Government has made attempt to improve them in recent year. In this context, National Environmental Policy[3] forms the base for any project to consider integrating environmental aspects into economic development.

[3] NCEA (2006), Environmental Performance Assessment in Myanmar, Yangon.

In 2012, National Environmental Law was enacted first time in Myanmar. By law, National Environmental Conservation Coordination Committee (NECCC) for effective coordination among stakeholders was formed with the senior officials from various agencies while Environmental Conservation Department is also newly created to regulate environmental situation in the country. Environmental quality standards are to be set up by government for monitoring the environmental performance and management throughout the country. It may require for new investment and development projects to conduct the ESIA as well. Details of those are to be specified in subsequent environmental regulation but this is yet to be officially published soon. Thus, the ESMF process must comply with those instructions made in upcoming regulation.

The Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law (1994) contain the legal provision for protecting rare and endangered flora and fauna species in Myanmar. It requires updating the list of permanently and temporarily protected species in accordance with the list of species identified by CITIES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). There is also no provision for protected fish species.

As required by Forest Law (1992), Forest Department notified restricted tree species list for protecting them throughout the country. Regardless the area these trees are grown and found either in the Forest Estate that are legally protected under the jurisdiction of Forest Department, permission is required for cutting or exploiting them. For example, the species like Acacia Catachu could be found in Sin The, Male Nattaung and North Yamar, therefore precaution need to be undertaken if those trees are unavoidably affected by civil works of rehabilitating irrigation canal and building construction.

Being a signatory member of United Nations Convention on Biological Diversity, the National Biodiversity Strategic Action Plan (NBSAP) was also formulated in Myanmar since 2011. Priority and strategy are set out for protecting key biodiversity area where rare and globally endanger species are inhabited in Myanmar. Irrigation command area of North Yamar share the border at the west with prioritized bio-corridor, precaution needs to be undertaken particularly for conserving of priority species such as endangered migratory birds.

There is also concern in Myanmar with regard to Climate Change. As Myanmar is signatory to the United Nations Convention on Climate Change (UNFCCC), Myanmar had prepared first national communication report submittal to UNFCCC. Attempts were also made by government for not only estimating the greenhouse gas emission from various sources but also developing measures related to climate mitigation and adaptation. In responding to mitigation aspect, abatement strategy to reduce emission from its main sources such as deforestation, land use land cover change and paddy field were studied and formulated. Since methyl emission from irrigation reservoir and increased cultivation of paddy are responsible for GHG emission, it may also require take this into consideration for environmental and social safeguard measures of this project.

The National Framework for Biosafety was also drafted in 2008 by Department of Agriculture Planning (DAP) under MOAI in accordance with the Cartagena Protocol on Biosafety, Cartagena, 2000. Therefore, if importing genetically modified seed for agriculture development is intended, it may require following the procedure and guidelines of biosafety framework procedures. If hybrid seeds and plant materials are to be imported, it also requires

following to the procedure and guideline set up by The Plant Pest Quarantine Law (1993 revised in 2011) and The Seed Law (2011).

For those fertilizers that are to be used in irrigated area as part of agriculture development, it needs to be checked whether or not they are officially licensed, imported, transported and stored according to The Pesticide Law (1990) as well as to the international best practices. The current problem encountered in rural township is that there are illegally imported pesticides across the border and how pesticide law could be effectively enforced on ground level. The same is applied to the case of fertilizer imported from neighboring countries. Any fertilizer that are imported and used must be in conformity with The Fertilizer Law enacted in 2002.

There are also some regulations related to irrigation and drainage work that might be also relevant to dam safety and environmental and social safeguard of the proposed ADSP, including the Canal Act, 1905(Amendment in 1998); the Myanmar Embankment Act, 1909 (Amendment in 1998), and the Myanmar Irrigation Manual, 1945 (Revised & Edited).

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.

The Farmland Law enacted in 2012 includes the legal provision for allowing farmers to form a group as necessary. However, this has not been realized yet because many of farmer groups that are willing to form a farmer organization are facing difficulty to get clearance from concerned ministry for official registration. The gap of the law is lack of specific provision on how far these groups could take management responsibility for co-managing such an irrigation work in transparent and accountable manner.

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 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, 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 aimed at consolidating the environmental conservation activities at local and national levels. National Environmental Conservation Committee, 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 MOAI will be the implementing agency of the Project at the national level.

In recent years, the Ministry of Health 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 Bank Safeguard Policies

The project investments are expected to be designed to have positive social and environmental benefits. The Project triggers the following Bank safeguard policies: *Environmental Assessment* (OP 4.01); *Pest Management* (OP 4.09); *Physical Cultural Resources* (OP 4.11); *Safety of Dams* (OP 4.37); *Involuntary Resettlement* (OP 4.12); and *Indigenous Peoples* (OP 4.10).[4] For detailed information on these policies applicable to the project please visit the referenced website.[5]

Currently, there is no regulation for 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 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.

In addition, the Project investments will follow the WBG Environmental, Health, and Safety Guidelines, which are technical reference documents with general and industry-specific examples of Good International Industry Practice. 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.

2.6 Project Implementation Arrangements, Capacity and Monitoring

The MOAI will be the implementing agency of the ADSP under the overall guidance of the Project Director. The Project Director comes from the ranks of a senior management of the MOAI. The Project will be governed at the Union level by the National Project Steering Committee (NPSC) and at the township level by the Agricultural Coordination Committees (ACC) (see Figure 1). The main functions of the NPSC are to review project work plans and project progress, resolve implementation bottlenecks, and provide guidance on any other matters as requested by the Project Management Unit (PMU). It will also provide guidance to project

[4]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.

[5] For more information on the Bank's Safeguard Policies please visit http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,menuPK:584441~pagePK:64168427~piPK:64168435~theSitePK:584435,00.html

implementation and resolve any issues of a policy nature that might arise during project execution. The PMU will be the NPSC's secretariat. The NPSC will be set-up before project start-up through a special order from the Minister of MOAI.

The ACCs are township level structural coordination bodies, which are responsible for the coordination of crop planning and extension activities and also make irrigation water allocation and distribution decisions. They also provide a platform for joint (MOAI-farmer) planning and monitoring of project activities in targeted irrigation schemes. Implementation of the project activities at the township level will be done by the Project Implementation Committee (PIC) which is a sub-committee under ACC, and it includes township level staff of the implementing MOAI departments (ID, DOA, DAR, AMD, and SLRD), except for the irrigation rehabilitation works which will be done by ID directly. The PIC works closely with WUGs in planning, implementation and monitoring of agreed project activities.

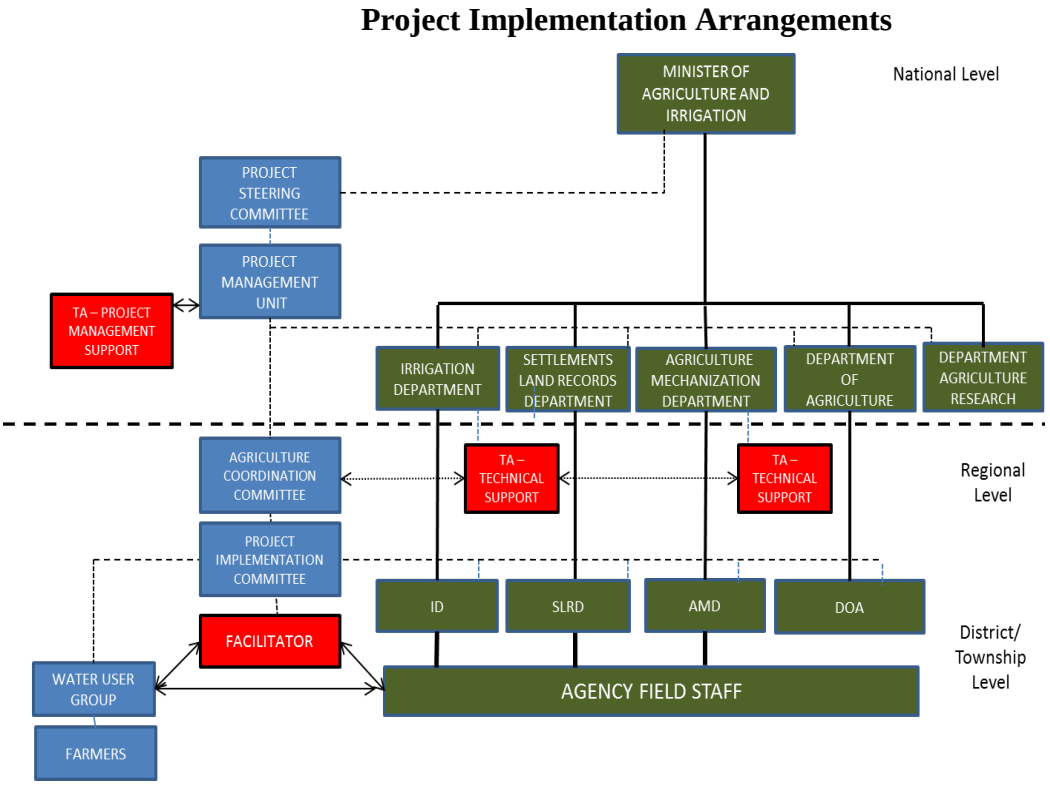
The project will be managed by the PMU, which will be integrated within the existing structures of ID. The PMU will be located in Nay Pyi Taw in MOAI headquarters. The PMU will be managed by a Manager who will be recruited through competitive external recruitment process. The other PMU staff would include: national financial management specialist; national procurement specialist; Monitoring and Evaluation specialist; safeguard specialist; and technical support staff depending on the evolving needs. PMU would be responsible for day-to-day management and coordination of the project. It will be responsible for the project financial management and procurement functions together with the ID financial and procurement division who second their staff to the PMU. It will ensure that annual work plans are prepared, budgeted and implemented in a timely manner and that management of project funds is in line with the provisions of the project's eligibility guidelines. The PMU will be also responsible for the management of the Designated Accounts; disbursement of the project funds, replenishment of the bank accounts and submission of withdrawal applications; and consolidation of annual work plans, budget planning, arrange for project annual audit, project reporting and M&E.

Implementation of the project activities will be carried out by five technical departments (ID, DOA, AMD, DAR, and SLRD) through their central, regional, district and township level structures. ID will be the lead agency for the implementation of the Component 1, with technical inputs from SLRD and AMD, and DOA would be the lead agency for Component 2, with technical inputs from DAR and AMD. These implementing departments will provide necessary technical expertise or recruit necessary expertize if needed to ensure smooth implementation of the project. They are responsible for the: (i) initiation of the procurement activities as per work plan, provision of technical specifications and TORs to PMU and serve as members of the evaluation committee; (ii) accounting for funds on their respective operating accounts and at district level accounts and provision of financial information to PMU for the compilation of the Interim Unaudited Financial Reports; and (iii) preparation of the annual work plans of their respective sub-components and activities, and provision of information and indicators for the PMU for the consolidated project reporting. The implementation of field activities will be done by respective township level staff with the supervision and technical backstopping from the team of central/regional/district level Subject Matter Specialists, except for the irrigation rehabilitation works which will be done by ID directly.

The implementation arrangements for Component 4 (Contingent Emergency Financing) will be detailed in a specific Implementation Plan. The Plan is a disbursement condition for this component.

PMU will monitor progress against the agreed performance indicators. Data will be collected for each of the indicators by PIUs who will be responsible for monitoring technical progress of their respective activities. The project's M&E system will focus on tracking and assessing project implementation progress, outputs, outcomes and impacts across all three components. During implementation, PMU will recruit dedicated staff to monitor project progress and update the project indicators. Quarterly progress reports will be provided to the WB within 45 days from the end of each quarter. The quarterly progress reports will include updates on the project implementation progress and up-to-date data on key performance indicators, financial and procurement information, and contract monitoring.

Figure 1: Project implementation arrangements



The Bank, together with MOAI, 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: (i) the overall progress in implementation of the project; (ii) results of M&E activities and impact evaluation; (iii) progress on procurement, disbursement, and financial management; (iv) progress on the implementation of the ESMF and other safeguards measures; (v) implementation arrangements; and (vi) need for any project adjustments or reallocation of funds to improve performance. At least three-months prior to the mid-term review, PMU will provide the WB with a project progress report with updated results indicators, project cost and disbursement estimates, and plans for completion. This report will be reviewed with the WB and the NPSC to help PMU take measures required.

The PMU will create a Safeguard Unit composed by an environmental and a social specialist. This Unit will be in charge of: screening and scoping, preparing terms of reference for environment and social issues to be included in feasibility studies, detailed screening of sub-projects identified in FS, preparing terms of reference for safeguard instruments as well as for the third party service provider[6], reviewing and quality control of safeguard instruments produced for each sub-project, monitoring and follow up of safeguard implementation.

[66] See Land Acquisition and Resettlement Policy Framework (LRPF), attached to this ESMF, for details about the tasks expected of the third party service provider.

3. Addressing Environmental and Social Issues under the Project

3.1. Project Typology

The Project will finance the design, construction and supervision of civil works and detailed feasibility studies (including ESIAs with EMPs) for the potential project investments associated with:

- Rehabilitation of existing main conveyance, flow control and sediment management systems and de-siltation of irrigation and drainage systems;
- development of on-farm water management infrastructure and pilot land improvement in 2-3 selected systems; and
- Introduction of dam safety enhancement measures as monitoring instrumentation and remedial works.

The civil works for the irrigation system improvement will be different for each system and can only be described in detail after the feasibility studies have been completed. In general, the works in the primary and secondary canals consist of sediment removal, strengthening of embankments (against erosion and slope instabilities) with incidental provision of protective lining and repairs of structures and gates. All the works will be done in and limited to the existing canal system and no new canals will be developed. In some areas drainage canals will be cleaned up and improved to prevent and reduce water logging problems and to prevent sediment entering the irrigation canals. In the tertiary systems (the farmer managed systems on water course level and below) the works may consist of cleaning up water courses and if the farmers want, some extension of on farm canals can be implemented. In principle the works will be done by the farmers but the ID may provide support. For the pilots on land improvement the details need to be agreed first with the farmers/landowners. The works that can be expected are alignment of canals, drains and farm-roads. Structures may be small culverts, farm bridges and in some cases water division boxes.

The proposed dam safety improvement and remedial works would include:

A. Embankments Body

i) Installation of upstream blanket for seepage control
ii) Repair of gully erosion and sink holes,
iii) Repair of toe drainage, repair-modification of slope drainage, installation of additional relief wells,
iv) Improvement of embankment surface protection, covering of crest with granular fill,
v) Installation of piezometers and surface measuring beacons and seepage measuring weirs; and

B. Spillway

i) Improvement of the capacity of weirs and chutes,
ii) Repairs of the spillway chutes, side walls and baffle blocks,

C. Sediment management works in the reservoir particularly near the intakes and spillway, and

D. Repairs of access road to dam sites.

The final choice of dam safety repair works depends on the outcome of the technical feasibility studies.

Other recommendations for dam strengthening in the Independent Dam Safety Assessment include:

- Undertake bathymetric survey to assess actual sediment deposits;
- Sediment dredging;
- Consider implementation of the catchment sediment management in order to prolong the lifespan of the dam, based on the results obtained in (1) and (2).
- Prepare Instrumentation Plan & Install Monitoring Instruments (benchmarks, piezometers and "V" notches for leakage/seepage measurement),
- Prepare an Operation & Maintenance (O&M) Plan and Emergency Preparedness Plan (EPP)
- Others: clear the trees and bushes at the downstream slope and toe area of the dams and control.

3.2. 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 areas and the typical known impacts of suggested project activities. However, during the ESMF preparation, the Consultant used participatory assessment (e.g., village level assessment; social assessment, and available secondary data) to be able to understand potential general environmental and social impact of proposed project activities at this stage. Site specific impacts (during pre-/construction stages as well as operation stage) will be analyzed during the feasibility and detailed design stage and included in the relevant ESIAs, ECOPs and other safeguard instruments as needed. Typical project environmental and social impacts for suggested project activities are presented below.

3.3. Positive Impacts

With proper design and commitment, the proposed project would positively impact on increase of food security; increase of household income; improved health condition by better access to water supply and sanitation; creation of rural employment; improved flood control; multiplier effect on local economic development and improving water governance.

Total population in Myanmar is approximately 52 million with the 1 percent per annum population growth rate. To feed increased population in Myanmar, agriculture production definitely needs to be boosted. Since agriculture land is limited itself for future expansion, agriculture intensification is essential for boosting agriculture production. In project village, it has been clearly observed that agriculture production has been significantly increased already under existing irrigation scheme. If efficiency of conveying water till to tail of irrigation canal is increased due to proposed project, not only paddy growing area but also paddy yield per acre would be increased. As project areas are located in central and upper Myanmar, increase of paddy production there would be greatly conducive to regional food supply, particularly to those upland areas where growing paddy is quite limited and transporting rice from lower Myanmar is quite costly.

As a result of existing irrigation scheme, it has been already observed increase of annual income of farmer household in project villages. It is no doubt about that this trend would

continue alongside the increased efficiency due to rehabilitation of irrigation scheme. Even though income increase is subject to market situation of crop sown and produced like price fluctuation of paddy, farmer can alternatively switch one crop to another depending on market potential. For example, export market for pulse and bean has been well established in Myanmar and without much difficulty, local farmers could adapt to suitable cropping pattern if freedom of cropping choice is given and assured. Probably, agriculture extension that would be strengthened by proposed project would also enhance farmer capacity in managing associated risk.

Due to water shortage in the place like Dry Zone (Central part of Myanmar), improving access to sanitary toilet is always constrained. As consequences, public health condition was worsen by increased vulnerable to water-borne diseases that were one of the top five major killing diseases among the children aged under 5. Although intended intervention by the proposed project is not to supply drinking water to the community, it is witnessed that household access to water supply, at least for domestic use, was increased in the village under existing irrigation scheme because of the rise of ground water level resulting open dug well and tube well became more easily accessible than before.

In project villages, it was observed that migration to other areas for searching employment was relatively low comparing to other villages that were not covered by existing irrigation scheme. At least double cropping that was practiced in most of the project villages demanded farm laborer for farming operation throughout the year. Even though it is not full time job, it seemingly created substantial employment opportunity for those who were mostly landless in particular villages. Therefore, it is perceived that creation of rural employment would continue as agriculture intensification by proposed project is to be enhanced than that of present situation in project areas.

Except for Swa irrigation scheme, the creeks that were utilized by existing irrigation scheme were by nature seasonal having the characteristic of torrential flood when there was heavy rain during the wet season. This caused severe damage to agriculture land, human settlement and infrastructure at downstream. Once after dam were constructed over these creeks, torrential flow are impounded in the reservoir of the irrigation scheme and regulate its flow to downstream. This relieves the damage at downstream as far as operation of the dam is well management.

It was observed that there were increasing economic activities in town adjacent to irrigation scheme. With the boom of agriculture production, the processing, marketing and transportation of agriculture products are becoming active and well-functioning in the area. Increase in purchasing power of farmers also stimulates the growth of other goods and services in the village as well as neighboring town. This trend is going to be continued when proposed project is implemented successfully.

People participation in irrigation management was not favorable in the past due to socio-politico-constraints at that time. Thus, limited farmer participation was partly responsible for lowering the irrigation efficiency in term of the ratio of irrigated area to irrigable area. Since proposed project is to promote participatory irrigation management, informed decision making process for effective and efficient management of water resources in greater transparency and accountability manner would be developed and implemented. It is most likely that success of the participatory development in irrigation management would be empirical for how such an

experiential learning could be replicated and scaled up for improving water resource management as a whole with greater participation of all stakeholders.

3.4. Potential Negative Impacts

Rehabilitation or Small scale construction

The scale and duration of civil works for rehabilitation of existing irrigation systems and in particular the dams and related infrastructure and ancillary facilities are unknown at this moment. Although the irrigation schemes may be of small or medium scale direct physical impacts will likely include accessing and opening quarries and borrow pits, space for batch plants, work camps, equipment parks and laydown areas; access roads may be need (as in the case of works in one of the proposed dams). Some of the works proposed for the dams and reservoirs will entail dredging.

Most of these works will generate temporary and localized known construction impacts related primarily to air pollution/dust, noise, vibration, and access restriction; improper disposal of construction related waste; temporary pollution of soil and surface waters due to accidental spillage of fuel from construction activities; safety hazards including worker safety; damage to natural habitats, aquatic fauna, or existing vegetation, and impacts to physical cultural resources. Most of these impacts are related to construction activities. However, these should be prevented or reduced to acceptable levels by applying good international construction practices and planning. It is expected that the rehabilitation of drainage canals would be done along the existing ones that are under the jurisdiction of ID. These impacts should be properly managed during the construction phase by the contractor and closely supervised by the PMU and the supervision engineer.

Larger works camps for workers from outside the area is there a possible influx of job and opportunity seekers that can contribute to conflicts with local people who may be ethnic minorities. Could the influx of outsiders contribute to the spread of communicable diseases, (such as HIV and STDs) or have effects on local commodity prices and commerce in local markets.

Typical impacts and mitigation measures are presented in Table 1.

Project technical studies and capacity building investments including Technical Assistance activities. Investments related to soil improvement and plant protection as well as extension of modern farming practices will be designed to consider sustainable pest management applications through implementation of an integrated Pest Management Plan. Other planned activities financing irrigation equipment and/or irrigation technology pilots as well as laboratory equipment (DAR) will be purchased and installed in line with technical specifications approved by the Bank that will take include environmental protection provisions and mitigation in addition to training on safe operation and sustainable maintenance during and beyond project duration.

Table 1: Potential adverse impacts of project activities and known applicable mitigation measures during rehabilitation/small scale building construction works

Possible adverse impact	Activity description	Mitigation measures
Noise, Vibration and Dust Borrow pits Disposal sites	Use of heavy machine (i.e. bulldozer, excavator) for rehabilitating drainage , access roads, burrow pits, disposal sites	1. Good engineering practice and maintenance of vehicles would be required according Irrigation manual, occupational health safety instruction and Bank's guideline. 2. Dust from handling or transportation of aggregates, cement, etc., should be minimized by sprinkling or other appropriate method; i.e. limit of excessive truckload, use of cover sheet. 3. Restoration of borrow [its and disposal sites
Presence of workers/worker's camps	Worker's behavior Wastes (solid/liquid) from camps and working yards	1. Camp management including Codes of Conduct 2. Waste Management Plans
Damage to farmland and environment (water quality) near to rehabilitated canal and disturbance to agriculture activity	Due to excavated materials and civil works	1. Prior to operation, assess the operational area and collect information about the farmland area and farmers that would be potentially affected by operation (e.g. checklist). 2. Raise people awareness through meeting and communication materials before boundary delineation between adjacent farmland and drainage system to avoid confusion and dispute 3. Consult with farmers for identifying working zone of civil work (including damping site) and developing operational time schedules adjusting to farming seasons. Also, agree upon grievance procedures, compensation and communication channel as necessary.
Accessibility constraint and personal safety Increased traffic, noise, and dust	Project vehicles may impose constraints to local villagers for having access to their farm and places they are used to commute. Traffic accidents could occur resulting in personal causalities and injuries.	1. Assess local access route and consult with villagers for arrangement of temporary path if required 2. Use warning signboard, prior notice, and announcement whenever heavy traffic is to be occurred. 3. Develop/implement health and safety guidelines
Disposal of dredged materials	Damage to farmlands from disposal of dredged materials from reservoirs	1. Select site with approval/compensation for farmers 2. Monitor dredged material quality and design and implement proper treatment methods to ensure continuing use as farmland

3.5 Long-Term and Indirect Environmental Impacts

At present, an assessment of induced, long-term impacts has not been carried out. The following analysis is based on literature review and impacts that have been reported in

irrigation projects. An adaptive management strategy to address these impacts is proposed in the next chapter.

Typical long term impacts from operation of irrigation activities may include those related to low flow regime; flood risk under extreme weather; GHG emissions; soil salinity and decline of soil fertility; soil erosion and water logging; stream morphology changes; sedimentation; and increase of pest and weed. Further, it is known for example, that in irrigation areas, farmers normally use their farmland during the off-cropping season as a grazing ground for their cattle. As irrigation regime is going to be increased by the proposed project, loss of grazing land could occur, therefore, the project will promote using irrigated land to produce fodder, which can be used for pen-fed feeding of livestock. Also, excessive use of fertilizer and pesticide by farmers may impact the quality of water that drains from agriculture field to adjacent natural watercourses or the groundwater impacting long term drinking water sources located in the project sites.

A potential long term environmental impact is the possible raising of groundwater levels, a known effect of increased irrigation after rehabilitation and increased system utilization. Further, a potential indirect impact of the rehabilitated scheme could be on drinking water quality for villages that might use wells around the irrigation sites. Also, possible conflicts with other water source users may occur (dam/reservoir operation for other activities such as a hydropower station) as well as the risk of utilizing the allowed volume of water abstracted from water sources such as rivers and streams.

Further, since irrigation efficiency is improved by the proposed project, there could be a tendency of increase in cropping intensity in future. If farmers only grow paddy after paddy in their farmland where irrigation efficiency is improved without replenishing soil nutrients with fertilizers, soil fertility could gradually decline due to the changes of physical and chemical properties in the soil. Also, irrigation canal physical network could constrain villagers' accessibility, particularly to women and children, to commute from village settlement area to agriculture field if proper accessible lane or bridge are not constructed and maintained. In return, villagers' careless crossing the restricted canal area may also cause damage to canal.

Overall, the proposed Project is tackling and addresses some of these impacts through robust design of selected infrastructure interventions and detailed site assessment during implementation that targets, among other aspects, effectiveness of the agriculture extension system; responsible use of integrated organic fertilizers; and selection of suitable crops according to soil characteristics, all which cumulatively will mitigate various of the above mentioned impacts. In connection with agriculture extension program, project would also finance capacity building program for stakeholders at various level for wider dissemination of environmentally sound agriculture technology and integrated pest management.

Cumulative environmental impacts that might be generated at the project sites include possible water contamination downstream from reservoirs linked to rehabilitated irrigation schemes due to uncontrolled and unregulated activities such as mining and gold panning in the upper watershed. High arsenic levels were found in Male Nattaung dam and nitrate level exceeded maximum limit in water sample taken from the irrigated canal of Sinthe; such pollution if not addressed at source could affect quality of surface and ground water downstream despite rehabilitation of related irrigation schemes.

Further, while irrigation schemes are designed to serve for flood control downstream, it may bear the risk of flood when extreme weathers occur in the region. Consequently, potentially affected sites considered for investments need to be assessed in detail during project implementation and appropriate flood protection measures should be proposed (such as flood wall, levees, emergency sandbags, etc.).

People living near dam sites are concerned over the dam safety and collapse of dam when heavy rain occurs in the area, particularly in Male Nattaung and Swa downstream area. As extreme weather is expected to occur in the future according to climate change scenario analysis of national communication report on climate change, the concern over the collapse of dam and consequences at downstream due to unpredictable incidences should be taken into consideration for necessary measures.

3.6 Land Legacy Issues in Relation to the Construction of the Original Irrigation Schemes Including Dams and Reservoirs

Many of the irrigation schemes in the project target townships, which are candidate schemes to be included potentially in the project, were built some 10–20 years ago. The social assessment (SA) carried out during project preparation found that, in some cases people were displaced without adequate compensation when dams and primary canals were originally built. The SA conducted during preparation was not a comprehensive assessment, since it included only the four irrigation schemes that were pre-identified for potential funding under the project. It will be followed-up by a more comprehensive SA, including all candidate schemes, during implementation.

The land issues related to existing dams and reservoirs are considered to be beyond the scope of and will not be directly addressed by the project. These complex legacy issues are being addressed at the country level through the auspices of the National Land Resource Management Central Committee and the Parliamentary Land Loss Inquiry Commission. The Bank, under the Country Partnership Framework, may provide separate support on land, including country wide land related studies or assessments. However, under the project, the existence of land legacy issues directly related to candidate irrigation schemes to be considered to be included in the project will be assessed as part of the more comprehensive SA to be carried out during implementation.

To such effect, the SA will, among other issues: identify who were affected when the candidate irrigation schemes were originally built including their ethnic identities; assess what compensation and assistance they received to restore livelihood and what are their current levels of livelihood; and determine if there are significant unresolved land issues or disputes which need to be addressed within the scope of the project objectives or that if not addressed would hinder the implementation of project activities. The initial findings of the SA will also be used as an input for site selection where only candidate schemes which have no or relatively minor land legacy issues which can be effectively addressed under the scope of the project would be eligible to participate in the project. For the participating schemes, any land legacy will be addressed through the LAAP, and the IPP, if relevant, which will be developed during implementation and include measures to restore the livelihood of affected people in line with the objectives of applicable Bank policies.

The third party service provider, who will be hired under the Project, will facilitate the legacy issues assessment. Through project implementation support, the Bank task team will provide guidance to the Project Safeguard Coordinator on the terms of reference for the SA and the review of the SA report and its application to site specific the ESMP, LAAP and/or IPP.

4. Procedures to Address Project Environmental and Social Issues

4.1. Guiding Principles

Overall, the set of guiding principles for developing the environmental assessment instruments relevant to the ASDP should encompass the following concepts:

(i) *Integrate environmental and social objectives into the 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.

(iii) *Promote analysis of alternatives*

(iv) *Promote environmental and social capacity building and institutional strengthening*.

The project will provide an opportunity to build counterpart capacity for integrating environmental and social concerns into their work. Support for capacity building will come in the form of training, monitoring and reporting.

4.2 Basic Approach

Each of the ADSP project investments, depending on its typology, will include a level of assessment of the potential social and environmental impacts and a specific Environmental Assessment safeguard tool consistent with Myanmar laws and standards (as applicable) and the Bank requirements. The Bank will review and clear all safeguards instruments during implementation including TORs.

The project will have the following approach for addressing environmental and social issues and will include the following safeguard instruments:

- This ESMF prepared prior to appraisal and approval of the ADSP, to inform the overall environmental and social performance of the project;
- An iterative approach between the FS and the subprojects will be implemented. An initial screening of identified sub-projects will identify issues to be included in the TOR of the FS. The TORs for the FSs will include provisions for environmental and social safeguards, including long-term impacts, so that the products (FS, design) will be prepared taking in consideration possible impacts on environment;
- During or after the FSs completed, additional screening of proposed subprojects will be carried out by PMU to determine: (1): if the subprojects can be managed through the application of Environmental Codes of Practice (ECOP); or (2): site-specific Environmental and Social Management Plans are needed.

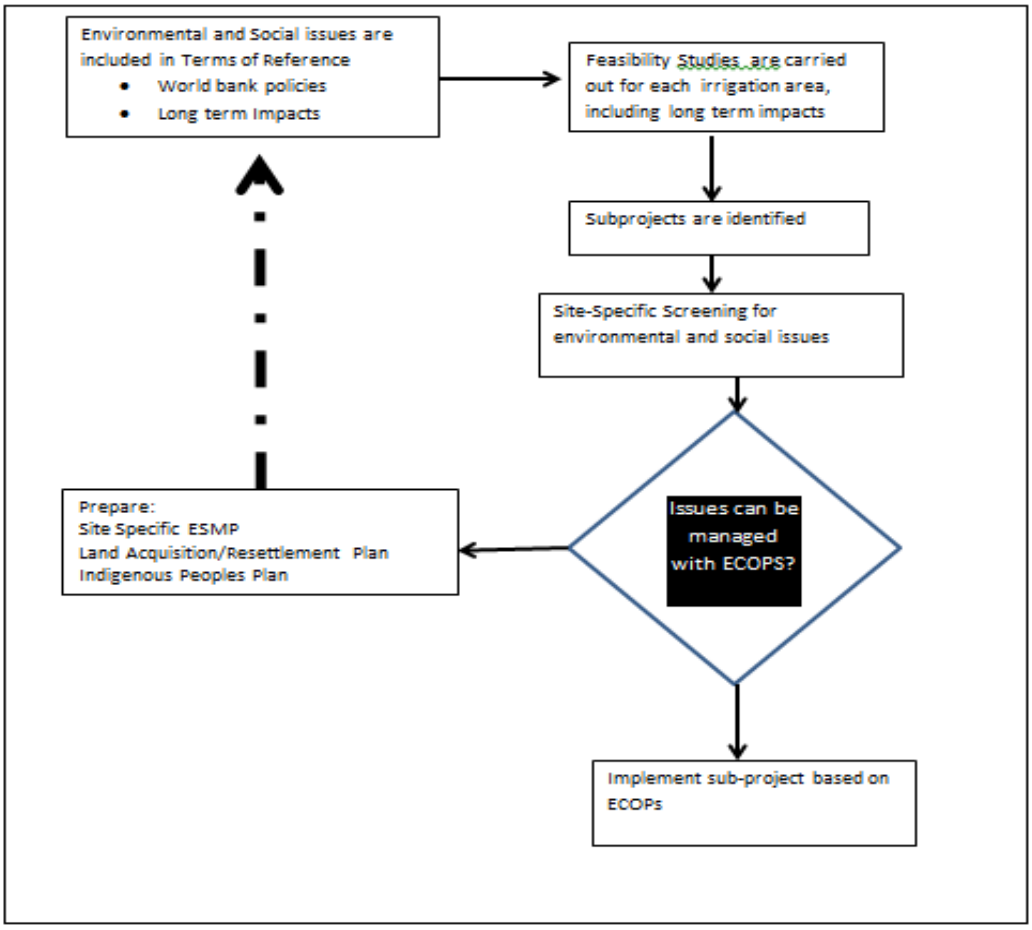
- Feasibility studies will carry out necessary additional safeguard pans as needed. . In particular, SA will be conducted by the consultant selected by the PMU[7] as part of the FS for each scheme which will include free, prior and informed consultations with affected people and project beneficiaries. The SA will provide inputs to the screening process and identify the need and the scope of the LAAP and IPP (see Annex 3, *Land Acquisition and Resettlement Policy Framework,* and Annex 4, *Indigenous Peoples Planning Framework,* for details)
- Specific Environmental and Social Impact Assessments (ESIAs) and/or Environmental and Social Management Plans (ESMPs), and other safeguard instruments as required (e.g. environmental checklists, Environmental Codes of Practice (ECOP), Land Acquisition Action Plans (LAAP), Indigenous Peoples Plans (IPP), Integrated Pest Management Plan, etc.) will be prepared by individual consultants selected by PMUs for all investments once the FS are completed and technical details will be available during project implementation following the guidance established in this ESMF[8].
- The basic instrument will be ECOPs to manage all construction related impacts. Additional screening of the project will determine whether or not additional instruments are needed

The proposed process is summarized in Figure 2.

[7] See Annex 3, *Land Acquisition and Resettlement Policy Framework* or the Annex 4, *Indigenous Peoples Planning Framework* for details on the selection of the SA consultant.

[8] For details about the development of LAAP, please see Annex 3, *Land Acquisition and Resettlement Policy Framework*. For details about how SA will be conducted and how IPP be developed, please see Annex 4, *Indigenous Peoples Planning Framework*.

Figure 2: Summary of the approach for addressing environmental and social issues and safeguards instruments



4.3 Detailed Safeguard Process

Step 1: Screening and Scoping

Screening is perhaps the most important step in safeguard management tool for the project. Screening will be based on an assessment of project components and site sensitivity. Initial screening will identify potential safeguard issues to be addressed in Feasibility Studies. Once sub-projects are identified, and enough details are known on their typology, detailed screening and scoping will be carried out. Subproject screening is the responsibility of the PMU. As proposed above, this will be an iterative process.

Step 2: Preparation of Terms of Reference

Based on the initial screening, TOR for environmental and social safeguards will be prepared to be included in the TOR for the FS.

Detailed screening of identified sub-projects will result in TOR Reference for the required safeguard instrument. Safeguard instruments could include:

- Full Environmental Impact Assessment.

- Environmental and Social Management Plans.
- Environmental Codes of Practice.
- Land Acquisition Action Plans[9]
- Social Assessment.[10]
- Indigenous Peoples Plan.
- Physical Cultural Resources Plan.
- Safety of Dams(as part of detailed investigation and design study of remedial works of dams, including the preparation of O&M Plan and EPP)

TOR for safeguard instruments are either carried out independently or included back into overall terms of reference for feasibility studies and/or design.

Step 3: Site Sensitivity

The required safeguard work will be commensurate with potential environmental and social impacts. The screening of projects and project sites will determine the sensitivity of the site. The following matrix (Table 2) should be applied for identifying potential issues.

Table 2: Site sensitivity and safeguard policies

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

[9] See Annex 3, *Land Acquisition and Resettlement Policy Framework*, for details.

[10] For SA and IPP, see Annex 4, *Indigenous Peoples Planning Framework*.

	risks	hurricanes	
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

Subprojects are expected to be at the level of Category B, according to Bank policies. Each subproject Category will be decided based on the scale of project components and the sensitivity of the site. Based on the assessment done at the level of this framework preparation, it is not expected that the project will finance category "A" investments. However, if screening of subprojects during implementation may conclude that there are subprojects at the level of category A, then the overall project will become Category A and will need to be restructured to reflect such findings.

Type of Project	**Site Sensitivity**		
	High Sensitivity	**Medium Sensitivity**	**Low Sensitivity**
Rehabilitation of existing main conveyance, flow control and sediment management systems and de-siltation of irrigation and drainage systems, and necessary dam safety remedial works.	**A**	**B**	**B**
Development of on-farm water management infrastructure and pilot land improvement in 2-3 selected systems; and	**B**	**B**	**B**

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 prepared needs to be determined in line with OP 4.01 (see Table 3 for guidance).

Table 3: Definition of required subprojects' safeguard documents work vs. investment categorization

Type of Project	Required Safeguard Instruments
Category B[11]	Use site screening criteria to prepare specific assessments and prepare ECOPs for construction; Prepare EIAs and/or EMPs where applicable including measures for natural habitats and physical cultural resources; Confirm the need for land acquisition and/or resettlement; If projects are to be built in areas with indigenous peoples social assessment part of the EIA will ensure compliance with OP 4.10 and consultation process and prepare an IPP. Develop LAAP if involuntary land acquisition occurs; IPMP O&M Plan and EPP in the case of large dams

4.4 Tools Included in the ESMF

The ESMF includes:

- Screening and scoping criteria for individual investments that are assessed (Checklists are provided in Annex 1)
    - Use site screening criteria and Checklists to prepare specific assessments and prepare ESMPs for construction (e.g., Annex 1 for Checklist for rehabilitating canal and drainage system and Checklist for construction of agriculture extension and seed storage facilities).
    - Confirm need for land acquisition and/or resettlement.
    - If projects are to be built in areas with ethnic minorities undertake a social assessment and consultation process and prepare an Indigenous Peoples Plan.
    - Physical Cultural Resources Plan (if applicable). Chance finding procedures are included in the Environmental management of Construction (Annex 2).
- Environmental Code of Practices (ECOPs) for management of construction-related impacts (Annex 2).
- A Resettlement Policy Framework for land acquisition and resettlement (Annex 3).
- An Indigenous Peoples Planning Framework concerning ethnic minorities (Annex 4).
- Guidance to ensure the participation of all eligible farmers including ethnic farmers in project activities (Annex 3.4 and Annex 4.1).

[11] Should a Category A subproject be implemented, a project restructuring will be done prior to approving the said category A subproject.

- Guidance on how to implement the Pest management policy provisions including the integrated pest management plan. An integrated Pest Management Plan will be implemented in all irrigation areas site-specifically (Annex 5).
- Guidance on how to address Safety of Dams (Annex 6).

4.5 Addressing Indirect Long-Term Impacts

An adaptive management approach is proposed to address long-term impacts. General mitigation measures that are proposed to minimize some of the impacts are presented in Table 4. Monitoring of key parameters will ensure proper identification of raising issues in order to flag actions from relevant agencies. Site-specific mitigation will be developed once the technical parameters and feasibility studies are prepared for the infrastructure investments during project implementation.

Table 4: Management of long-term impacts

Issue	Proposed Mitigation Measures	Implementation Schedule	Source of Funding
Water contamination	Law enforcement in Catchment area Agriculture extension for integrated pest management Law enforcement for illegal pesticide	After catchment conservation action plan is developed & agriculture extension network & system are strengthened	Agriculture extension cost
Soil salinity	Canal lining for those canal sections affected by saline/akali soil and properly maintain Application of gypsum wherever available & feasible Agriculture extension for suitable cropping pattern and soil fertility management	Since project construction phase	Bill in quantity for canal rehabilitation Agriculture extension cost
Water logging	Proper maintenance after good rehabilitation of canal and drainage system with people participation	Since construction phase	Annual maintenance
Sedimentation	Proper maintenance after good canal rehabilitation with appropriate sedimentation trap or extractor Flushing the canal as frequently as possible Develop and implement participatory operation and maintenance of canal an drainage system	Since construction phase	Annual maintenance
Increase of Pest and Weed	Effective agriculture extension for integrated pest management and cropping system management	When agriculture extension system is in place	extension cost
Accessibility constraint	Integrate accessibility pattern of local community into design and construction of canal rehabilitation Due diligent to maintain the accessibility options/route/bridge by both ID and community	Annually	annual maintenance

5. National and Local Institutional Arrangement and Capacity Building for ESMF Implementation and Monitoring

The ESMP shall be implemented by the following organizations (limitation of the institution and the need of capacity building are also briefly presented):

Irrigation Department

ID is responsible for construction and management of irrigation dam and scheme throughout the country. Limited budget and understaffing in existing irrigation schemes are major constraints for effective operation and maintenance of irrigation system (reported by social assessment team). As part of decentralization of the current political reform, management responsibilities of those irrigation schemes with less than 5,000 acres of irrigated area were transferred to regional government (State/Division). However, it would not effect on proposed irrigation scheme because the size of each irrigation scheme of proposed project are exceeding than 5,000 acres of irrigate area.

Technical training on environmental management and social mobilization for participatory development would be required to build the capacity of ID staff at operational and management level. Also, there might be need for training to improve technical skills in certain aspects for effective and irrigation management such as dam safety, hydrology and meteorology measurement and assessment, etc.

Department of Agriculture

Major responsibility of DOA is to provide agriculture extension service to farmers for agriculture development. At local level, they also have to enforce the seed law, pesticide law and fertilizer law whether or not supply of these inputs to farmers are in accordance with the regulation and departmental instruction. To mitigate the environmental impacts, agriculture extension system needs to be very efficient and effective for technology diffusion among the farmers. Paradigm shift is strongly needed in agriculture extension for deliberating participatory process of farmer-driven technology innovation, adaptation and dissemination based on farmer's prioritized farming problems and needs rather than injection of agriculture scientist's thoughtful solutions to what may farmers need for solving their farming problems on ground. Farmer to farmer extension was to some degree introduced in DOA for certain crops. However, there are still lacks of concrete conceptual framework as well as procedure guidelines to scale up the farmer-led agriculture technology innovation and diffusion. Lack of human resources, physical resources and financial resources are also major constraints to invest in participatory action research for technology solutions to the problems small holding farmers are facing.

Township Agriculture Coordination Committee

At present, Township Agriculture Coordination Committee (ACC) is formed in every township of existing irrigation scheme. The purpose of the Township ACC is to enhance coordination among the government departments for boosting agriculture production in respected township. Township Staff in charge of Government Administration Department (GAD) chairs Township ACC and other members are Township Staff in Charge from DOA, SLRD, National Planning Department, and AMD. Major responsibility is to supervise the agriculture activity at the field level and to provide administrative and technical assistance to famers. Therefore, Township ACC is seen as an appropriate coordination body for township level coordination that

is essential for execution of EMP. However, Township ACC lacks experiences in participatory informed decision-making and in environmental management. Training workshop would be required to officials from various departments to increase their awareness and knowledge on participatory development, transparency and accountability for good governance and environmental management in relation with improved irrigation efficiency.

Coordination Committees

To implement ESMP, healthier coordination is essential. Township ACC would be a coordination body at township level yet, coordination needs to be strengthened at national level and regional level. At national level, forming the project steering committee is desirable not only for overseeing the project strategy, approach and progress but also for fostering coordination among government ministries for implementing EMP. Representative from MOAI would have to chair the steering committee. To increase awareness of regional stakeholders, the project will conduct regional project launching workshop in respected region.

Water User Group

Water user group needs to be formed in each project village with those farmers who benefit from improved irrigation regime for agriculture intensification. In general, primary purpose of WUG is to pool resources, knowledge and skill for collective actions contributing to effective and efficient irrigation management.

ESMF Implementation

Effective implementation of this ESMF will require technical capacity in the human resources of implementing institutions as well as logistical facilitation. Sufficient understanding of the mechanisms for implementing the ESMF will need to be provided to the various stakeholders implementing the ADSP investments. This will be important to support the TACC and stakeholders at local level in 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, the project will appoint environmental and social specialist/expertise as part of the PMU. Such expertise will have specific tasks such as: (i) Preparing, together with the implementing entities, of annual work programs and budgets linked to EMPs; (ii) Monitoring project progress as it relates to compliance with the ESMF guidelines, resolving implementation bottlenecks, and ensuring that overall project implementation proceeds smoothly; (iii) Collecting and managing information relevant to the project and accounts (i.e., environmental and social monitoring and audit reports); and (iv) Organizing and providing training sessions, including a training plan and its modules, in environmental screening and environmental management; similarly, training is also needed in land acquisition and involuntary resettlement safeguard policies for township field supervision staff, and farmers representatives to familiarize them with the principles and procedures as set out in the ESMF.

Subprojects ESIAs including ESMPs will be prepared at the level of feasibility studies or detailed design by international and/or national consultants hired by PMU during project implementation. Specific mitigation measures highlighted in the subprojects ESMPs will be implemented by contractors (or farmers where applicable) during works while supervision of EMP provisions will be done by the PMU with help from environmental and social specialist part of PMU.

Capacity Building and Training Plan

The implementing agencies have little or no experience with the WBG safeguard policies, and have little capacity to implement and monitor them. The Environmental and Social specialist (if selected nationally) may need some specific training in the policy areas of environmental assessment as applied by the Bank. The Bank will assist to identify appropriate external training opportunities for the environmental and social specialist.

A series of training workshops on implementation of the ESMF will take place as part of the project launch workshop and during the initial year of implementation. This training will ensure that the main specialists are able to manage and monitor the environmental and social aspects of the ADSP activities. The workshops should be conducted by an external consultant with knowledge on the environmental management requirements for Myanmar, including substantial knowledge on Bank and IFC safeguard policies and requirements (e.g., OHS standards). Adequate budget for this training is included in project financing.

In addition, the project will provide technical assistance to the PMU during the first year of project implementation. This assistance will provide on-hands training to environmental and social staff, makes recommendations on screening process and formats, improve instruments such as ECOPs, and assist with the preparation of Terms of Reference and review of reports. About 3 man-months on international consultant are estimated for the first year, based on three visits to the country during that period.

Further, preseason training to local extension workers and farmers will be structured and financed by project during implementation to strengthen farmers' capacity to correctly identify common pests; raise their awareness of safe and selective use of pesticides as well as standards for residues and consumer safety; and understand alternative options (to pesticide use) and how to evaluate/adopt them.

Budget for ESMF Implementation

As the technical details have not yet been finalized for the project investments, an estimated lump sum amount has been designated to address the potential number of EIAs and ESMPs which will have to be prepared as well as monitoring requirements for the ESMF. This is an estimate (see below Table) and will need to be updated once the FS/design of project investments has been finalized during project implementation.

Proposed budgets for implementation of the ESMF

Activity	Budget
Dam safety monitoring implementation[12]	$20,000/year/dam
Preparation of EIA/ESMP at FS/design stage	$100,000/scheme
Budget for implementation of each ESMP, monitoring and reporting	$25,000/year
Training on IPM implementation	$10,000/year/scheme
Other related workshops (soil conservation; nutrient mgmt.)	$150,000
1-day training for highlighting potential environmental impacts and mitigation measures (project launching workshop)	$4,000/training
Environmental and social safeguard specialists (2 salary expert in PMU)	$84,000/year
Technical assistance (3 man-months international consultant)	$60,000 for first year.

[12] The total budget allocated for the dam safety related activities, including rehabilitation works, equipment, studies, etc., is around US$8 million.

6. Environmental Monitoring

The monitoring program will concentrates on key indicators of the possible adverse impacts identified by the environmental impact assessments, in particular groundwater quality and levels warning of approaching water-logging problems and drainage effluent quality affecting downstream areas; water quality in public wells for drinking water supply; irrigation water quality including in main drains and monitoring (based on observations and sampling as necessary) of physical and chemical soil characteristics. The estimated annual cost of such monitoring program is about US$25,000/scheme for small schemes.

Identification and quantification of environmental indicators will be done during project implementation once ESIAs are prepared. The monitoring program will be prepared in adequate detail, setting out the location and frequency of measurements, and the parameters to be measured and tested. Training and capacity building for EMP monitoring will be provided by Bank experts as well as international consultants.

The PMU/environmental and social specialist with help by farmers will supervise the implementation of the environmental management plan, and will contract qualified laboratory for the monitoring, including the testing analysis and reporting. The PMU will check with local environmental authorities to determine if the project implementation is meeting all specified ESMF, ESIAs, ESMP and related safeguard requirements (e.g. LAAP, IPP). These measures will be complemented by the participatory M&E under which project affected people and direct beneficiaries report issues they experience to the project (see the Section 7 of the ESMF, as well as the Annex 3 *Land Acquisition and Resettlement Policy Framework,* and Annex 4 *Indigenous Peoples Planning Framework,* for more detail.)

They will also perform supervision site visits during works as well as operation stage of the project 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; a summary of the environmental issues encountered should be reported in the bi-annual Implementation Report to the Bank. The Bank will also review these reports during the periodic supervision missions.

7. Grievance Redress Mechanism

Complaints and grievances in relation to the implementation of this ESMF will be dealt with under the project grievances redress mechanism. A summary of project grievance mechanism will be developed in English and Myanma as well as relevant ethnic languages and made available through various media including written materials and internet. They will also be made available in locations convenient to local population and explained about during public consultations and meetings with WUGs, in order to ensure that project affected people are aware of the avenue to have their grievance redressed.

Under this project, the WUGs will serve as the first tier mechanism to handle complaints and grievances. The WUGs will be formed at the initial part of project implementation for respective irrigation schemes and land improvement pilots, well before civil works to be supported under the project are designed and implemented. The grievance focal point will be appointed within each WUG who will receive, address, and keep record of the complaints and feedbacks. The grievance focal point will first review the grievances submitted. If the grievances are found to be between farmers over farmland boundary setting, mutual assistance to mitigate impact over farmer managed systems, and other disputes between farmers, the grievance focal point will meet relevant farmers and seek to find resolutions in line with this ESMF, under the support of the third party service provider.

If grievances or disputes between farmers cannot be solved at the WUG level within 30 days of the submission of the grievances, the issue will be brought to PIC for mediation. PIC is expected to inform aggrieved persons or parties to disputes of the resolution in 30 days. If still unsatisfied, aggrieved persons or parties to disputes will elevate the matter to the PMU at the national level which will make the final decision in consultation with the Safeguard Coordinator. The Bank task team will be consulted for all grievances that are elevated to the national level. The aggrieved people will be informed of the decision within 30 days of the submission to PMU which will be the final.

If the initial review by the grievance focal point of WUG finds that the grievances concern the rehabilitation of primary or secondary canals, civil works carried out by the project hired contractors, village extension education centers or other issues that go beyond the disputes between farmers, the grievance focal point will immediately inform the third party service provider who bring the issue to the PIC for mediation. PIC is expected to inform aggrieved people or parties to disputes of the resolution in 30 days. If still unsatisfied, aggrieved people or parties to disputes will elevate the matter to PMU at the national level which will make the final decision in consultation with the Safeguard Coordinator. The Bank task team will be consulted for all grievances that are elevated to the national level. The aggrieved people will be informed of the decision within 30 days of the submission to PMU which will be the final.

Aggrieved persons or parties to disputes are also allowed to directly contact the third party service provider and raise concerns or questions. The third party service provider will also install sign posts in local areas with a clear indication of the contact information, and call for any people with grievances or questions to inform them. Where ethnic minorities are present, the information will be expressed in a relevant ethnic language. A consultation meeting will be held prior to the start of civil works in places and time convenient to local population including but not limited to water users and farmers. The nature of the civil works to be carried out, expected impact, entitlements and grievance mechanisms will be explained to local people. The translated

summary of this ESMF, and the translation of the LRPF and IPPF in full, will be made available to participants of consultations and at the local office of PIC. The third party service provider will visit project sites regularly and receive inquiries or grievances directly from local people. The third party service provider will provide WUGs necessary training and continuing capacity development throughout project implementation. Project's communication and information dissemination activities will include information about grievance redress mechanisms.

The participatory M&E will be conducted, under the facilitation of the third party service provider, whereby affected people will assess the implementation of respective project activities as well as this LRPF, report outstanding issues and air grievances or other issues people may have with the project. The meeting will be attended by township PIC members and village authorities who will assist participants in identifying resolutions for grievances that may be presented. The third party service provider will prepare minutes of the meeting that record the issues raised and how they will be addressed in the subsequent annual cycle. This record will be submitted to PMU through PIC.

8. Public Disclosure and Consultation Process

8.1 Consultation Process

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 once (for category B projects) during the process. The Public Consultation provides a summary of the project objectives and a summary of the EA and SA conclusions.

Consultations with all significant stakeholders on the project draft safeguard instruments (ESMF and SA) took place at 4 project sites (Pyee Soat village; Nyaung Lun village; Ma Lei Nat Taung village and Kye Tha Pye village) during February 3-6, 2015 as well as in Yangon on February 10, 2015. Invitations have been issued and documents circulated and posted on the MOAI website in both English and Myanmar language timely before the meetings. Also, a 2-page flier summarizing the project goal, components and the safeguard documents has been distributed at the meeting in Yangon. All meetings were organized by MOAI and discussions led by U Tint Zaw, Deputy Director General of the Irrigation Department with other MOAI staff from representative departments involved in project preparation.

The ADSP consultations aimed at: (i) providing background information to various stakeholders on the ADSP, (ii) receiving feedback from civil society and NGOs on issues pertaining the ESMF of ADSP, and (iii) discuss ways to maximize ADSP environmental and social performance. Feedback received during the site visits raised aspects primarily relevant to the urgent need to help farmers receive/access the water required to reach their plots for the upcoming crop planting season; problems encountered at some plots during floods or when land leveling occurred; possibility for project to finance extension of the existing irrigation systems to reach more farmers; and the need to rehabilitate the irrigation and drainage canals as well as affiliated farm roads. Further, farmers expressed the need for dissemination of agricultural knowhow and good agricultural practices from the Agricultural Extension workers and welcomed that the ADSP will consider the formation of WUGs. The majority of aspects raised have been considered in the actual project design.

The meeting in Yangon also clarified to participants the project institutional arrangements at local level, specifics on the project proposed grievance redress mechanisms, and how the project will deal with land aspects including legacy and conflict issues. The summary of the feedback received from all meetings can be found in Annex 7. Additionally, guidance to ensure the participation of all eligible farmers in project activities is presented in Annex 3.4.[13]

During implementation, a participatory SA will be conducted for each selected project scheme under the facilitation of the third party service provider. The participatory SA will include free, prior and informed consultations with affected people including but not limited to ethnic minorities in the project zone of influence. The result of the participatory SA, as well as LAAP and IPP to be developed based on the participatory SA, will be made available to stakeholders and affected people in places accessible to and using language understandable to

[13] The same guidance is also attached to the Annex 4, *Indigenous Peoples Planning Framework* as Annex 4.1.

them (see Annex 3 *Land Acquisition and Resettlement Policy Framework* and Annex 4 *Indigenous Peoples Planning Framework* for details).

8.2 Disclosure Process

For projects such as ADSP, the Bank procedures require that draft ESMF and other relevant safeguard documents be prepared and publicly disclosed before project appraisal. This allows the public and other stakeholders to comment on the possible environmental and social impacts of the project, and the frameworks to be strengthen as necessary, particularly measures and plans to prevent or mitigate any adverse environmental and social impacts. In line with the Bank's Public Consultation and Disclosure Policy, for the ADSP, the draft ESMF, including draft LRPF and IPPF, have been disclosed in country in English on the MOAI website on January 16, 2015, along with the LPRF and SA report in local language. The draft ESMF, along with the SA report, was also disclosed in the Bank's InfoShop on January 20, 2015. The draft ESMF in local language has been disclosed in country on the project supported website[14] for the ADSP public consultations on February 2, 2015. The final documents have been revised to incorporate feedback from public meetings held in February 2015 and have been re-disclosed in country and in Infoshop. During project implementation, subprojects ESIAs with ESMPs as well as any other plans necessary to reflect the triggered safeguard policies (OP 4.37, OP 4.11, OP 4.10, OP 4.12, etc.) will be prepared in line with technical studies and consulted by and disclosed to the public before any relevant works may commence. Copies of the ESIAs/ESMPs and any other plans necessary to reflect the triggered safeguard policies cited above should also be provided to the implementing agencies and submitted to the Bank for review and approval. This will ensure record keeping of all activities implemented under the ESMF.

[14] The MOAI asked the Bank to disclose the project's safeguards documents on the project supported webpage for public consultations for the ADSP due to the technical problems with its website associated with very slow and unreliable internet in Nay Pyi Taw.

Annex 1: Project Screening Checklists

Examining Vulnerable and Sensitive Sites at Downstream of Irrigation Scheme

Checklist for identifying downstream vulnerable and sensitive site subjective to water stress and risk of peak flood under extreme weather event					
Name of village		Village Tract		Township	
Date of Entry		Entry by		Position	
Checklist for examining					Yes (or) No
1. Are there people living along the creek within your village vicinity? If yes, No of household/family…….. Population …….					
2. Are these people vulnerable to peak flood?					
3. Are there water sources along the creek supplying water for					
Drinking use? Dependent Household ……..					
Domestic use? Dependent Household …….					
Animal use?					
4. Are there alluvial cultivated land on stream bed or along the canal susceptible to water stress due to low flow regime? If yes, Estimated acre ……. Dependent farmers …….					
5. Are there agriculture land along the creek vulnerable to peak flood under extreme weather event? If yes, total acres likely to be affected ……..					
6. Are there any bridges or infrastructures that are likely to be damaged by peak flood? If yes, no of bridge …….. no of infrastructure ……..					
7. Are there any habitats important for locally important fish species that are likely to be affected by water stress or peak flood?					
8. Are there any habitats for reptile known to local people that are likely to be affected by water stress or peak flood?					
9. Are there any habitats for local birds that are likely to be affected by water stress or peak flood?					
10. Are there any habitats for seasonal/migratory birds that are likely to be affected by water stress or peak flood?					

Checklist of environmental and social parameter for screening impact

	Parameter	Sin The	North Yamar	Swa	Male Nattaung
Hydrology	1-1 Low flow regime	❸	❷	❷	❸
	1-2 Flood regime (design/op)		❶	❷	
	1-3 Operation of dams				
	1-4 Fall of water table				
	1-5 Rise of water table	①	①	①	①
Pollution	2-1 Solute dispersion				
	2-2 Toxic substances	❶	❶	❷	❸
	2-3 Organic pollution				
	2-4 Anaerobic effects	❷	❷	❷	❷
	2-5 Gas emissions				
Soils	3-1 Soil salinity		❶		
	3-2 Soil properties	❶	❶	❶	❶
	3-3 Saline groundwater				
	3-4 drainage/water logging		❶	❶	❶
	3-5 Saline intrusion				
Sediments	4-1 Local erosion	❶	❶	❶	❶
	4-2 Hinterland effect				
	4-3 River morphology		❷	❷	❷
	4-4 Channel regime	❷	❷	❷	❷
	4-5 Sedimentation	❷	❷	❷	❷
	4-6 Estuary erosion				
Ecology	5-1 Project lands	❶	❶	❶	❶
	5-2 Water bodies	①	①	①	①
	5-3 Surrounding area				
	5-4 Valleys & shores				
	5-5 Wetlands & plains				❶
	5-6 Rare species				
	5-7 Animal migration		❶	❶	❶
	5-8 Natural industry				
Socio-economic	6-1 Population change				
	6-2 Income & amenity	❶①	❶①	❶①	❶①
	6-3 Human migration				
	6-4 Resettlement				
	6-5 Women's role	❶	❶	❶	❶
	6-6 Minority groups				
	6-7 Sites of value				
	6-8 Regional effects	❷	❶		❶
	6-9 User involvement	❸	❸	❸	❸
	6-10 Recreation				
Health	7-1 Water & sanitation	①	①	①	①
	7-2 Habitation				
	7-3 Health services				
	7-4 Nutrition				
	7-5 Relocation effect				
	7-6 Disease ecology	❶	❶	❶	❶
	7-7 Disease hosts				
	7-8 Disease control				
	7-9 Other hazards	❶	❶	❶	❶
Imbalances	8-1 Pests & weeds	❷	❷	❷	❷
	8-2 Animal diseases				
	8-3 Aquatic weeds	❶	❶	❶	❶
	8-4 Structural damage				
	8-5 Animal imbalances	❶	❶	❶	❶

Note: Checklist was adapted from FAO (1995) Guidelines for Interpretation of Water Quality for Irrigation and black circle refers to negative impact whereas white circle refers to positive impact. The number in circle refers to likelihood of the occurrence of the impact. (1 = less likely to occur, 2 = moderately likely to occur, 3 = most likely to occur)

Checklist for Civil Work of Rehabilitating Canal and Drainage System

Monthly Checklist for Screening Construction Impact by Rehabilitation of Canal and Drainage System		
Name of village: Name of village tract: Township:	Prepared Date: Prepared by: Position held:	
Sr No	Checklist	Response Yes (or) No
Q1	Have you done village meeting for informing about the plan for civil work of rehabilitating canal and drainage system?	

Q2	Are the villagers' attendances to village meeting exceeding than 70% of total households of the village?
	if (no), please organize the meeting again
	if (yes) please fill up the name of household in given format.	

Q3	(Show villagers a sketch map of canal/drainage that are to be rehabilitated) Have you checked with villagers whose farmlands share the border with the canal? If yes, tick off the name of farmer in given format	
Q4	Have you explained farmers about the law demarcating the canal area?	
Q5	Have you checked with farmer whom is likely to be affected by civil work of rehabilitation?	
Q6	Have you reached consensus with farmers whom are likely to be affected in order to mitigate damage to their farm? (loss of land temporary/permanent)	
Q7	Have you agreed with farmers on appropriate working time for civil work without affecting farm operation?	
Q8	Have you agreed with villagers/farmers for where to safely dispose waste from civil work? (Including clearance of grease, oil, lubricant)	
Q9	Have you agreed with villager/farmer for defining temporary accessible path if temporary area closure is needed during civil work?	
Q10	Have you satisfactorily explained farmers on how dust would be reduced from vehicle mobilization and civil work?	
Q11	Have you agreed with villagers/farmers on traffic safety?	
Q12	Have you consulted with villagers for where to construct passage and bridge crossing the canal according to their accessibility need?	
Q13	Have you informed villagers where they can make complain if not met their needs?	
Q14	Have you agreed with villagers how to settle complain and make compensation if necessary?	
Q15	Have you resolve the complaints satisfactorily?	
Q16	Have you reached consensus with villagers on how they would take responsibility to avoid damage of canal due to their causes?	
Q17	Will rehabilitation of canal and drainage system potentially cause	
	(a) Damage to Religious site/Sacred place/Burial place?	
	(b) Damage to trees restricted by Forest Department?	
	(c) Damage to wildlife habitat? (bird, reptile, insect, fish)	
Note: Use separate sheet for mapping and recording the discussion and agreement as necessary Decision made		
Approved by Village Administration	Approved by Irrigation Department	Inspected by Appointed Inspector

Checklist for Construction of Agriculture Extension and Storage Facility

Checklist for screening construction impact by agriculture extension & storage facilities		
Name of village: Name of village tract: Township:	Prepared Date: Prepared by: Position held:	
Sr No	Checklist	Response Yes (or) No
Q1	Have you done village meeting for informing about the plan for civil work of rehabilitating canal and drainage system?	
Q2	Have you checked official document of land ownership (holding right) or community's recognition on present user? Does the land that would acquire for construction -	
	(a) belong to one of the government institutions?	
	(b) belong to a villager?	
	(c) belong to a village? (village common land)	
	(d) belong to farmland?	
	(e) belong to vacant, fallow, virgin land?	
	(f) belong to Permanent Forest Estate under jurisdiction of Forest Dept?	
	(g) belong to land at government disposal?	
	(i) belong to religious institution/organization?	
	(j) belong to private individual?	
Q3	Have you reached written consensus with land owner (those with holding right) for transfer of land or use of land for stated purpose?	
Q4	Have you made public announcement for any complaint before acquiring land for construction? (at least one month in advance)	
Q5	Have you settled any dispute or complaint made by other over land acquisition?	
Q6	Have you made clear to all (both public and organization) about arrangement on holding right of land buildings or facilities are constructed?	
Q7	Have you made necessary arrangement with concerned authority for issuing /receiving tenure security certificate or equivalent of the land premises is constructed?	
Q8	Have you informed about the plan of civil work for constructing premises to the public/village community?	
Q9	Have you developed safety guidelines for construction to mitigate or avoid any negative impact to neighbors?	
Q10	Have you checked that acquiring/procurement of construction materials are from official sources? e.g: timber, gravel, sand, lime, etc.,) Attached official certificate of official sources	

Checklist for Screening Environmental and Social Impact in Project Village During Operation Phase

No	Potential adverse impact	Magnitude of the impact			Remark (Area extent or No of Household to be affected (Small/Medium/Large)
		Low	Moderate	High	
1	GHG Emission from paddy field	a few irrigated field with inefficient water management	Some of the irrigated paddy field with inefficient water management	Most of the irrigated paddy field with inefficient water management	
2	Water contamination by pesticide use	None or water sources for animal use are subjective to contamination	Some water sources for drinking, household uses & animal uses are subjective to contamination	Main water sources for drinking, household use & animal use are subjective to contamination	
3	Soil salinity/alkali	None or slightly difficult for farming	Becoming difficult for farming	Impossible for continuing farming	
4	Decline of soil fertility	Crop yield decrease slightly	Crop yield gradually decrease	Crop yield sharply decrease	
5	Water logging	None or little farming constraint	Difficult for farming and damage to crop	Impossible for farming	
6	Soil erosion	Surface erosion in farmland	Rill erosion in farmland	Gullies in farmland	
7	Sedimentation	A few section of canal and distributaries are likely to be affected	Some section of canal and distributaries are likely to be affected	Most parts of canal & distributaries are likely to be affected	
8	Loss of grazing land	None or seasonally difficult for grazing	Difficult for grazing animal throughout the year	Impossible to keep grazing animal	
9	Threat to biodiversity (local/seasonal bird)	None of a few habitat to be damaged	Population affected due to habitat damaged	Population disappeared due to habitat losses	
10	Threat to biodiversity (reptile/fish)	None of a few habitat to be damaged	Population affected due to habitat damaged	Population disappeared due to habitat losses	
11	Increase pest & weed	Slightly increased cost	Moderate losses due to increased cost	Severe losses due to crop yield decrease & increased cost	
12	Aquatic weed invasion	Started invasion	Grow vigorously & Disturb irrigation system	Damage canal and farming	
13	Public health concern Water borne diseases & Mosquito infection	Morbidity same as other region	Higher morbidity rate compare to regional average	Higher morbidity and mortality rate compare to regional average	
14	Fear of dam collapse	No fear or a little concern	Fear when extreme weather	Fear all the time	
15	Accessibility constraint	None or inconveniences some time to commute	Difficult to commute	Unsafe to commute	
16	Weak people participation conducive to ineffective irrigation management	Trustworthy leadership but still low participation	Monopolistic factional leadership (two three capable people) within ale dominated committee and passive participation occasionally	No women executive, lack of people trust, one man show leadership	
17	Socio-politico tension	Frequent disputes among villagers	Growing conflicts of the factions within villages	Confrontation among the factions	

Annex 2: Environmental Management of Construction Activities (to be included in construction contacts)

General

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.

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):

- All affected areas should be landscaped and any necessary remedial works should be undertaken without delay, including grassing and reforestation;
- water courses should be cleared of debris and drains and culverts checked for clear flow paths;
- All sites should be cleaned of debris and all excess materials properly disposed; and
- 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 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:

1. 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
2. Conduct sawing, cutting, grinding, sanding, chipping or
3. Chiseling with proper guards and anchoring as applicable

4. Maintain clear traffic ways to avoid driving of heavy equipment over loose scrap
5. 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
6. 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
7. 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:

1. Stop the construction activities in the area of the chance find;
2. Delineate the discovered site or area;
3. 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;
4. Notify the supervisory Engineer who in turn will notify the responsible local authorities and the National Culture Administration immediately (within 24 hours or less);
5. 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;

6. 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;
7. Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities; and
8. 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.

Annex 3: Land Acquisition and Resettlement Framework

A. Background

The Government of Myanmar agreed to receive funding from the Bank for the ADSP. The MOAI is the Implementing Agency. This document provides policies and procedures to be taken under the project in relation to land and asset acquisition in order to ensure the Project fully complies with the Bank OP 4.12 'Involuntary Resettlement'.

The project focuses on the rehabilitation of middle-scale surface irrigation schemes in four regions: Bago East, Nay Pyi Taw, Mandalay, and Sagaing. Up to eight such schemes will be supported by the project during its seven year implementation period. The irrigation schemes that will be rehabilitated under the project will be identified based on the feasibility studies (FS) that will be carried out after the project effectiveness. A Land Acquisition and Resettlement Policy Framework (LRPF) was prepared during preparation instead of a Resettlement Action Plan. Land Acquisition Action Plans (LAAP) will be developed in line with this LRPF and the Bank's OP 4.12 during implementation.

This LRPF was developed based on the SA conducted during the project preparation to inform the design of the project, which assessed four pre-identified irrigation schemes in the four project target regions. These four irrigation schemes were selected because they demonstrate some characteristics typical of irrigation schemes in the four target regions. The project may rehabilitate any of these four schemes if its feasibility is ascertained under the FS to be conducted during the implementation based on a more detailed assessment of associated economic, technical, environment and social issues. A full SA will be conducted as part of FS during implementation in line with the OP 4.10, Indigenous Peoples, if the ethnic screening to be conducted during implementation under FS finds that ethnic minorities are present in or have collective attachment to the area of influence of the irrigation schemes that will be supported under the project.

The project falls under Environment Category B of the Bank. Physical relocation of households or large-scale acquisition of land and/or assets is unlikely to occur. The project affected people (PAP) are mostly direct project beneficiaries, although some nonfarmers and those farmers who do not receive direct project benefits may also be affected under the rehabilitation of primary and secondary canals as well as under land improvement pilots.

B. The Project

Project Development Objective

The Project Development Objective of ADSP is to increase crop yields and cropping intensity in the selected existing irrigation systems in Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions. This will be achieved through improved irrigation and drainage management and complementary farm advisory and technical services.

Project Components

The proposed project has four components: (i) Irrigation and Drainage Management; (ii) Farm Advisory and Technical Services; (iii) Project Coordination and Management; and (iv) Contingent Emergency Response. Summary descriptions of each component are as follows.

Component 1: Irrigation and Drainage Management

The component aims to enhance more flexible and reliable provision of irrigation and drainage services in the project areas to enable an increase in irrigation area coverage and resulting farm productivity. It would address irrigation and drainage management through: (1) focusing on institutional change required for the provision of farmer-responsive irrigation services; and (2) financing the improvement and rehabilitation of irrigation and drainage infrastructure covering about 35,000 ha within eight selected schemes in the selected regions.

The project's support to institutional improvements includes: development of irrigation and drainage management institutions, their human resources, data collection and management information systems and infrastructure; strengthening of the existing ACCs as decision making platform for irrigation management for farmers and service delivery agencies; and establishment and strengthening of WUGs. Competent agencies with adequate technical skills would be hired to help farmers establish and strengthen WUGs. National or international NGOs with a proven experience in participatory approach and community engagement will be hired to monitor project implementation and carry out participatory Monitoring and Evaluation (M&E).

The project will also support development of on-farm water management infrastructure and pilot land improvements in 2-3 selected systems. These land improvement pilots will involve the adjustment of existing, irregularly shaped plots into equal-sized, regularly-shaped ones, combined with the land levelling and realignment, and construction of on-farm irrigation and drainage canals and access roads. A competent third-party organization (e.g. an NGO) will be engaged to ensure that all local population including but not limited to direct beneficiaries of the project will actively participate in project implementation and that negative impacts that may fall on them would be minimized or otherwise mitigated. Participatory M&E will also be carried out so local population will be given avenues to voice grievances or inquiries directly to the project, under the facilitation of the third party service provider and the presence of local government officials. The third party service provider will work closely with the ID, SLRD and the PIC of the township for all activities related to the land improvement pilots.

Component 2: Farm Advisory and Technical Services

This component facilitates agricultural technology development and adoption activities in the targeted irrigation schemes, which would increase farm productivity and reduce production costs. It will support quality seed production (mainly non-hybrid rice, beans and pulses, and oil crops that are not produced by private sector) by developing farmer-based seed multiplication infrastructure and facilities and strengthen seed supply chains, promote improved fertilizer applications which will be adopted to the variability in soil types in targeted irrigation schemes, help the MOAI and farmers improve the capacity for plant protection through the adoption of IPM techniques. All these agricultural technology development activities and knowledge of improved farming practices will be disseminated to target farmers through improved farm advisory services which are based on farmers' needs and technical constraints, farming systems and market opportunities. The project will also support rehabilitation or construction of village extension education centers, establish field demonstration sites of improved technologies, expand training programs and provide operational and mobility support to MOAI extension staff and subject matter specialists.

In response to prevailing good preconditions for profitable farm mechanization in targeted irrigation schemes, the project provide supports farm mechanization through training of

MOAI mechanics, testing and demonstration of new climate-smart technologies suitable for smallholder farming systems, and providing mechanization services in the target irrigation systems. The project will also upgrade the capacity of the Meikhtila Mechanization Training Center in Mandalay region through introduction of the modern training methodologies, materials, and upgrade repair workshops, in order to provide more and better vocational training to the staff of MOAI Mechanization Service Stations, farmers, and private sector. It will also support four MOAI Mechanization Service Stations in the project areas, through procurement of machine packages and mobile repair workshops selected in collaboration with the private sectors in order to promote climate-smart mechanization technologies to farmers, provide cost-effective services suitable for smallholder farming systems in Dry Zone, and carry out farmer training.

Component 3: Project Coordination and Management

The PMU will be established. It will include technical and fiduciary MOAI staff who will be seconded to PMU at a full-time basis from the relevant implementing departments. The implementation of individual project components and sub-components is being carried out through departmental Project Implementation Units. The PMU will be responsible for the overall coordination of the project implementation and fiduciary arrangements, including procurement, financial management, management of safeguards issues, internal and external auditing and the establishment of the project M&E system. Outside consultants will be recruited in areas which require strengthening of MOAI implementation capacity. The component would finance establishment of the M&E and Management Information Systems and associated Technical Advisory services including participatory M&E; communication and consultation program; salaries of the externally recruited staff, related office equipment and mobility.

Component 4: Contingent Emergency Response

The objective of this zero amount-budgeted component is to allow a rapid reallocation of loan proceeds from other components to provide preparedness and rapid response support to disaster, emergency and/or catastrophic events as needed.

Institutional Arrangements

The MOAI will be the implementing agency of the ADSP. A Project Steering Committee (PSC) for project governance and oversight will be established at the central level. At township level a coordination function will be assigned to the ACC.

A PMU will be established within MOAI which would be responsible for day-to-day management and coordination of the project (including safeguards). This PMU will be headed by a full time PMU Manager. The Safeguard Coordinator will be appointed at the PMU who will directly report to the PMU manager. The actual implementation of project activities will be carried out by PIUs in the MOAI departments with the necessary technical expertise and by third party implementation partners. The ID will be responsible for the implementation of Component 1 with technical support from the SLRD and the AMD. Implementation of the Component 2 will be the responsibility of the DOA and its divisions, with technical support from the DAR. AMD will be responsible for the implementation of farm mechanization activities under this component.

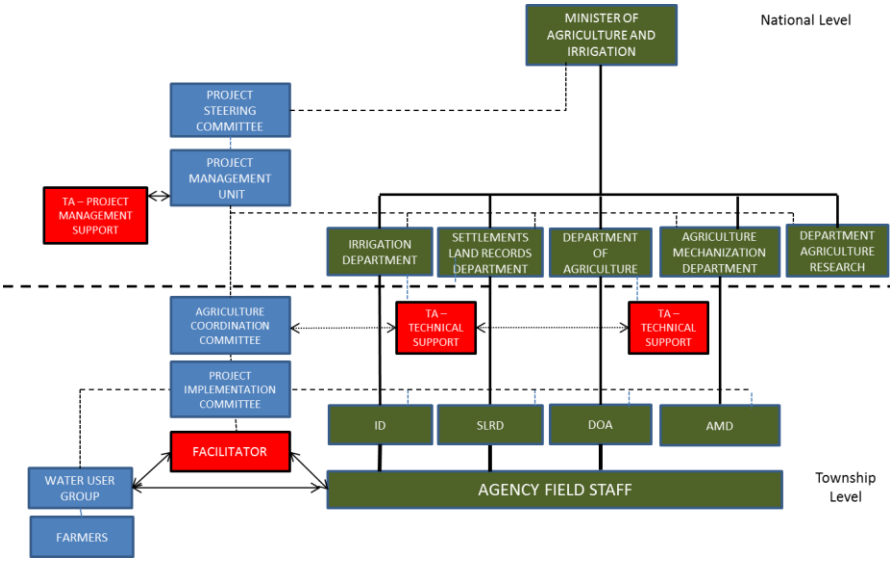
At township level, the PICs will be responsible for the implementation of the agreed activities. They work under the guidance of ACCs. PICs will be made up by representatives of all implementing departments of MOAI and chaired by ID. PIC will include a Safeguard Focal

Point who will be responsible for safeguard related issues at the township level, in close coordination with the third party service provider. The project will establish and support institutional strengthening of WUGs who will become the common platform for the planning, execution and monitoring of irrigation and extension activities at the community level as well as management of social risks.

Safeguard Coordinator in the PMU will be in charge of overall safeguard compliance including the implementation of this LRPF. PMU will be responsible for the overall coordination of the project implementation and fiduciary arrangements, including procurement, financial management, safeguards, internal and external auditing and the establishment of the project M&E system.

A third party service provider will be hired under the project who will facilitate beneficiary farmers during decision making processes, in partnership with technical specialists of ID, to help them develop equitable and transparent mechanisms for the management of farmer owned systems. The third party service provider will also support the safeguard coordinator by monitoring safeguard implementation and compliance at the village level, including collecting grievances affected people may have and assisting farmers develop proper minutes of meetings. It is to note that their task will focus on the facilitation between beneficiary farmers as well as between them and concerned government agencies, and the provision of social inputs to technical design processes to ensure social impacts are fully taken into account in the technical design processes.

Figure 1: Project Institutional Set-Up for Implementation



C. Existing Legal and Institutional Frameworks

Land Laws

Farmland Law was adopted in March 2012. It affirms that the state is the ultimate owner of all land. It also provides a private use right over farmland that includes the right to sell, exchange, inherit, donate, lease and 'pawn' the land. The Farmland Law also covers conditions under which farmers can retain use-rights, the state's power to rescind such rights, the process

for settling land-related disputes, and basic requirements for compensation in the case the state acquires the land for public purposes.

The Vacant, Fallow and Virgin Lands Management Law was also enacted in 2012. It governs the allocation and use of virgin land and vacant or fallow land. This law provides establishment of the Central Committee for the Management of Vacant, Fallow and Virgin Lands (CCVFV), which is responsible for granting use rights for such lands.

The 1894 Land Acquisition Act remains the primary law governing compulsory land acquisition. The Act permits the government to acquire land for public purposes and requires it to compensate land users. Its provisions include the procedures for required notice for acquisition of land and objections or appeals, as well as land valuation methods.

Institutions

The MOAI is the primary body responsible for farmland. The ministry has departments in charge of land-use planning, water resources, irrigation, mechanization, settlement and land records, among other matters. The Farmland Management Body (FMB) and the CCVFV, established by the above mentioned two laws enacted in 2012 respectively, are responsible for approving requests for land use rights governed by the respective law.

D. The Bank OP 4.12

The Bank OP 4.12 aims to achieve the following objectives:

(a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.

(b) Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.

(c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

The policy covers direct economic and social impacts that both result from Bank-assisted investment projects and are caused by the involuntary taking of land resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location. It applies to all project activities that result in involuntary resettlement, regardless of the source of financing.

The policy requires the borrower to prepare a resettlement action plan or a resettlement policy framework that includes measures to ensure that affected people are informed about their options and rights; consulted on, offered choices among, and provided with technically and economically feasible resettlement alternatives; and provided prompt and effective compensation at full replacement cost for losses of assets and international valuation standards and principles.

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. Under this project, the provisions of this LRPF and the OP 4.12 will take precedence if gaps are found to exist. The LAAP will describe specific gaps relevant to the issues and impacts that are likely to occur and provide specific steps to bridge the gaps to ensure a full compliance with the OP 4.12.

E. Scope of Potential Impacts and Risks

The predominant majority of Project Affected People (PAP) will be smallholders. The impact of land and asset acquisition in the project would be generally limited to those who participate in, and directly benefit from, the rehabilitation of irrigation and drainage infrastructure as well as land improvement pilots. The exception is that the rehabilitation of primary and secondary canals may impact owners of private assets who may not be farmers and thus will not benefit from the project, although it is unlikely that such cases would occur under the project in a large number. The SA conducted during the project preparation found that the majority of them are ethnic Barma although some ethnically non Barma farmers may also be present in project areas and participate in the project. Special attention will be paid to such ethnic minority populations and female-headed smallholder families.

It is unlikely that the project will result in a large scale acquisition of private land. The project will rehabilitate existing irrigation and drainage infrastructure covering about 35,000ha along the existing alignments. Physical relocation of households is not anticipated. Village extension centers will be built on the state land. Works to improve the safety of dams would be limited to repair works on dam bodies and is not anticipated that would cause significant loss of or access to land, or result in income loss. Most civil works will be undertaken in the crop idle seasons so as to avoid impact of temporary land occupation as much as possible. The village extension centers (VECs) would be built on the public (i.e. state owned) land.

Land acquisition and asset loss are grouped into two broad types according to the management responsibility of the structures (Government or communities), scale of impacts, ability of affected people to determine the scope of investments and their impact, and whether or not affected people would directly and tangibly benefit from the investments. The first category includes the impacts which arise from the improvements of main system canals (primary and secondary). The affected people will include but will not be limited to direct beneficiaries of the project or members of WUGs; some nonfarmers may also be negatively affected. The second category includes those impacts which occur in relation to land improvement pilots. For this category of impacts, most affected people are potentially direct project beneficiaries and members of the WUG although some farmers may choose to opt out of the pilot with compensation at replacement cost. Only those who have land or assets within the boundaries of the pilot land improvement scheme will be affected.

Main Systems (Primary and Secondary Canal)

The project will rehabilitate existing primary and secondary canals mostly along the existing alignment. The works to be carried out will include rehabilitation of existing main conveyance, flow control and sediment management systems and de-siltation of irrigation and drainage systems, strengthening of embankments (against erosion and slope instabilities) with incidental provision of protective lining and repairs of structures and gates. In some areas drainage canals will be cleaned up and improved to prevent and reduce water logging problems and to prevent sediment entering the irrigation canals. All the works will be done in and limited

to the existing canal system and no new canals will be developed. Minor realignments of existing canals may be necessary however, works to be carried out will be of limited scale and will not require many external laborers. Potential impacts would include minor losses of private land and the limited loss of pre-existing private assets including trees, structures and fences along the canals as a result of the minor realignment of canals and the construction of access roads. In addition to those farmers who will directly benefit from the project through the improved access to irrigation water, nonfarmers may lose private assets along the canal embankments and where access roads will be built. Also, the rehabilitation of primary canals may also affect farmers who do not receive water from the secondary canals to be rehabilitated by the project and whose access to irrigation water may thus not be significantly improved as a result of the project. Those who will be affected by the rehabilitation of primary and secondary canals will receive compensation at replacement cost without depreciation for lost land and/or assets – either in cash or in kind. The implementing agency (MOAI) shall cover the cost.

Land Improvements

The land improvement pilot will support the readjustment and reconfiguration of farmlands owned by farmers, the construction of access roads and rehabilitation of watercourses and drainage. Two to three pilot sites would be identified during the implementation among those where the project will improve access to irrigation water. No civil works will be required outside the boundaries of the pilot sites, and works will include alignment of canals, drains and farm-roads, and construction of structures such as small culverts, farm bridges and in some cases water division boxes. No one outside the designated sites will likely be affected by a land improvement pilot, except that some lands outside the pilot sites may temporarily be occupied to store construction machinery and materials. No physical relocation of households is anticipated.

According to the current procedure, participating farmers are expected to negotiate with each other so those who lose more land would be compensated through cash or in-kind by fellow farmers. Also, all farmers within designated land improvement sites are required to reach an agreement on the particular reconfiguration of farmlands, before the implementation of land improvement can commence. Also, no land improvement is allowed if any farmer would lose more than 10 percent of his/ her irrigated land as a result of land improvement. Such practice is found to cause the following technical problems (see also the below Table):

a. The requirement that no farmer should lose more than 10 percent of irrigated land often causes significant technical challenges or makes land improvement unviable depending on topographical or other conditions.

b. Land improvement may be carried out even where some farmers actually lose more than 10 percent of irrigated land due to technical errors.

c. The requirement that all farmers have to agree to the terms of compensation and the reconfiguration of improved land plots prior to the commencement of the land improvement activities is found to cause a significant delay.

d. The negotiation between farmers to minimize and mitigate impacts may not always result in fair and transparent results due to local socioeconomic dynamics.

Steps of the land improvement projects in Myanmar

Step	Current procedures	Implementing agency	Weaknesses identified	Proposed procedure
1	Identification of the potential LI site	SLRD/ID		No change is required
2	Expression of interest to a farm community in LI project and preliminary agreement with land users	SLRD	The LI practices, community participation and public displays are not established. They vary from place to place	Establish clear guidelines for all processes and share them with village communities approached for LI project before the start of the project
3	Checking of the existing land user right (LUR) certificates that are based on the cadastral Queen Maps. All land users shall have LUR certificates before the start of the project. The land improvement projects are not implemented in the areas with existing land conflicts.	SLRD	LUR may be accurate	LUR be verified or reissued based on steps 4 below
4	Preparation of the new cadastral maps with re-shaped/realigned land parcel layouts, infrastructure (water canals and farm access roads)	SLRD	Old Queen Maps are not reliable to produce new maps and issue new LUR certificates	Use the modern equipment and software to produce new Queen maps and LUR certificates, of which the accuracy will be verified by land users.
5	Open meeting(s) with all land users participating in the scheme (as long as it takes) to verify a new layout of their land parcel(s), loss of land and how they should be addressed (land donations or compensation). Land donations are allowed only if scale of loss is less than 10% of the productive land holding. A written agreement of all land users is required to move to the next step	SLRD	- No procedures for compensation if land > 10% has to be acquired - Unclear procedure for public display and consent - Absence of the impartial dispute resolution mechanism	- Develop the procedures for compensation of land above the agreed threshold - Publicly display all information - Develop a clear dispute resolution mechanism including the timeline before which farmers consent should be established
6	Documentation of project impact, compensation strategy, grievance redress and monitoring mechanism, and other relevant information, their disclosure, and stakeholder consultations	SLRD (?)	- No documentation is required, disclosed or consulted with stakeholders	- A resettlement plan will be developed, disclosed and consulted with stakeholders in line with international good practice
7	Preparation and issuance of new LUR certificates, new cadastral maps, and new land revenue records	SLRD	- Grievance redress/ dispute resolution mechanism is not required to provide the avenue for disputes over LUC certification	- Grievance redress/ dispute resolution mechanism will be established with the participation of WUG prior to LUC issuance. -No other change is required except to build on step 4
8	Start of the civil works	ID/AMD	- It is not clearly required that compensation has to be paid before civil works commence - It is not clearly required that grievance redress/ monitoring mechanisms should be established before compensation payment commence	- Compensation, if it has to be provided, has to be paid before civil works start -Grievance redress/ monitoring mechanism will be established before compensation payment commences in line with the resettlement plan.

In order to address such challenges, the project will allow the land improvement pilot to be implemented even where some farmers within the boundaries of land improvement sites do not agree with the designed reconfiguration of farmland, provided that impacts are compensated at a replacement value and in line with the policies and procedures provided in this LRPF. In other words, farmers are allowed to "opt out" of the pilot and "sell" the land to WUGs at the value which is at least equal to the replacement value of the affected land. Also, the project will allow a land improvement pilot to proceed even where farmers lose more than 10 percent (but not more than 15 percent) of irrigated farmland, provided that (i) the technical features of the pilot are such that income loss will likely be fully restored by the increased productivity within two cropping seasons, and that (ii) the affected farmers would receive income support in the event that their income is not recovered in two cropping seasons. The participatory SA facilitated by the third party service provider will help WUGs establish in a participatory manner the baseline income level, and project monitoring mechanisms including the participatory M&E will monitor the state of income restoration. Farmers will also be assisted to form WUGs and carry out participatory processes under the support of the third party service provider and minimize each other's impact.

The project will develop detailed steps and technical parameters for the land improvement pilots during implementation, based on a more detailed analysis of the strengths

and weaknesses of the existing procedures. More detailed steps to minimize and mitigate the impact of land improvement pilots will be developed in line with such detailed steps and technical parameters, as well as this LAAP, and will be described in the Project Implementation Manual.

Other activities to be carried out under the project will unlikely cause a loss of land or asset. However, they involve risks that, if not properly implemented, may cause adverse impact on local population. The sections that follow will describe such risks, for each type of civil works to be supported under the project, and how such risks will be managed and avoided under the project.

Farmer owned and managed systems (tertiary canals and drainages, watercourses)

The project would support the WUGs in the improvement of the farmer managed and owned parts of the irrigation and drainage systems such as repair or provision of water courses that serve several farms and small canals and structures like culverts and boxes. It is to note that farmers themselves will plan and design such civil works with the technical assistance of the irrigation department. The third party service provider will facilitate and coordinate between potential beneficiary farmers to assist them in the process.

No major acquisition or physical relocation of households is anticipated to be necessary, however, minor readjustments, on-field extension and changes of land use may occur in order to address irrigation problem identified by WUGs within their respective watercourse units. The type of small works to improve on-farm irrigation at watercourse level will depend on the problems identified by the members of the WUGs, but they will typically include rehabilitation of culverts, canals and ditches, the construction of pathways, cleaning up of watercourses and the digging of new canals and ditches within the farm plots that belong to farmers themselves. Almost all works will be carried out by the farmers but the ID may provide support. Such civil works will result in minor modifications and rationalizations of plot layouts which will not affect the land ownership or plot boundaries, as it will only involve the reconfigurations of existing farm plots. A very small size of farmland that beneficiary farmers currently use for farming may well be transformed to canals, ditches and pathways, should farmers choose to execute such small works. Also, some personal assets such as trees and structures may need to be removed to accommodate such small works if they elect that such works would be done. Farmers will continue to own and manage canals, ditches and pathways built within the reconfigured plots, as part of their own farm plots.

The size of land that farmers can use for farming may be slightly reduced depending on how plots are reconfigured, and income may be affected temporarily, however, such a temporary income loss should be covered by the improved access to irrigation water managed by beneficiary farmers themselves. It is expected that works that will be carried out for farmer managed systems will be completed and production will be more than recovered after one cropping season or two. Farmers will be facilitated by the third party service provider to address and mitigate temporary income losses. Also, the project will not be implemented if farmers do not reach a agreement on how they will mitigate potential negative impacts that may fall on farmers. The third party service provider will visit project sites at least on a monthly basis since the planning till 2 months after the completion of civil works and monitor how the consensus is established and implemented, and fill the farmer action plan to record the types and scope of impacts as well as the community agreement on how to mitigate them, using the template

attached in Annex 3 of this LRPF. In particular, the third party service provider will verify the following and record them: (i) all affected people directly benefit from the improvement in project interventions in farmer owned and managed systems; (ii) all affected people are aware that they have the right to opt out and refuse to participate in the project assisted improvement in farmer owned and managed systems; (iii) no one is forced to agree to the terms of reconfiguration of farm plots; and (iv) technical features of the project activities are such that negative impact will be fully recovered from the increased income as a result of the project in 2 cropping season.

The minutes of the meeting where the agreement takes place should be attached to the plan, and ID will file them for review by the Bank. Participatory M&E will be carried out with affected people through which affected farmers can raise complaints or grievances. In the event that the loss in production and the resultant loss in income are not recovered within two cropping season, the project will provide temporary income support until recovered including the first two cropping years.

Village extension education centers, and seed storage and value added processing facilities

This project would also rehabilitate existing village extension education centers within the existing locations or newly establish such centers by rehabilitating or retrofitting existing government buildings on the state land. Very limited or no land acquisition or access loss is anticipated to occur. Small facilities for seed storage and value added processing activities will also be built on community or farmers land. Very limited land will be necessary to house such facilities, which will be built only if direct beneficiary groups (WUGs or women's groups, as relevant) elect such facilities to be built in their villages. Such beneficiary groups will be allowed to donate land to house such facilities, following the principles, procedures and processes provided in this LRPF.

Works to improve the safety of dams

Under the project, some civil works will also be carried out to improve the safety and operation of dams from which the project irrigation schemes will receive water, based on the recommendations of the dam safety study conducted during the preparation which assessed the four dams which provide water to the irrigation schemes assessed under the SA. Feasibility studies that will be carried out during implementation will identify the types and scale of civil works that the project will finance, but they will include (i) embankment repairs including repair of gullies and erosion holes, repair of toe drainage/repair, modification of drainage slope, drainage/install relief wells, improvement in embankment surface protection, covering of crest with granular fill, installation of piezometers and surface measuring beacons and seepage measuring weirs; and (ii) spillway repairs, including the improvement of the capacity of weirs and line chutes, repairs of the spillway chutes, side walls and baffle blocks, sediment management works and repairs of access road to dam sites. Management of reservoirs will unlikely be altered. Land will also unlikely be significantly affected, and access to natural resources should also not be an issue. There is a possibility that the rehabilitation of access roads may require loss of private assets or land, since the exact irrigation schemes to be included in the project scope are not determined yet. If such an event occurs, compensation will be provided at replacement costs for loss of land or assets.

Many of the irrigation schemes in the project target townships, which are candidate schemes to be included potentially in the project, were built some 10 – 20 years ago. The social

assessment (SA) carried out during project preparation found that, in some cases, people were displaced without adequate compensation when dams – and to some extent primary canals – were originally built. The SA conducted during preparation was not a comprehensive or complete assessment, since it included only the four irrigation schemes that were pre-identified for potential funding under the project. It will be followed-up by a more comprehensive and in depth SA in selected schemes, during implementation.

The land issues related to existing dams and reservoirs are considered beyond the scope of and will not be addressed by the project. These complex legacy issues are being addressed at the country level through the auspices of the National Land Resource Management Central Committee and the Parliamentary Land Loss Inquiry Commission. The Bank, under the Country Partnership Framework, may provide separate support on land, including country wide land related studies or assessments.

However, under the project, the existence of land legacy issues related to candidate irrigation schemes considered to be included in the project will be assessed as part of the more comprehensive SA to be carried out during implementation. The SA will, among other issues: identify who were affected when the candidate irrigation schemes were originally built including their ethnic identities; assess what compensation and assistance they received to restore livelihood and what are their current levels of livelihood; and determine if there are any unresolved land disputes which would hinder the timely implementation of project activities. The third party service provider, who will be hired under the Project, will facilitate this assessment. Through project implementation support, the Bank task team will provide guidance to the Project Safeguard Coordinator on the terms of reference for the SA and the review of the SA report. The findings of the SA will be used as an input for site selection.

Candidate schemes will have no or relatively minor land legacy issues which can be effectively addressed under the scope of the project would be eligible to participate in the project. In such cases, the ESMF, the Land Acquisition Action Plan (LAAP), and the Indigenous Peoples Plan (IPP) if relevant, which will be developed during implementation, will include measures to restore the livelihood of affected people and close other gaps with the objective of the OP 4.01, OP 4.10 and the OP 4.12 as identified by SA.

F. Land Acquisition and Resettlement Policy Framework

Objectives and Principles

This LRPF aims to ensure that the project will be implemented in line with the Bank's OP 4.12, Involuntary Resettlement. Accordingly, the current LRPF encompasses key principles as follows:

(a) Acquisition of land and other assets will be avoided where feasible or minimized to the extent possible. Physical relocation of households is not allowed.

(b) All people who are found to be present in project affected areas on the cut-off-date and affected by the rehabilitation of the main systems (i.e. primary and secondary irrigation and drainage structures) as well as land improvement pilots are entitled for compensation at replacement value and in line with international valuation standards and principles for loss of land or assets.

(c) Voluntary donations and in-kind assistance by fellow farmers are allowed under the project provided that: (i) affected people are the direct beneficiaries; (ii) know that they have the right to refuse to donate land or assets, or accept in-kind assistance offered by fellow farmers; (iii) agree to donate land or assets without coercion or under duress; (iv) will not lose more than 10 percent of their total irrigated land or livelihood; and that (v) technical features of the project activities are such that negative impact will be fully recovered from the increased income as a result of the project in 2 cropping season or compensated for any loss of income.

(d) The third party service provider will develop the capacity of, and facilitate the discussion among, WUG members and help them collectively minimize and mitigate impacts through voluntary donations in a transparent manner and without force or under duress. The third party service provider will document the process through which WUG members build agreement on voluntary donation processes.

(e) The third party service provider will ensure that all PAP including those who will not directly benefit from the project will be meaningfully consulted and given opportunities to participate in planning and implementing rehabilitation measures. Efforts will be made to ensure that adverse impacts are avoided or otherwise will be mitigated.

(f) The project will strengthen WUGs to establish inclusive and transparent internal decision mechanisms, based on the guidelines provided in the Annex 3.4 of this LRPF. WUGs will be assisted so their members provide inputs to the design of civil works. The third party service providers will support WUGs so as to ensure that affected farmers and local population have access to project information.

(g) FS will be carried out during implementation for respective schemes and the project irrigation schemes will be selected based on the result. A Participatory SA[15] will be conducted as part of FS for each project scheme, which will establish social baseline including the population living in the command areas. A Participatory SA will also be carried out for land improvement pilots. The participatory SA will include an assessment of the nature, scale and scope of displacement that occurred when the project irrigation schemes were originally built, and of the current state of the livelihood of the previously displaced people.

(h) LAAP will be developed during implementation for the rehabilitation of primary and secondary canals and land improvement pilots in line with this LRPF and the Bank's OP 4.12, which should include all elements provided below.

(i) Compensation should be fully paid in cash or in kind and voluntary donation processes should be completed at least one month prior to the start of the civil work. The timing of LAAP preparation, submission and approval should be linked to plans of civil work implementation to make sure the payments will be completed in time; and

(j) PAP 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-project levels.

[15] The participatory SA will serve as the Social Assessment under OP 4.10 where ethnic minorities are present.

The implementation of resettlement activities is linked to the implementation of the investment activities of the project to ensure that a temporary restriction of access to farmland or any other sources of income does not occur before mitigation measures are in place.

Protocol of Voluntary donation

The following protocol will govern voluntary donations of private assets.

- Voluntary donations are an act of informed consent and affected people are not forced to donate land or other assets with coercion or under duress, or misled to believe that they are obliged to do so, without regard to the ethnic background or legal status of their land occupancy.
- Voluntary donations are allowed only if an investment that leads to asset loss can technically be implemented in another location than where it is planned – land acquisition associated with an investment that is location-specific by nature cannot be considered as voluntary; rather, it is an act of eminent domain. In such cases, a LAAP will be developed.
- Voluntary donations are allowed only for very minor impacts that meet the following criteria:
  - The households contributing land or other assets are direct beneficiaries of the subproject;
  - The total size of productive land owned by the affected household is more than $300m^2$;
  - The impact is less than 5 percent of the total productive assets owned by said household; and
  - No one has to be physically relocated.
- The affected people are fully informed that they have the right to refuse to donate land or other private assets, and instead receive compensation at replacement cost, and that a grievance handling mechanism is available to them through which they can express their unwillingness to donate. People are encouraged to use the grievance handling mechanism if they have questions or inquiries, either in writing or verbally. Adequate measures will be in place to protect complainants.
- The third party service provider will confirm through a face-to-face meeting that the affected people are indeed aware that they are entitled to compensation and knowingly and freely agree to donate land or other assets without compensation at replacement costs. The minutes of this meeting, including the confirmation that all conditions for voluntary donations in this LRPF are met, will be attached to the signed Voluntary Donation of Land and Assets Agreement Form.
- Once the informed consent of the affected people has been confirmed in writing, the third party service provider will develop the Voluntary Donation of Land and Assets

Agreement Form.[16] Both the husband and the wife of the affected household will sign two copies of the form in the presence of the third party service provider and the PIC.

- The PMU, under the support of the E&S specialists, will review and approve the signed Voluntary Donation of Land and Assets Agreement Form, and keeps one original signed form for review by the Bank. The affected household keeps another original signed form.
- Implementation of investments involving voluntary donations starts only once the PMU has approved the signed Voluntary Donation of Land and Assets Agreement Form.

The informed agreement of affected people will be verified as part of the participatory M&E.

Eligibility

PAP entitled for rehabilitation or compensation under the project are as follows:

1) All families losing access to land, permanently or temporarily, over which they have legal use rights or traditional/customary use rights with or without legal status;
2) Owners of affected buildings, crops, plants, or other objects attached to the land; and
3) Members of the households losing business and income.

A cut-of date will be established for each investment activity that may involve land and asset acquisition in order to determine eligible PAPs. The cut-off date is the date when the social baseline is established as part of the participatory SA to be conducted under FS. Persons who start using the land or build structures in the proposed area after the cut-off date will not be eligible for compensation under the project.

Implementation/ Land Acquisition Action Plan Procedures

Primary and Secondary Canals

A participatory SA[17] will be carried out as part of the FS for each scheme. The participatory SA will start with information dissemination. The PMU and PIC with the support of the third party service provider will provide essential information about the project including land acquisition processes, entitlements, and grievances mechanisms. Special attention will be paid to ensure that information is fully shared with women and vulnerable groups. The participatory SA will also collect and analyze information on the population in the command areas, including their livelihoods. The nature, scale and scope of displacement that occurred when the project irrigation schemes were originally constructed, and the current state of the livelihood of the previously displace people, will also be assessed. Social baseline (which will serve as the census defined in OP 4.12) will be established and the people potentially affected by the rehabilitation to be carried out for the concerned scheme will be identified based on the

[16] The Project Implementation Manual contains a format for a voluntary donation form.

[17] This SA will serve as a Social Assessment (SA) under OP 4.10 if ethnic minorities are found to be present in the catchment area of the irrigation scheme under study.

record of SLRD, field assessment and interview with local people. Free, prior and informed consultations with local affected people will also be conducted and vulnerable people will be identified under the participatory SA. The third party service provider will ensure that all local people potentially affected by the rehabilitation of respective primary and secondary canals, including nonfarmers and those farmers who do not take water from the respective primary or secondary canals to be rehabilitated, are included in the participatory SA.

Scope of Impact and affected people will be identified. Detailed engineering designs which will be carried out by the Design Branch of the ID will identify the scope of impact and potential PAP, and, under the guidance of the third party service provider, consult with PAP for proposed designs to seek for inputs to verify that no technically viable alternative option exists that would further reduce social impacts and to obtain their preliminary agreements in a written form. The LUC of all people who will likely be affected will be checked and assessed based on the on-site survey to verify the accuracy, or they will be revised based on the result of the on-site measurement with the participation of land owners themselves.

Draft LAAP will be developed. The same design team of the ID with the assistance of the third party service provider will prepare a draft LAAP. The LAAP will include, at minimum:

- The description of the project objective and activities
- Potential impacts, and mechanisms to minimize negative impact
- Identification of vulnerable households
- Eligibility criteria
- Summary of participatory SA, characteristics of affected people including vulnerable people among them and issues related to land tenure
- Valuation and compensation for losses at replacement cost
- Programs for improvement or restoration of livelihoods and standards of living
- Institutional arrangement
- Consultation and participation arrangements
- Implementation schedule
- Grievance procedures, and monitoring and evaluation
- Cost and budget

The draft LAAP will be consulted with the affected people, under the support of the third party service provider, in locations convenient to local people and in a language that is understandable to them. The draft LAAP will also be posted in local language at suitable locations of township and villages for public disclosure. The ID under the assistance of the third party service provider will incorporate the comments received at consultation meetings and submit the revised draft LAAP to the Safeguard Coordinator who will, upon confirmation that it addresses all issues required for LAAP, seek for PMU Director's approval. PMU Director will submit it to the Bank for no-objection.

ID will implement LAAP under the assistance of the third party service provider, following the clearance of LAAP by the Bank. Where grievances or inquiries are posted from affected people, ID representing the PIC as its chair and under the assistance of the third party service provider will respond as per the grievance mechanisms provided in this LRPF. Implementation will be closely monitored and documented by the third party service provider.

Monitoring and evaluation. Upon the completion of the LAAP implementation, the ID, under the assistance of the third party service provider, will conduct a LAAP implementation assessment to confirm that all affected people have received entitlements, and that outstanding grievances have been duly addressed as per the grievance mechanisms of this LRPF. As part of the assessment, participatory M&E will be carried out under the facilitation of the third party service provider (for details of participatory M&E, see the section below on grievance redress mechanism) Upon the confirmation, the third party service provider will advise ID to initiate civil works

Land Improvement Pilots

As was mentioned above, existing approaches to land improvement will be assessed and their strengths and gaps be identified, and an alternative approach that will be used under the project will be developed, during implementation. Detailed measures to minimize impacts and mitigate residual impacts, and their implementation procedures, will be developed during implementation, in line with the technical approach that will be developed for use under the project, but broadly, the following will summarize the processes and procedures to be taken to minimize and mitigate negative impacts:

1 Identification of Land Improvement Pilots and Initial Community Consultations

a) The ID and SLRD will identify potential locations which, from the technical point of view, are suitable for land improvement pilots. The third party service provider will help the ID and the SLRD carry out free, prior and informed consultations with all farmers who use the pilot land improvement sites identified. They include those owner farmers and absentee owners who have a LUC on the land inside the pilot sites as well as shareholders, tenants and agricultural laborers who gain income from farming or working on parts of the pilot sites. Information about potential benefits and impacts, implementation procedures and provisions of LRPF including grievance mechanisms will be fully explained in a language understandable to participants. In particular, overall implementation procedure, the principles of and conditions under which voluntary donations are allowed, entitlements for sharecroppers, tenants and agricultural laborers, and grievance mechanisms, will be clearly explained. It will also be clearly explained that those owner farmers who are not content with or do not wish to participate in the designed reconfiguration of farmland are entitled to opt out with compensation at replacement value.

b) Should the broad community support of the people affected by land improvement pilots is ascertained, preparation of the land improvement pilot will proceed. If the broad community support is not ascertained, the project will identify alternative sites and no further action will be taken for the original site.

2 Participatory SA

c) Once the broad community support is established, all LUC holders at the respective pilot sites will, under the support of the third party service provider, form a WUG and start developing organizational and institutional capacity for land improvement planning and conflict resolutions. It is to note that, while the majority of rights holders are expected to join WUGs and participate in land improvement pilots, given the considerable potential benefits that may result, some may choose not to participate due to a variety of reasons

including an unwillingness to accept the newly designed plot plans. Such farmers are allowed to receive compensation for loss of land at replacement costs and opt out.

d) The third party service provider will prepare the local socioeconomic and demographic profile including the social baseline, current land holding and production/ productivity levels, using a participatory approach involving both rights holders and land users. LUC of all rights holders including those who elect to opt out will be checked and assessed based on the on-site survey to verify the accuracy, or they will be revised based on the result of the on-site measurement with the participation of rights holders themselves. Also, those tenants, sharecroppers and agricultural laborers who gain income from using parts of the pilot sites will be identified. They form the Project Affected People under the project. Vulnerable farmers/ land users (including ethnic minorities, if present) will be identified under the participatory SA and measures to ensure the full restoration of their income streams will be developed. The level of income that owner farmers/ absentee owners as well as land users gain from parts of the pilot sites will also be assessed on the basis of which compensation for income loss will be calculated.

3 Consultation of Detailed Designs and Preparation of LAAP

e) Detailed engineering designs for land improvement pilots will be developed by design consultants in collaboration with rights holders and land users. A map showing new boundaries will be produced after the detailed engineering design is completed. Based on the final engineering design, an inventory of changes in plot sizes with two maps (one showing the current plot boundaries and the other one showing the new ones), will be produced. They will be verified by rights holders and land users of the pilot sites, including those who elect to opt out of the pilot. Participating rights holders and land users will participate in the process and help ensure that loss of land will be minimized.

f) Also, the loss of income for land users (sharecroppers, tenants and agricultural laborers) as a result of the reconfiguration of farmland which may result in a reduction of land for farming will be assessed and addressed.

g) The third party service provider will help rights holders and land users to mediate between themselves for land swaps and, if agreed upon, in-kind assistance to be provided by fellow farmers to help farmers with larger impacts restore their livelihood. It is to note that the project impact would not go beyond the boundaries of the farmlands where the land improvement pilot will be implemented, and no physical relocation of households would likely occur. The third party service provider will visit each affected farmer and confirm individually and in the absence of fellow members if they willingly and knowingly agree to donate land or assets and if appropriate accept in-kind assistance from fellow members. The third party service provider also confirms for individual affected farmers that all conditions of voluntary donations provided in the Section F (c) of this LRPF are met. The affected farmers will be clearly informed that, in the event that income is not fully restored after two cropping seasons, they are entitled for temporary income support until their income is restored.

h) The inventory and entitlement forms (Annex 3.2) will be filled, and the agreement reached will be documented in a 1-2 page note which describes how negative impacts will be minimized and mitigated, grievances will be addressed and implementation be

monitored. The third party service provider will submit forms filled and the note developed to PMU for review and clearance.

i) Those farmers who, after facilitated processes assisted by third party service provider, decide not to participate in the land improvement pilot are allowed to leave the farmland with compensation and livelihood restoration if applicable. Those farmers who opt out of the pilot are entitled for alternative farmland of the same size and productivity, or cash compensation at replacement value, and compensation at replacement values for all affected assets including trees, structures and standing crops. If affected assets are movable without damage, and if affected people wish to continue to use them, transport cost and other costs to reinstall assets at new locations will be covered.

j) The Safeguard Coordinator will compile the forms and the notes submitted by the third party service provider and develop the LAAP, based on the same format as the LAAP for primary and secondary canals. The LAAP will be consulted with local and affected people including land users and those who elect not to participate in the pilots, and their comments will be incorporated in the revised final LAAP. The copy of the draft LAAP will be posted locally at locations accessible and in a language that is understandable to local people.

4 Finalization and Approval of LAAP

k) The Safeguard Coordinator will seek approval of draft LAAP by PMU Director. If it is approved by the PMU Director, it will be submitted to the Bank for no-objection.

5 Implementation of the LAAP

l) Upon the clearance by the Bank of LAAP, ID and SLRD, under the assistance of the third party service provider, will start implementing the LAAP. Where grievances or inquiries are posted from affected people, ID and SLRD under the assistance of the third party service provider will respond quickly as per the grievance mechanisms under this LRPF. Implementation will be closely monitored and documented by the third party service provider. Throughout the process, the third party service provider will continue to support WUG members and develop their capacity through on the job training.

6 Monitoring and evaluation

m) Upon the completion of the LAAP, the ID and SLRD, under the assistance of the third party service provider, will carry out a post LAAP assessment to confirm that all affected farmers have received in-kind assistance as described in the note submitted by the potential members of WUGs. The post LAAP assessment will confirm that all impacts have been adequately and fully addressed. If the post LAAP assessment finds outstanding grievances or impacts that have not been adequately addressed, the ID and SLRD under the assistance of the third party service provider will swiftly address them. Civil works will start upon the confirmation that all outstanding issues have been resolved.

n) The third party service provider will continue to visit project sites after the completion of civil works, albeit less frequently, and inform the ID and the LSRD of the pace of income restoration, so that, in the unlikely event that income is not restored after two cropping seasons, income support will be provided to farmers.

Institutional Arrangements and Responsibilities

The overall responsibility of the implementation of this LRPF rests with the PMU under the assistance of the Safeguard Coordinator in the PMU. A competent person with a long experience in Bank safeguard policies will be hired as the Safeguard Coordinator who will ensure a full compliance of all actions taken at the central as well as township levels, and supervise the third party service provider. The safeguard capacity development plan will be shared with the Bank for review and comments. Safeguard Coordinator will also provide at the onset of the project implementation training on LRPF to other PMU staff, relevant MOAI department officers who will work on the project, and all ACC and PIC members. Refresher training will be organized at the mid-term. Refresher training will be organized at the mid-term.

At township level, the PICs will assume the overall responsibility for the implementation of this LRPF. PIC will include a Safeguard Focal Point who will be responsible for safeguard related issues at the township level, in close coordination with the third party service provider and under the supervision of the Safeguard Coordinator.

The third party service provider will play a key role to minimize and mitigate social impacts under the project. A team of consultants with sufficient experience and qualification in Bank social safeguard policies, community consultation and participation, and dispute handling mechanisms will be hired. The TOR of the third party service provider will be reviewed by the Bank. The third party service provider will provide on-going capacity development of all project staff at the township level, and monitor safeguard implementation and compliance at the village level, including collecting grievances affected people may have and assisting farmers develop proper minutes of meetings. The third party service provider will also ensure that negative impacts that may fall on local people who may not directly benefit from the project and/ or who are not the members of WUG will be fully addressed.

The WUGs will be the main project counterpart on behalf of farmers and play a key role through representing owner farmers in the project implementation, mediating between farmers for internal disputes and conflicts, and mitigating negative impacts through mutual assistance under land improvement pilots. The project will develop their capacity through providing technical assistance and by on-going support of the third party service provider.

Grievance Redress Mechanism

Complaints and grievances in relation to land and asset acquisition will be dealt with under the project grievances redress mechanism. A summary of project grievance mechanism will be developed both in English and Myanma as well as relevant ethnic languages and made available through various media including written materials and internet. They will also be made available in locations convenient to local population and explained about during public consultations and meetings with WUGs, in order to ensure that project affected people are aware of the avenue to have their grievance redressed.

Under this project, the WUGs will serve as the first tier mechanism to handle complaints and grievances. The WUGs will be formed at the initial part of project implementation for respective irrigation schemes and land improvement pilots, well before civil works to be supported under the project are designed and implemented. The grievance focal point will be appointed within each WUG who will receive, address, and keep record of the complaints and feedbacks. The grievance focal point will first review the grievances submitted. If the grievances

are found to be between farmers over farmland boundary setting, mutual assistance to mitigate impact over farmer managed systems, and other disputes between farmers, the grievance focal point will meet relevant farmers and seek to find resolutions in line with this LRPF, under the support of the third party service provider.

If grievances or disputes between farmers cannot be solved at the WUG level within 30 days of the submission of the grievances, the issue will be brought to PIC for mediation. PIC is expected to inform aggrieved persons or parties to disputes of the resolution in 30 days. If still unsatisfied, aggrieved persons or parties to disputes will elevate the matter to the PMU at the national level which will make the final decision in consultation with the Safeguard Coordinator. The Bank task team will be consulted for all grievances that are elevated to the national level. The aggrieved people will be informed of the decision within 30 days of the submission to PMU which will be the final.

If the initial review by the grievance focal point of WUG finds that the grievances concern the rehabilitation of primary or secondary canals, civil works carried out by the project hired contractors, village extension education centers or other issues that go beyond the disputes between farmers, the grievance focal point will immediately inform the third party service provider who bring the issue to the PIC for mediation. PIC is expected to inform aggrieved people or parties to disputes of the resolution in 30 days. If still unsatisfied, aggrieved people or parties to disputes will elevate the matter to PMU at the national level which will make the final decision in consultation with the Safeguard Coordinator. The Bank task team will be consulted for all grievances that are elevated to the national level. The aggrieved people will be informed of the decision within 30 days of the submission to PMU which will be the final.

Aggrieved persons or parties to disputes are also allowed to directly contact the third party service provider and raise concerns or questions. The third party service provider will also install sign posts in local areas with a clear indication of the contact information, and call for any people with grievances or questions to inform them. A consultation meeting will be held prior to the start of civil works in places and time convenient to local population including but not limited to water users and farmers. The nature of the civil works to be carried out, expected impact, entitlements and grievance mechanisms will be explained to local people. The translation of this LRPF will be made available to participants of consultations and at the local office of PIC. The third party service provider will visit project sites regularly and receive inquiries or grievances directly from local people. The third party service provider will provide WUGs necessary training and continuing capacity development throughout project implementation. Project's communication and information dissemination activities will include information about grievance redress mechanisms.

The participatory M&E will be conducted, under the facilitation of the third party service provider, whereby affected people will assess the implementation of respective project activities as well as this LRPF, report outstanding issues and air grievances or other issues people may have with the project. The meeting will be attended by township PIC members and village authorities who will assist participants in identifying resolutions for grievances that may be presented. The third party service provider will prepare minutes of the meeting that record the issues raised and how they will be addressed in the subsequent annual cycle. This record will be submitted to PMU through PIC.

Project monitoring

All PICs will have a LRPF focal point who will regularly supervise and monitor LAAP implementation. PIC focal points will report to PMU Director on LRPF related matters, and request support of the Safeguard Coordinator if needed. S/he will travel to the sites and spot check if the actions are taken and information provided in conformity with the LRPF. The participatory M&E will also be conducted as a means for local population, including both project beneficiaries and negatively affected people, to report project performance and issues they face. The project webpage will have a dedicated section where safeguard supervision monitoring reports to be prepared by PIC focal points and the results of participatory M&E will be disclosed.

Budget

Since the exact scale and scope of impact are not known till the feasibility studies are completed during project implementation, the costs of implementing this LRPF cannot be accurately estimated during project preparation. Based on the very rough estimation of likely impacts based on similar works carried out elsewhere, it is estimated that the cost will amount to about US$2.2 million, as indicated in the table below. The budget will be constantly reviewed during implementation especially in light of expected impacts, and more budgets may be provided if the scale of impacts make it necessary.

Land legacy issues directly related to candidate irrigation schemes to be considered to be included in the project will be assessed as part of the more comprehensive SA to be carried out during implementation. The initial findings of the SA will be used as an input for site selection where only candidate schemes which have no or relatively minor land legacy issues which can be effectively addressed under the scope of the project would be eligible to be participate in the project. For the participating schemes, any land legacy will be addressed through the LAAP, and the IPP, if relevant, which will be developed during implementation and include measures to restore the livelihood of affected people in line with the objectives of applicable Bank policies. The project will provide compensation for any land acquisition directly related to the project, but will not provide any compensation for past land acquisitions which are beyond the scope of the project. Measures to address land legacy issues could include providing affected people legal advice on their land tenure rights under Sub-component 1.3 or involving them in the activities supported under the Component 2 which would have positive effect on their livelihoods (e.g., extension, technology transfer, participation on value added processing pilots, etc.). These measures do not require additional incremental budget, as they are already fully budgeted under the related project components, and are therefore not budgeted in the LAAP.

Activity	**Estimated cost (USD)**
Beneficiary facilitation and engagement (inc. costs of the third party service provider,identification beneficiaries and awareness development, costs of farmer/beneficiary consultations and facilitations)	1,826,046
Potential cost of land acquisition and resettlement costs	400,000
Total	**2,226,046**

Entitlement Matrix

Type of Losses	Entitled Persons	Entitlements	Implementation Issues
Loss of private land	Legal owners or occupants	Cash compensation at replacement cost, 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 without a legally recognizable right or claim to the land they are occupying	At minimum, rehabilitation assistance to at least restore their livelihoods and standards of living, 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	All affected persons regardless of tenure status	Cash compensation at replacement cost Salvage materials will be handed over to affected people	If remaining parts of the structures are not sufficient for use, compensation will be paid for the entire affected buildings The project will help salvage material transportation Sharecroppers and tenants will be compensated for loss in standing crops and other assets they themselves invested in
Loss of income and standing crops	All affected persons regardless of tenure status	Civil works will be adjusted to avoid loss of income/ standing crops Existing contracts on sharecropping, tenancy and agricultural laboring will be honored	
Temporary land occupation	Legal owners or occupants	Cash compensation for loss of income or assets on a net basis Reinstitute land to the original state after the completion of civil works	PIC, under the support of third party service provider, will monitor implementation

Annex 3.1: Voluntary Donation of Land and Assets Agreement Form[18]

Name of land user:	NRC Number:		Beneficiary of the sub-project: Y/N	
Sex:	Age:		Occupation:	
Address:				
Description of land that will be taken by the sub-project:	Area affected:	Total irrigated area:	Ratio of land affected to total land held:	Map code:
Description of annual crops growing on the land now and project impact:				
	Details		Number	
– Trees that will be destroyed				
– Fruit trees				
– Trees used for other economic or household purposes				
– Mature forest trees				
– …				
Describe any other assets that will be lost or must be moved to implement the project:				
Value of donated assets:				
Confirm that affected people would not be physically relocated.				

By signing or providing thumb-print on this form, the land user or owner agrees to contribute assets to the project. The contribution is voluntary. If the land user or owner does not want to contribute his/ her assets to the project, he or she should refuse to sign or provide thumb print, and ask for compensation instead.

Date:..... Date:.....

Village Project Support Committee representative's signature

Affected person signature (both husband and wife)

[18] This form can only be used for land improvement pilots, since voluntary donations are not allowed for irrigation improvements.

Annex 3.2: Land Acquisition Forms

Form 1: Inventory of Project Affected People

Region: _____ District: _____ Township: _____ Village Tract: _____ Village: _____

Type of Activity: ☐Primary/Secondary; ☐ Land Improvement

			Agr.	Land				Assets				Crop		Income/ Business loss	
Serial No.	Name of head of HH	No. of persons in HH	Total irrigated land (acre)	Land to be acquired (acre)	Loss as % of total	Permanent structures (acre)	Temporary structures (acre)	Residential land (acre)	Other types of land (type, acre)	Other assets	Paddy (acre)	Field crops (acre)	Trees (no.)	Income type	Other losses

The filled form should be attached with minutes and all WUG members/ affected people should sign in it

Form 2: Entitlement

Region: _____ District: _____ Township: _____ Village Tract: _____ Village: _____

Type of Activity: ☐Primary/Secondary; ☐ Land Improvement

				Agr.	Land			Assets			Crop			Other	
Serial No.	Name of head of HH	No. of persons in HH	Quantity (acre)	Unit cost (Kyat)	Donation agreed[19]	Compens-ation in cash/in kind	Quantity (acre)	Unit cost (Kyat)	Compens-ation in cash/in Kind	Quantity	Unit cost (Kyat)	Compens-ation in cash/in kind	Quantity	Unit cost (Kyat)	Compe ation cash/in

[19] Voluntary donations are allowed only for Land Improvement

Annex 3.3: Farmers Action Plan

- Is there agreement in the WUG that the designed improvements in irrigations provide best benefits to the members? Y/N
- Is there agreement in the WUG that the in-assistance from farmers will contribute to mitigate income loss of negative affected farmers in one year? Y/N
- Will anyone's residential plots be affected? Y/N
- Will anyone need to physically relocate? Y/N
- Are all members aware of the grievance mechanisms available under the project? Y/N
- Will anyone lose more than 10 percent of their income? Y/N

No	Name of husband and wife of HH	Facilities to be build that cause loss (canals, etc)	Approx land loss (acre)	Loss of permanent structures (type, acre)	Loss of temporary structures (type, acre)	loss of other assets (type, acre)	Estimated loss in paddy production (Kyat)	Estimated income loss from paddy (Kyat)	Estimated loss in production of other crops (Kyat)	Estimated income loss from other crops (Kyat)	Trees (type, numbe r)	Estimated loss in other income (type, kyat)	Kin-kind assistance to be provided from fellow farmers	Agreeme (signature husband a wife)

- Briefly describe how negative impacts that may fall on farmers are addressed
- Describe examples of how larger negative impacts are to be addressed
- Describe alternatives to further reducing impacts discussed and why they were rejected

Minutes of the meeting where there is agreement on the Community Action Plan to mitigate temporary impacts should be attached.

The Community Action Plan should be signed by the third party service provider, the representative of SLRD, village chief

Annex 3.4: Guidance to Ensure the Participation of All Farmers in Project Activities

a) Special attention will be paid to ensure that the vulnerable water users have a full access to all project-related information. For this purpose the project will engage a third party service provider to disseminate project information to all stakeholders.

b) Scheme/ Site Specific Participatory SA: will be carried out under FS for each irrigation scheme and pilot land improvement site. The SA will (i) identify vulnerable farmers; (ii) conduct free, prior and informed consultations with them including, if relevant, ethnic minority farmers; (iii) identify measures to enhance their participation in the management of farmer owned systems and the implementation of land improvement pilots; and (iv) assess local sociopolitical dynamics and the risk that they may be excluded from local decision processes[20].

c) Vulnerable water users should be allowed to meaningfully particulate in the processes in which WUGs are formed and develop mechanisms for an equitable allocation of project benefits, minimize negative impacts on fellow water users and identify measures to mitigate residual impacts. The third party service provider will be hired and provide necessary support and guidance to beneficiary farmers so that they will form, gradually and over time, WUGs in an inclusive and equitable manner.

d) Vulnerable water users should be allowed to receive training and other capacity development supports as do fellow water users.

e) Grievances from people affected by the project and vulnerable water users will be addressed primarily through the WUG under the participatory mechanisms as per procedures described in this ESMF.

   Vulnerable water users will participate in the monitoring of project implementation and be given opportunities to provide feedbacks. In particular, they will be allowed to participate in participatory M&E to assess outstanding issues and identify measures to address them. Participatory M&E will seek to verify that farmer owned systems are rehabilitated and land improvement pilots are implemented in an incisive and equitable manner, and that negative impacts are addressed based on the consensus built among beneficiaries without causing significant impact on any member. The third party service provider hired under the project will regularly participate in the meeting of WUGs and monitor project implementation.

f) Members of the project oversight and implementation entities at all levels will be made fully aware of the challenges and constraints of the vulnerable water users, and of the needs for specific actions for their inclusion and informed participation. The project implementation agencies and oversight bodies at all levels will be made aware of the project principles and procedures with regard to farmer participation in project activities. Field extension workers will also be trained and sensitized so they will respond to the needs of smallholders and vulnerable farmers including female and ethnic farmers

g) All farmers should be allowed to select crops they grow.

h) Grievance Detailed grievance procedure will be developed based on the procedures described in this ESMF so all complains made by anyone locally or regionally to the displacement that may occur under the project will be properly processed. Such a procedure can set a good precedent and contribute towards resolving this difficult issue that require a nation-wide dialogue and consensus building.

i) The project will be implemented in sites that are free of land disputes brought to the consideration of the Land Loss Enquiry Commission of the Parliament.

j) Farmers should be allowed to participate in the decision on the investments/activities.

Identification of Farmers likely to be Affected by Construction

Checklist of farmers affected by civil work					
Name of village: Name of village tract: Township:			Prepared Date: Prepared by: Position held:		
Sr No	Name of Household Head (list for all household registered in the village)	Attend meeting Yes (or) No	Share the border with canal? Yes (or) No	Is likely to be affected by civil work Yes (or) No	Is mitigation measure agreeable? Signature (if yes)

Complaint Form

Villager Complaint Form			
Action taken [] Inform to concerned authority [] Check & verify by responsible person (Name) ……..…… [] Pending (no response further [] Satisfactorily solved			
Name of person complain		Village	
Name of Household Head		Village Tract	
National Identity		Township	
Date of complain		Name of village administration	
Major complain (losses, damage, dissatisfaction)			
Analysis of the complaint (To be written by verifier/responsible person)			
Signature of person complain		Signature of Village Administration	

Annex 4: Indigenous People Planning Framework

The Project

Project Development Objective

The Project Development Objective of ADSP is to increase crop yields and cropping intensity in the selected existing irrigation systems in Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions. This will be achieved through improved irrigation and drainage management and complementary farm advisory and technical services.

Project Components

The proposed project has four components: (i) Irrigation and Drainage Management; (ii) Farm Advisory and Technical Services; (iii) Project Coordination and Management; and (iv) Contingent Emergency Response. Summary descriptions of each component are as follows.

Component 1: Irrigation and Drainage Management

The component aims to enhance more flexible and reliable provision of irrigation and drainage services in the project areas to enable an increase in irrigation area coverage and resulting farm productivity. It would address irrigation and drainage management through: (1) focusing on institutional change required for the provision of farmer-responsive irrigation services; and (2) financing the improvement and rehabilitation of irrigation and drainage infrastructure covering about 35,000 ha within eight selected schemes in the selected regions.

The project's support to institutional improvements includes: development of irrigation and drainage management institutions, their human resources, data collection and management information systems and infrastructure; strengthening of the existing ACCs as decision making platform for irrigation management for farmers and service delivery agencies; and establishment and strengthening of WUGs. Competent agencies with adequate technical skills would be hired to help farmers establish and strengthen WUGs. National or international NGOs with a proven experience in participatory approach and community engagement will be hired to monitor project implementation and carry out participatory Monitoring and Evaluation (M&E).

The project will also support development of on-farm water management infrastructure and pilot land improvements in 2-3 selected systems. These land improvement pilots will involve the adjustment of existing, irregularly shaped plots into equal-sized, regularly-shaped ones, combined with the land levelling and realignment, and construction of on-farm irrigation and drainage canals and access roads. A competent third-party organization (e.g. an NGO) will be engaged to ensure that all local population including but not limited to direct beneficiaries of the project will actively participate in project implementation and that negative impacts that may fall on them would be minimized or otherwise mitigated. Participatory M&E will also be carried out so local population will be given avenues to voice grievances or inquiries directly to the project, under the facilitation of the third party service provider and the presence of local government officials. The third party service provider will work closely with the ID, SLRD and the PIC of the township for all activities related to the land improvement pilots.

Component 2: Farm Advisory and Technical Services

This component facilitates agricultural technology development and adoption activities in the targeted irrigation schemes, which would increase farm productivity and reduce production costs. It will support quality seed production (mainly non-hybrid rice, beans and pulses, and oil crops that are not produced by private sector) by developing farmer-based seed multiplication infrastructure and facilities and strengthen seed supply chains, promote improved fertilizer applications which will be adopted to the variability in soil types in targeted irrigation schemes, help the MOAI and farmers improve the capacity for plant protection through the adoption of IPM techniques. All these agricultural technology development activities and knowledge of improved farming practices will be disseminated to target farmers through improved farm advisory services which are based on farmers' needs and technical constraints, farming systems and market opportunities. The project will also support rehabilitation or construction of village extension education centers, establish field demonstration sites of improved technologies, expand training programs and provide operational and mobility support to MOAI extension staff and subject matter specialists.

In response to prevailing good preconditions for profitable farm mechanization in targeted irrigation schemes, the project provide supports farm mechanization through training of MOAI mechanics, testing and demonstration of new climate-smart technologies suitable for smallholder farming systems, and providing mechanization services in the target irrigation systems. The project will also upgrade the capacity of the Meikhtila Mechanization Training Center in Mandalay region through introduction of the modern training methodologies, materials, and upgrade repair workshops, in order to provide more and better vocational training to the staff of MOAI Mechanization Service Stations, farmers, and private sector. It will also support four MOAI Mechanization Service Stations in the project areas, through procurement of machine packages and mobile repair workshops selected in collaboration with the private sectors in order to promote climate-smart mechanization technologies to farmers, provide cost-effective services suitable for smallholder farming systems in Dry Zone, and carry out farmer training.

Component 3: Project Coordination and Management

The PMU will be established. It will include technical and fiduciary MOAI staff who will be seconded to PMU at a full-time basis from the relevant implementing departments. The implementation of individual project components and sub-components is being carried out through departmental Project Implementation Units. The PMU will be responsible for the overall coordination of the project implementation and fiduciary arrangements, including procurement, financial management, management of safeguards issues, internal and external auditing and the establishment of the project M&E system. Outside consultants will be recruited in areas which require strengthening of MOAI implementation capacity. The component would finance establishment of the M&E and Management Information Systems and associated Technical Advisory services including participatory M&E; communication and consultation program; salaries of the externally recruited staff, related office equipment and mobility.

Component 4: Contingent Emergency Response

The objective of this zero amount-budgeted component is to allow a rapid reallocation of loan proceeds from other components to provide preparedness and rapid response support to disaster, emergency and/or catastrophic events as needed.

Institutional Arrangements

The MOAI will be the implementing agency of the ADSP. A Project Steering Committee (PSC) for project governance and oversight will be established at the central level. At township level a coordination function will be assigned to the ACC.

A PMU will be established within MOAI which would be responsible for day-to-day management and coordination of the project (including safeguards). This PMU will be headed by a full time PMU Manager. The Safeguard Coordinator will be appointed at the PMU who will directly report to the PMU manager. The actual implementation of project activities will be carried out by PIUs in the MOAI departments with the necessary technical expertise and by third party implementation partners. The ID will be responsible for the implementation of Component 1 with technical support from the SLRD and the AMD. Implementation of the Component 2 will be the responsibility of the DOA and its divisions, with technical support from the DAR. AMD will be responsible for the implementation of farm mechanization activities under this component.

At township level, the PICs will be responsible for the implementation of the agreed activities. They work under the guidance of ACCs. PICs will be made up by representatives of all implementing departments of MOAI and chaired by ID. PIC will include a Safeguard Focal Point who will be responsible for safeguard related issues at the township level, in close coordination with the third party service provider. The project will establish and support institutional strengthening of WUGs who will become the common platform for the planning, execution and monitoring of irrigation and extension activities at the community level as well as management of social risks.

Safeguard Coordinator in the PMU will be in charge of overall safeguard compliance including the implementation of this LRPF. PMU will be responsible for the overall coordination of the project implementation and fiduciary arrangements, including procurement, financial management, safeguards, internal and external auditing and the establishment of the project M&E system.

A third party service provider will be hired under the project who will facilitate beneficiary farmers during decision making processes, in partnership with technical specialists of ID, to help them develop equitable and transparent mechanisms for the management of farmer owned systems. The third party service provider will also support the safeguard coordinator by monitoring safeguard implementation and compliance at the village level, including collecting grievances affected people may have and assisting farmers develop proper minutes of meetings. It is to note that their task will focus on the facilitation between beneficiary farmers as well as between them and concerned government agencies, and the provision of social inputs to technical design processes to ensure social impacts are fully taken into account in the technical design processes.

Objectives and Principles of the IPPF

This IPPF aims 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 and implemented in a

participatory manner based on a social assessment and free, prior and informed consultations, and in line with the Bank OP 4.10, Indigenous Peoples.

Ethnic minorities in the Project Areas

A Social Assessment was conducted during the project preparation in order to: (1) collect and analyze socioeconomic data and information about the project's potential beneficiaries and the people who may be negatively affected by the project including but not limited to ethnic minorities; (2) inform the project design to maximize benefits to a broad spectrum of beneficiaries including ethnic minorities and minimize and mitigate negative impacts that may occur; and (3) provide inputs to the development of the project safeguard instruments, namely, LRPF and the ESMF including this IPPF.

The social assessment focused on the area with existing irrigation schemes of the four project regions which constitute the potential project areas given the nature of the project which rehabilitate existing irrigation schemes without expansion or major realignment. Demographic, socioeconomic and other relevant data were collected for the potential project areas. Detailed field assessment was conducted in the catchment area of four pre-identified irrigation schemes in each of the four project regions, which included free, prior and informed consultations with representatives of ethnic minorities. These four irrigation schemes were selected because they demonstrate some characteristics typical of the irrigation schemes in respective target regions. The project may rehabilitate any of these four schemes if its feasibility is ascertained under the FS to be conducted during the implementation based on a more detailed assessment of associated economic, technical, environment and social issues. A full SA will be conducted as part of the FS during implementation in line with the Bank OP 4.10, if an ethnic screening to be conducted in the early part of the FS finds that ethnic minorities are present in or have collective attachment to the area of influence of project irrigation schemes.

The SA conducted during the preparation did not find ethnic minority communities in project areas except for Karan and Shan peoples in Yaetar Shay Township of East Bago region. This is because not many ethnic minorities live in low land with existing irrigation schemes which constitute potential project areas. Since the project will only rehabilitate existing irrigation schemes, it is unlikely that very many ethnic minorities are directly affected by the project or present in the project's area of influence. The exact irrigation schemes that will be rehabilitated under the project, however, will be determined during the implementation as part of FS, and ethnic minority communities may be present in the area of influence of the project irrigation schemes. This IPPF was therefore developed in order to ensure that the project will be implemented in full compliance with the Bank's OP 4.10.

Many of the irrigation schemes in the project target townships, which are candidate schemes to be included potentially in the project, were built some 10 – 20 years ago. The social assessment (SA) carried out during project preparation found that, in some cases, people were displaced without adequate compensation when dams – and to some extent primary canals – were originally built. The SA conducted during preparation was not a comprehensive assessment, since it included only the four irrigation schemes that were pre-identified for potential funding under the project. It will be followed-up by a more comprehensive SA, including all candidate schemes, during implementation.

The land issues related to existing dams and reservoirs are beyond the scope of and will not be addressed by the project. These complex legacy issues are being addressed at the country

level through the auspices of the National Land Resource Management Central Committee and the Parliamentary Land Loss Inquiry Commission. The Bank, under the Country Partnership Framework, may provide separate support on land, including country wide land related studies or assessments.

Under the project, the existence of land legacy issues related to candidate irrigation schemes to be considered to be included in the project will be assessed as part of the more comprehensive SA to be carried out during implementation. The SA will, among other issues: identify who were affected when the candidate irrigation schemes were originally built including their ethnic identities; assess what compensation and assistance they received to restore livelihood and what are their current levels of livelihood; and determine if there are any unresolved land disputes which would hinder the timely implementation of project activities. The third party service provider, who will be hired under the Project, will lead the assessment. Through project implementation support, the Bank task team will provide guidance to the Project Safeguard Coordinator on the terms of reference for the SA and the review of the SA report. The findings of the SA will be used as an input for site selection. Candidate schemes with serious unresolved land disputes are not eligible to be included in the project. Other candidate schemes, which meet the project site screening criteria, may have specific land legacy issues which can be effectively addressed under the project. In such cases, the LAAP and the IPP if relevant, which will be developed during implementation, will include measures to restore the livelihood of affected people and close other gaps with the objective of the OP 4.12 and the OP 4.10 as identified by SA.

Project Impacts on Ethnic minorities

The overall impacts of the project on ethnic minority communities are positive: those ethnic farmers with access to project irrigation schemes will benefit from improved agricultural livelihoods and an increase in income opportunities through higher cropping intensities and better crop choices, and enhanced productivity due to increased use of high quality inputs and farming skills. They will also benefit from strengthened social inclusion especially where they share the same farmer owned canals with ethnic Bamar farmers as the project will form and develop the capacity of WUG in equitable and transparent management. If the land improvement pilots include plots used by ethnic farmers, they will also benefit from improved productivity and income as a result of land improvement.

The expected negative impact will include the minor loss of farm land and private assets such as trees and fences associated with the rehabilitation of irrigation canals and land improvement pilots. Since the project will rehabilitate existing irrigation schemes without major realignment, it is highly unlikely that a large scale displacement of ethnic minority communities would occur as a result of the project. Physical relocation of households is unlikely to occur. Similarly, land improvement pilots will involve the realignments and leveling of existing, irregularly shaped plots into equal-sized, regularly-shaped ones (the size depends on the local situation and would vary from 0.5-2 acres), and the construction of on-farm irrigation and drainage canals, and of access roads, which will unlikely cause physical relocation or major loss of land. Most civil works will be undertaken in the crop idle seasons so as to avoid temporary occupation of private land wherever possible. Negative project impact would be generally limited to those who participate in, and directly benefit from, the rehabilitation of irrigation and drainage infrastructure as well as land improvement pilots. The exception is that the rehabilitation of primary and secondary canals may impact owners of private assets who may not

be farmers and thus will not benefit from the project, although it is unlikely that such cases would occur under the project in a large number.

The same participatory measures that the project will carry out to ensure a meaningful consultation with and an active participation of local population in project activities, as described in the Annex 4.1 of this IPPF, will apply to ethnic minorities present in the project areas of influence. This is because the types and scale of impacts, both positive and negative, and the risks associated with the project, are generally limited and similar for ethnic minorities and for ethnic Barman. However, a significant risk remains that ethnic farmers may not fully benefit from the project due to local social and inter-ethnic dynamics that may inhibit their full participation in WUGs or because they are induced to sell lands following the rehabilitation of irrigation or land improvements that will increase land prices. Also, some non-farming ethnic minorities may be present along or near the primary and/ or secondary canals that will be rehabilitated by the project, but they may not be adequately consulted with due to local inter-ethnic dynamics, and negative impact that may fall on them may remain unaddressed. Social tensions and sense of unfairness may evolve within local communities if ethnic groups perceive that the project interventions widen income gaps. Measures are thus developed to provide additional protections to ethnic minorities and described in the following sections of this IPPF.

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 percent), Kayin/Karen (7 percent), Rakhine (4.5 percent), Chin (2 percent), Mon (2 percent), Kachin (1.4 percent), Kayah (1 percent). 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.

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:

- To develop language, literature, fine arts and culture of the National races;
- To promote solidarity, mutual amity and respect and mutual assistance among the National races; and
- 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.

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.

Project implementation procedure

OP 4.10 requires that special planning measures be established to address particular issues concerning ethnic minorities. More specifically, the policy requires the undertaking of a social assessment and free, prior and informed consultation process leading to the broad community support by ethnic minorities for the project, and the development of an instrument for indigenous peoples in the form of an IPP. Generally an IPP is prepared with appropriate measures identified during the social assessment and consultation process.

The following describes the processes and procedures that will be followed under the project in order to fully address the Bank's OP 4.10, *Indigenous Peoples*.

Project Information Dissemination and Vulnerability Awareness Building

Prior to the FS, the project will disseminate project information to all stakeholders through various means, such as mass media, project brochures/posters and a dedicated project site on the internet. Measures provided under this IPPF will be widely disseminated through such campaigns. The project, with the help of the Safeguard Coordinator and the Third Party Service Provider, will also develop the capacity of the project implementation agencies and oversight bodies at all levels at the onset of the project on safeguard issues relevant to the project including processes and required actions as well as responsibilities of the concerned parties.

Ethnic screening

At the early stage of the FS, an ethnic screening will be conducted in order to determine if ethnic minorities are present or have collective attachment in the area of influence of the project irrigation schemes or pilot land improvement sites. The third party service provider will assist the FS team, under the supervision of the Safeguard Coordinator at the PMU, and ensure that ethnic screening would be conducted according to this IPPF and the Bank OP 4.10.

At the time of FS, only main canals and some parts of secondary canals may have been identified for rehabilitation under the project, and lower category canals may not have been identified. Ethnic screening should nonetheless cover the entire catchment area of the respective irrigation scheme, because the rehabilitation of the main canals will affect the entire canal

systems within the scheme. FS will be separately conducted for Land Improvement pilots, which may not have been identified when FSs for irrigation schemes are conducted.

Where ethnic minorities are found to be present or have collective attachment in the area of influence of the project irrigation schemes and/ or land improvement pilots, the steps that are described below will be taken. It is to note that the OP 4.10 will be triggered and the following steps will be taken if ethnic minorities are present in or have collective attachment in the areas of influence even if no negative impact is likely to occur.

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. 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:

- Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
- Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
- Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
- An indigenous language, often different from the official language of the country or region.

Participatory SA and Free, Prior and Informed Consultations

If ethnic screening finds an ethnic minority community to be present in or have collective attachment to the catchment area of the project irrigation schemes or the area of influence of land improvement pilots, a participatory SA that will be conducted as part of FS will address all elements of SA defined under OP 4.10[21], including, at minimum, the following:

- Identify key stakeholders of affected ethnic minorities and establish an appropriate framework for their participation in the selection, design, implementation, and monitoring and evaluation of the relevant project activities, in particular with regard to the establishment of WUGs;
- Assess the demographic, socioeconomic, cultural and other relevant characteristics of affected ethnic minorities in the catchment area of the respective irrigation schemes/ land improvement sites, establish social baseline and identify potential barriers to their full participation in WUGs and benefiting from project activities;

[21] Scheme specific SA will be conducted without regard to the presence of ethnic minorities in respective irrigation scheme/ land improvement sites, in order to assess overall project impact on local population including but not limited to beneficiary farmers, socioeconomic characteristics of vulnerable farmers and develop measures to ensure their full participation in WUGs and in the planning and implementation of farmer owned systems and land improvement plots. See Annex 4.1 of this IPPF.

- Review relevant legal and institutional framework applicable to ethnic minorities;
- Assess, based on free, prior, and informed consultation with the affected ethnic minorities, the potential impact of project activities and, where adverse impacts are identified, determine how they can be avoided, minimized, or substantially mitigated;
- Propose specific measures to ensure that affected ethnic minority people will, meaningfully and in a culturally appropriate manner, participate in WUGs, benefit from the project, and mitigate and mitigate negative impacts; and
- Develop institutional arrangements and implementation procedures to assist ethnic farmers to voice grievances and have them addressed in ways that are socially sound, in line with the procedures described in this ESMF.
- Assess the nature, scale and scope of displacement that occurred when the project irrigation schemes were originally constructed, as part of the due diligence of the original construction of project irrigation schemes. Assess also the current state of the livelihood of the formerly displaced ethnic minority population.

The third party service provider, under the guidance of Safeguard Coordinator at PMU, will provide necessary support to the FS team so that all requirements under OP 4.10 would be addressed in the respective SA. Free, prior and informed consultations with affected ethnic minorities will also be conducted as part of the SA. Notice of consultation meetings will be disseminated at least two weeks prior to the meetings and in a language or modes that are understandable to affected people. Care will be exercised so that not only beneficiary farmers but a broad range of local people will also be invited. The SA will cover the entire catchment area of the respective irrigation schemes given the potential impact of rehabilitating main canals on lower hierarchy canals, even if ethnic minorities are not expected to be present near project main canals. Also, the SA will be conducted even if no negative impact is anticipated under the respective irrigation scheme/ land improvement pilot. The SA Report may bundle more than one irrigation scheme or land improvement site, depending on the proximities of schemes/ sites, similarities in socioeconomic impact, timing of investment preparation and financing, and other relevant conditions.

If broad community support cannot be ascertained from affected ethnic minority communities, the project activities will not be financed for the scheme/ site, as relevant.

Indigenous Peoples Plans (IPP)

On the basis of the SA and free, prior and informed consultation conducted as part of the process, an IPP will be prepared for each scheme/ site. The third party service provider, under the guidance of the PMU Safeguard Coordinator, will provide necessary support so that all requirements under OP 4.10 would be addressed in IPP(s). One IPP(s) may bundle more than one irrigation scheme or land improvement site, depending on the proximities of schemes/ sites, similarities in socioeconomic impact, timing of investment preparation and financing, and other relevant conditions. An IPP should include the following elements, as needed:

- The description of the project objective and activities, in particular on project activities that will be conducted for the scheme/ site;
- A summary of the SA including the results of the free, prior, and informed consultation with affected ethnic minority communities and verification of their broad community support for the project;

- Description of potential negative impacts and measures to address them;
- A framework to ensure that affected ethnic minority communities can meaningfully participate in WUGs, and in the process to minimize and mitigate negative impacts. Where ethnic farmers share the same farmer owned systems and participate in the same land improvement pilots, an integrated framework will be developed that will ensure both ethnic Barma and ethnic minority farmers would collaborate in minimizing and mitigating negative impacts for common benefits[22].
- Mechanisms through which affected ethnic minority communities are able to voice concerns and grievances and have them addressed;
- Mechanisms and benchmarks for monitoring, evaluating, and reporting on the implementation of IPP; and
- The financing plan for IPP implementation.

Approval and Disclosure

Once the draft IPP(s) and the associated SA Report(s) are drafted, they will be submitted to DI for review and approval. DI will translate them into relevant ethnic languages, make them available in its website as well as in locations accessible to affected ethnic minorities, and consult them with affected ethnic minorities for comments. DI will also disclose them in DI's webpage, finalize them taking into account the comment received, and submit them to the Bank for review and clearance. The Bank will disclose the IPP(s) through the Infoshop as well as at the country office website.

Implementation Arrangements

The overall responsibility of the implementation of this IPPF rests with the PMU under the assistance of the Safeguard Coordinator in the PMU. A competent person with a long experience in Bank safeguard policies will be hired as the Safeguard Coordinator who will ensure a full compliance of all actions taken at the central as well as township levels, and supervise the third party service provider. Safeguard Coordinator will prepare the safeguard capacity development plan at the beginning of the project in which existing capacity gaps to implement this IPPF are identified and measures to fill the gaps will be presented. The safeguard capacity development plan will be shared with the Bank for review and comments. Safeguard Coordinator will implement the safeguard capacity development plan to train other PMU staff, relevant MOAI department officers who will work on the project, and all ACC and PIC members. Refresher training will be organized at the mid-term.

At township level, the PICs will assume the overall responsibility for the implementation of this IPPF. PIC will include a Safeguard Focal Point who will be responsible for safeguard related issues at the township level, in close coordination with the third party service provider and under the supervision of the Safeguard Coordinator.

[22] A similar framework will be developed to help beneficiary farmers form WUGs, and minimize and mitigate, based on participatory processes, negative impacts that may fall on fellow members through in-kind assistance, and will be applied to all farmer owned irrigation systems and land improvement pilots supported under the project. More details are provided in the Annex 4.1of this ESMF.

The third party service provider will play a key role in identifying and consulting with affected ethnic minorities, and minimize and mitigate social impacts that may fall on them, if any. A team of consultants with sufficient experience and qualification in Bank OP 4.10, community consultation and participation, and dispute handling mechanisms will be hired. The Terms of Reference of the third party service provider will be reviewed by the Bank. The third party service provider will provide on-going capacity development of all project staff at the township level, and monitor safeguard implementation and compliance at the village level, including collecting grievances affected ethnic minorities may have and assisting farmers develop proper minutes of meetings. The third party service provider will also ensure that negative impacts that may fall on local ethnic minorities who may not directly benefit from the project and/ or who are not the members of WUG will be fully addressed.

The WUGs will be the main project counterpart on behalf of farmers and play a key role through representing owner farmers in the project implementation, mediating between farmers for internal disputes and conflicts, and mitigating negative impacts through mutual assistance under land improvement pilots. The project will develop their capacity through providing technical assistance and by on-going support of the third party service provider. Particular attention will be paid to ensure that ethnic farmers can meaningfully participate in a WUG, if they are present.

Monitoring and evaluation

Throughout the implementation of the project, the third party service provider under the guidance of the Safeguard Coordinator will monitor the project compliance with Bank safeguard policies. The third party service provider will visit at least on a monthly basis since the planning till 2 months after the completion of civil works the project sites and meet the affected ethnic minority communities including both the direct project beneficiaries (i.e. the users of project rehabilitated irrigation schemes and participants of land improvement pilots) and those who do not directly receive project benefits (i.e. non farmers, nonmembers of WUGs). Upon the completion of an IPP, the ID, under the assistance of the PMU Safeguard Coordinator, will carry out an IPP completion assessment to confirm that all measures under this IPP have been fully implemented and that the negative impacts on ethnic minority communities have been adequately addressed.

Monitoring group will be created in each WUG which will ensure that all actions would be undertaken in line with this IPPF and, in case of irregularities, contact the ACC. The participatory M&E will be conducted, under the facilitation of the third party service provider, whereby affected people including both beneficiary farmers and non-beneficiary ethnic minorities are encouraged and facilitated to report outstanding issues and air grievances. The meeting is attended by township PIC members and village authorities. The WUG prepares minutes of the meeting that record the issues raised and how they will be addressed in the subsequent annual cycle. This record will be submitted to PMU through PIC.

All PICs will have an IPPF focal point who will regularly supervise and monitor IPP implementation. PIC focal points will report to PMU Director on IPPF related matters, and request support of the Safeguard Coordinator if needed. S/he will travel to the sites and spot check if the actions are taken and information provided in conformity with the IPPF.

The project MIS system will collect key data on IPPF such as the presence and absence of ethnic minorities in the command areas of respective schemes, the number of ethnic

population and their name of ethnicity, dates of consultation meetings conducted. The Third Party Service Provider will go to all project schemes at least on a monthly basis during and planning and implementation of civil works, prepare a back to office report upon return from the field, and develop the quarterly progress report. The Back to office reports during the report period will be attached to the quarterly progress report, which will be shared with the Bank. The project webpage will have a dedicated section where such reports will be disclosed.

Grievance Redress Mechanism

Complaints and grievances in relation to land and asset acquisition will be dealt with under the project grievances redress mechanism. A summary of project grievance mechanism will be developed in English, Myanma and relevant ethnic languages and made available through various media including written materials and internet. They will also be made available in locations convenient to affected ethnic population and explained about during public consultations in a language understandable to ethnic minorities.

Under this project, the WUGs will serve as the first tier mechanism to handle complaints and grievances. The WUGs will be formed at the initial part of project implementation for respective irrigation schemes and land improvement pilots, well before civil works to be supported under the project are designed and implemented. The grievance focal point will be appointed within each WUG who will receive, address, and keep record of the complaints and feedbacks. The grievance focal point will first review the grievances submitted. If the grievances are found to be between farmers over farmland boundary setting, mutual assistance to mitigate impact over farmer managed systems, and other disputes between farmers, the grievance focal point will meet relevant farmers and seek to find resolutions in line with this LRPF, under the support of the third party service provider.

If grievances or disputes between farmers cannot be solved at the WUG level within 30 days of the submission of the grievances, the issue will be brought to PIC for mediation. PIC is expected to inform aggrieved persons or parties to disputes of the resolution in 30 days. If still unsatisfied, aggrieved persons or parties to disputes will elevate the matter to the PMU at the national level which will make the final decision in consultation with the Safeguard Coordinator. The Bank task team will be consulted for all grievances that are elevated to the national level. The aggrieved people will be informed of the decision within 30 days of the submission to PMU which will be the final.

If the initial review by the grievance focal point of WUG finds that the grievances concern the rehabilitation of primary or secondary canals, civil works carried out by the project hired contractors, village extension education centers or other issues that go beyond the disputes between farmers, the grievance focal point will immediately inform the third party service provider who bring the issue to the PIC for mediation. PIC is expected to inform aggrieved people or parties to disputes of the resolution in 30 days. If still unsatisfied, aggrieved people or parties to disputes will elevate the matter to the PMU at the national level which will make the final decision in consultation with the Safeguard Coordinator. The Bank task team will be consulted for all grievances that are elevated to the national level. The aggrieved people will be informed of the decision within 30 days of the submission to PMU which will be the final.

Aggrieved ethnic persons or parties to disputes are also allowed to directly contact the third party service provider and raise concerns or questions. The third party service provider will also install sign posts in local areas with a clear indication in of the contact information, and call

for any people with grievances or questions to inform them. Where ethnic minorities are present, the information will be expressed in a relevant ethnic language. A consultation meeting will be held prior to the start of civil works in places and time convenient to local ethnic population. The nature of the civil works to be carried out, expected impact, entitlements and grievance mechanisms will be explained to affected ethnic people. The translation of this IPPF will be made available to participants of consultations and at the local office of PIC. The third party service provider will visit project sites regularly and receive inquiries or grievances directly from local ethnic people. The third party service provider will provide WUGs necessary training and continuing capacity development throughout project implementation. Project's communication and information dissemination activities will include information about grievance redress mechanisms.

The participatory M&E will be conducted, under the facilitation of the third party service provider, whereby affected people will assess the implementation of respective project activities as well as this LRPF, report outstanding issues and air grievances or other issues people may have with the project. The meeting will be attended by township PIC members and village authorities who will assist participants in identifying resolutions for grievances that may be presented. The third party service provider will prepare minutes of the meeting that record the issues raised and how they will be addressed in the subsequent annual cycle. This record will be submitted to PMU through PIC.

Budget

Implementation of IPPF is expected to cost $2,541,046, which includes the following.

Activity	**Estimated cost (USD)**
Beneficiary facilitation and engagement (inc. costs of the third party service provider,identification beneficiaries and awareness development, costs of farmer/beneficiary consultations and facilitations)	1,826,046
The safeguard coordinator in the PMU	275,000
Total operating costs of the PMU, incl. on safeguards	350,000
Facilitation of participatory M&E	90,000
Total	**2,541,046**

Annex 4.1: Guidance to Ensure the Participation of All Eligible Farmers in Project Activities

1. Special attention will be paid to ensure that the vulnerable water users have a full access to all project-related information. For this purpose the project will engage a third party service provider to disseminate project information to all stakeholders.
2. Scheme/Site Specific Participatory Social Assessment (SA): will be carried out under FS for each irrigation scheme and pilot land improvement site. The SA will (i) identify vulnerable farmers; (ii) conduct free, prior and informed consultations with them including, if relevant, ethnic minority farmers; (iii) identify measures to enhance their participation in the management of farmer owned systems and the implementation of land improvement pilots; and (iv) assess local sociopolitical dynamics and the risk that they may be excluded from local decision processes[23.]
3. Vulnerable water users should be allowed to meaningfully particulate in the processes in which WUGs are formed and develop mechanisms for an equitable allocation of project benefits, minimize negative impacts on fellow water users and identify measures to mitigate residual impacts. The third party service provider will be hired and provide necessary support and guidance to beneficiary farmers so that they will form, gradually and over time, WUGs in an inclusive and equitable manner.
4. Vulnerable water users should be allowed to receive training and other capacity development supports as do fellow water users.
5. Grievances from people affected by the project and vulnerable water users will be addressed primarily through the WUG under the participatory mechanisms as per procedures described in this ESMF.
6. Vulnerable water users will participate in the monitoring of project implementation and be given opportunities to provide feedbacks. In particular, they will be allowed to participate in participatory M&E to assess outstanding issues and identify measures to address them. Participatory M&E will seek to verify that farmer owned systems are rehabilitated and land improvement pilots are implemented in an incisive and equitable manner, and that negative impacts are addressed based on the consensus built among beneficiaries without causing significant impact on any member. The third party service provider hired under the project will regularly participate in the meeting of WUGs and monitor project implementation.
7. Members of the project oversight and implementation entities at all levels will be made fully aware of the challenges and constraints of the vulnerable water users, and of the needs for specific actions for their inclusion and informed participation. The project implementation agencies and oversight bodies at all levels will be made aware of the project principles and procedures with regard to farmer participation in project activities.

[23] Where ethnic minorities are present in project areas of influence, SA will address requirements provided in the Indigenous Peoples Planning Framework attached to this ESMF.

Field extension workers will also be trained and sensitized so they will respond to the needs of smallholders and vulnerable farmers including female and ethnic farmers

8. All farmers should be allowed to select crops they grow.
9. Detailed grievance procedure will be developed based on the procedures described in this ESMF so all complains made by anyone locally or regionally to the displacement that may occur under the project will be properly processed. Such a procedure can set a good precedent and contribute towards resolving this difficult issue that require a nation-wide dialogue and consensus building.
10. The project will be implemented in sites that are free of serious land disputes, as determined through the SA, including but not limited to those brought to the consideration of the Land Loss Enquiry Commission of the Parliament.
11. Farmers should be allowed to participate in the decision on the investments/activities.

Annex 5: Pest Management Plan Framework Process

Background

Agriculture intensification as a result of improved irrigation and drainage system may lead to excessive use of pesticides in the cultivated land of irrigation command areas of the proposed project areas. The situation could be worsening if farmer use the unregistered and unregulated pesticides that were poor quality and illegally imported from neighboring countries across international border. Farmer knowledge on the use of appropriate pesticide with careful handling are weak in Myanmar and they are misled by marketing agent of pesticide dealers to use stronger pesticides that are harmful to environment instead of following the principle and practice of integrated pest management.

The following are foreseeable consequences if improvement in pest management is not achieved: destruction of crop pollinators leading to poor crop yields; elimination of the natural enemies of crop pests and consequent loss of natural pest control that keeps the populations of crop pests very low; development of pest resistance to pesticides, encouraging further increases in the use of chemical pesticides; contamination of the soil and water bodies; toxicity to fish and birds; proliferation of aquatic weeds; pesticide poisoning of farmers and deleterious effects on human health; unacceptable levels of pesticide residues in harvested produce and in the food chain; and loss of biodiversity in the environment, particularly of the aquatic non-target species.

Integrated Pest Management (IPM) should be introduced in connection with effective farmer-to-farmer extension system in the project villages. IPM involves the integration of cultural, physical, biological and chemical practices to grow crops with minimal use of pesticides. Monitoring, sampling, and record keepings are used to determine when control options are needed to keep pests below an economically damaging threshold. The goal of IPM is thus managing pest but not unrealistically eradicating them. Implementation of IMP for the ADSP must be in conformity with existing legal framework of Myanmar and with best international practices.

The context of pest management in Myanmar

Myanmar has enacted the Pesticide Law since 1990 and the procedures relating to the Pesticide Law was also enacted in 1991. In accordance with the prescribed conditions in the procedures, the Pesticide Registration Board was formed in 1992. The law also contains general provision for legal requirement of two major components as far as pesticide management is concerned. The first one is registration scheme and the second is licensing program. Every pesticide intended to be used in Myanmar must undergo the registration process together with complete registration dossier and sample of the product apply for registration. For law enforcement, the Plant Protection Division of the Department of Agriculture has established Provincial and District level Plant Protection Teams with professional staff trained abroad and locally. The staffs are assigned as inspectors responsible for inspection of pesticide outlets in their respective regions. For every pesticide applied there is need to obtain registration from Pesticide Registration Board; the applicant shall require expressing the proposed used pattern stating effectiveness to the target pest species, toxicological studies consist of no adverse effects to non-target species and the environment. Myanmar still does not have pesticide-manufacturing plants for the time being. Department of Agriculture has a small-scale formulation plant as pilot plant granted by United Nations Industrial Development Organization (UNIDO). Private

entrepreneurs should formulate their pesticides only in that formulation plant. Myanmar does not have obsolete pesticides.

To void the development of resistance problems, attempt has been made for dissemination of appropriate technologies to the farmers through Plant Protection Clinics and also Farmers Field Schools in every States and Divisions by Department of Agriculture. Those pesticides granted registration in Myanmar must have conformity with prescribed conditions and guidelines dedicated by the Pesticides Manufacturing and Formulation Organization (Croplife formerly GIFAP). It comprises guideline for sound management of safe manufacturing, labeling, handling, storage and disposal. At the same time, Myanmar is cooperating in the use of International Code of Conduct for the Distribution and Use of Pesticides. Every pesticide must have proper label in Myanmar language so that farmers can easily thoroughly read and understand the label before use.

The pesticides categorized as Class I.a and I.b in WHO classification are considered as Extremely Hazardous Pesticides and are handled by Certified Pesticide Applicators. Those applicators are certified after completion of five days training course conducted by Plant Protection Division of Department of Agriculture. Out of more than 1,700 formulations registered in Myanmar, only few are under Class I.a and I.b. Most are Class II and III. Myanmar is also engaged in ASEAN Pesticide Regulatory Harmonization program.

Overall, currently there is a lack of information on the IPM at the level of local extension workers, the private sector or farmers in the country as well as human resources to plan and implement pest management programs.

Integrated Pest Management

IPM is a sustainable approach to managing damaging agents (pests and pathogens) by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health, and environmental risks. In developing IPM, it is important to take into account: (i) Criteria for selection of suitable pesticides, and (ii) Procedure for management of the use of pesticides.

(i) Criteria for selection of suitable pesticides

In project areas major crop is paddy. To some degree depending on weather, availability of water and market condition, farmers also grow sesame and mung bean. According to farmers, it is witnessed that use of pesticide has been significantly increased after five years since the dam was constructed and they had practiced multiple cropping under existing irrigation scheme. Therefore, the use of pesticide would be inevitable in the future as well while integrated pest management is to be implemented. In general, those pesticides intended to use in the future need be effective against target species while having minimal effect on non-target species and bearing negligible adverse impacts to environment, human health and consumption. In selecting suitable pesticide, the need to prevent the development of resistance to pest should be taken into account. Table 5 lists common pest and diseases for major crops in project area and main criteria for their selection.

Table 5: Criteria for selecting suitable pesticide

Common crop by variety in the project area	Common pest and diseases	Criteria for selecting pesticides
Summer Paddy • Pale Thwe • Yadanar Toe • Yadanar Aung • Thee Dut Yin	• Stem borer • Jassids	1. Pesticide shall be used in minimum quantity only after that efficacy of other controlling methods is limited. 2. Pesticide shall be used only if are officially imported, licensed for sale and properly sealed and labeled in Myanmar language. 3. Pesticide shall not be used if are included in the banned list of Plant Protection Division, DOA (Most of the WHO Class I(a) and I(b) are included in this list) – see Table 6 and Table 7 for list of restricted and banned pesticides in Myanmar 4. Prior to use, the observation shall be taken by trained farmer or qualified technician/staff to verify pest or disease for selecting the appropriate pesticide. a. In the case of pest, economic threshold level of pest occurrence shall be determined for the use of insecticide b. For diseases, the assistance from township DOA may require to determine the severity of disease (e.g: leaf area index) for the use of pesticide
Monsoon Paddy • Ayar Min • Manaw Thukha • Shwe Ta Sok • Sin Thuka • Pale Thwe	• Bacterial leaf blight • Stem borer	
Sesame	• Leaf roller • Black stem (bacterial)	
Mung bean • Yezin 14	• Pod borer • Leaf roller	

Table 6: List of restricted Pesticides in Myanmar

Pesticide Name	Group
Methyl Bromide	Fumigant
Phosphine	Fumigant
Bromadiolone	Coumarin
Zinc Phosphide	Inorganic
Brodifacoum	Coumarin
Fenthion	Organophosphorous
DDT	Organochlorine

Table 7: List of banned Pesticides in Myanmar

Pesticide Name	Group
Adrin	Organochlorine
EPN	Organophosphorus
BHC	Organochlorine
Inorganic Mercury compounds	Inorganic
Captafol	Phthalimide
Chlordane	Organochlorine
Organic mercury compound	Organic
Parathion ethyl	Organophosphorus
Chlordimeform	Formamidine
Strobane	
Cyhexatin	Organotin
2,4,5-T	Phenoxy
Dieldrin	Organochlorine
Toxaphene	Organochlorine
EDB	Dinosed
Endrin	Organochlorine
Dinosed	

(ii) **Procedure for management of the use of pesticide**

The notification of the procedures pertaining to Pesticide Law (1991) form a basic for the procedural framework of the project to follow as far as the manufacturing, labeling, handling, storage and disposal of pesticides are concerned. The following are excerpts from the notification relevant to these matters:

Conditions for Compliance by the Pesticide Importer

(a) The imported pesticide or active ingredient, on arrival, shall be subjected to inspection by the DOA without failure in order to inspect the quality; the Inspector shall be permitted to draw the specified quantity or weight of sample according to the specified sampling method free of charge; the Inspector shall issue a Sampling Certificate in taking such samples;

(b) The handling, transportation and storage of pesticides shall be made according to the safety guidelines issued by the Registration Board;

(c) Pesticides shall be distributed and sold only to licensed sellers; sale vouchers shall be kept and sales register for different pesticides shall also be maintained;

(d) The "**Danger**" sign shall be affixed conspicuously at the pesticide store;

(e) The pesticide store shall be securely locked when loading and unloading is not in progress;

(f) Pesticides shall be loaded and unloaded under the supervision of a person experienced in safe handling;

(g) The nearest Fire Brigade Station shall be notified of the location of the pesticide store and its approximate quantity of storage;

(h) No pesticides shall be stored in the living quarters;

(i) Pesticides, active ingredients or packing materials to be disposed of due to any reasons, shall be done so according to the instructions of the DOA

(j) If the stock of pesticides or active ingredients in the possession to have deteriorated in quality, its continued use and sale shall be made according to the instructions of the DOA;

(k) The pesticides shall be sold safely packed and the damaged packing shall be repacked before sale;

(l) No pesticide shall be falsely advertised for sale with respect to its efficacy; the advertisement for sale shall be made in manner approved by the Registration Board;

(m) Inspection by the inspector shall be allowed and assistance necessary for inspection shall be rendered.

Conditions for Compliance by the License Holder

(a) The license shall be affixed in a conspicuous place;

(b) Only the pesticide or active ingredient permitted on the license shall be formulated, produced, repacked or sold;

(c) The formulation or repacking of pesticides locally shall be undertaken in accordance with the provisions of the existing laws with respect to health and social aspects of workers;

(d) The quality and the potency of formulated or repacked pesticides shall be guaranteed;

(e) The handling, transportation and storage of pesticides shall be made according to the safety guidelines issued by the Registration Board;

(f) Formulators, re-packers and wholesale dealers of pesticide shall also comply with the following conditions;

(g) The "**Danger**" sign shall be affixed conspicuously at the pesticide store;

(h) The pesticide store shall be securely locked when loading and unloading is not in progress;

(i) Pesticides shall be loaded and unloaded under the supervision of a person who is experienced in handling;

(j) The nearest Fire Brigade Station shall be notified of the location of the pesticide store and its approximate quantity of storage;

(k) No pesticides shall be stored in the living quarters;

(l) The pesticide shall be sold with labels and instruction for use translated into Myanmar Language for which approval has been obtained from the Registration Board;

(m) The sale of pesticides restricted from time to time by the Registration Board shall be made only to persons with purchase permits issued by the relevant Managers or to certified pesticide applicators;

(n) Whole or retail sale of pesticides shall be affected with vouchers and daily sales registers showing names of purchasers and type and quantity of pesticide being sold.

Such vouchers and registers shall be made available for inspection by the respective Manager or Inspector.

(o) Pesticide shall not be sold together with food-stuffs and medicines on the roadside;

(p) Pesticides shall be sold safely packed and the damaged packing and containers shall be repacked securely before sale;

(q) Pesticides shall not be sold without labels and instructions for use;

(r) Pesticides, active ingredients or packing materials to be disposed of due to any reason shall be done according to instructions of the DOA;

(s) If the stock of pesticides or active ingredients in the possession of license holder is found on inspection to have deteriorated in quality, its continued use and sale shall be made according to the instructions of the DOA;

(t) Inspection of pesticide by respective Township Manager or Inspector shall be allowed and necessary assistance shall also be rendered;

(u) If during inspection under sub-clause (p) the respective Manager or Inspector requires samples for quality analysis, the necessary quantity or weight taken according to the specified sampling method shall be made available free of charge; in taking such samples the respective Manager or Inspector shall issue a sampling certificate.

Conditions for compliance by the User

(a) The pesticide prescribed on crop basis by the Registration Board shall only be used in the specified manner;

(b) No pesticides other than those formulated for domestic use shall be kept in the living quarters.

(c) Harvesting and sale of food crops shall be done only after the elapse of pre-harvest interval of pesticide application as prescribed by the Registration Board;

(d) The required quantity or weight of crop samples for pesticide residue analysis taken according to the specified sampling method, shall be provided free of charge, if required by the respective Manager of Inspector; in taking such samples the respective Township Manager or Inspector; shall issue sampling certificate;

(e) The decision of DOA based upon the opinion of the Director General of the Department of Health shall be complied with in respect to harvested food crop containing pesticide residue higher than the permitted level.

Law enforcement on pesticide sale and use at local level is vital for controlling undesirable impacts by improper use of pesticide on environment and human. As illegal and sale of unregistered pesticides are very common throughout the country, it may require developing procedures for check and balance system to enforce law as described below:

i) At national level, project steering committee should discuss the matter related to establishment of mechanism for law enforcement and independent review.
ii) At local level, Township ACC should play central role for promoting law enforcement and independent reviewing of pest management in the respected administrative area;

iii) Township ACC should also closely coordinate with police department and township judiciary department for their collaboration in effective law enforcement and litigation process for those cases suspect for breaching the law;
iv) Civil society and village fellows should be invited for participating in this process;
v) Checklist should be developed based on the compliances described above and used by those who would conduct independent assessment on quarterly basic;
vi) Report of quarterly independent assessment should be submitted to Township ACC and matter concerning with unlawful activities should be discussed for taking necessary actions;
vii) Education of farmers, pesticide dealers and the whole sale in the township should be done to understand the necessary compliances on the use of pesticides;
viii) Information, communication and education materials should be developed and disseminated to the users and relevant stakeholders for their compliance.
ix) The progress made in township level enforcement should be reported to bi-annual public forum held at regional level
x) Farmers should be also incentivized for compliance in pest management.

Environmental auditor shall also review law enforcement and report it accordingly.

Site-specific IPM Plan

Site-specific IPM plans will be developed for each site selected for financing by the project. The IPM Plan is a decision – making model used to prevent and manage pest problems primarily by farmers. The goal of an IPM Plan is to keep pests at acceptable levels through effective, economical, and environmental – sound methods. A highly effective IPM Plan incorporates a number of strategies including criteria, identification, monitor, threshold, treatment, and evaluation. Farmers need to monitor pest infestation in order to know how the pest will influence yield, when to apply controls, and what type of control methods are appropriate.

The IPM action plan establishes the strategies that need to be considered prior to identifying the specific application that will be utilized in controlling a pest. These strategies/elements should cover the following aspects: criteria (e.g., human health and safety; minimal environmental damage; maxim potential for long term control; cost effectiveness, feasible operation); identification prior to pesticide application; monitoring (to help farmers to make decisions on the best timing for treatments to achieve the desired effects); thresholds for application; type of treatment, and evaluation based on inspections that allows validation of treatment. Overall, the IPM plan will primarily concentrate on demonstrations, awareness building and training and monitoring activities in the project areas.

Annex 6: Dam Safety Related Procedures

Overall

Whilst large dams are handled under OP 4.37 (Dam Safety), small dams are handled under OP 4.01 (EIA). Dams are classified as large ones: (a) with the height greater than 15 m and (b) with height between 10-15 m if one of the following three conditions are met: (i) reservoir capacity greater than 3 million m^3, (ii) crest length greater than 500 m, or (iii) spillway capacity greater than 2,000 m^3/s.

The safety assessment report and safety plans of large dams are not disclosed due to its security and confidential nature. A brochure of the Emergency Preparedness Plan (EPP) will be prepared for local communities to understand the emergency related actions and procedures.

The rehabilitation works of dams need to be designed and supervised by competent professionals. The TORs for detailed design consultancy, including required investigations, survey, and supervision, will be reviewed and cleared by the Bank.

The dam safety conditions of additional dams to be identified during implementation need to be reviewed an independent dam specialist and the Bank. Similarly, the results of the detailed design of the four identified dams (5 reservoirs) and additionally identified dams should be reviewed by an international dam specialist and the Bank. The TORs for independent safety assessment and rehabilitation design review of these dams will be reviewed and cleared by the Bank.

The four dam safety plans, i.e. Construction Supervision and Quality Assurance Plan, Instrumentation Plan, O&M Plan, and Emergency Preparedness Plan (EPP) need to be prepared for each of "large" dams by detailed design consultancy during preparation. The key elements of these dam safety plans are provided at the bottom of this Annex and Appendixes for Preliminary O&M Plan and Framework EPP. In particular, the Preliminary O&M Plan and Framework EPP have been discussed and agreed on.

The CSQA Plan, Instrumentation Plan, O&M Plan, and EPP will be reviewed by an international dam specialist and the Bank.

An EPP brochure will be prepared for information dissemination and awareness raising of the local communities regarding the warning procedure, evacuation routes, meeting points, etc. in the case of potential dam breach.

Detailed procedures are described for: (i) 4 dams / 5 reservoirs that have been identified and (ii) additional dams to be identified during implementation as follows:

Identified Dams

A dam safety review, which was carried out during preparation, has been undertaken with the identified dam safety issues and proposed remedial measures. The 4 dams / 5 reservoirs are categorized as large dams.

The detailed investigation and design studies for remedial works will be undertaken by a consulting firm during implementation based on the TORs to be cleared by the Bank.

The results of the investigation and detailed design will be reviewed by an international dam specialist and the Bank.

The CSQA Plan, Instrumentation Plan, O&M Plan and EPP will be prepared by the aforementioned design consultant and will be reviewed by an international dam specialist and the Bank.

An EPP brochure will be prepared for information dissemination and awareness raising of the local communities regarding the warning procedure, evacuation routes, meeting points, etc.

Dams to be identified during implementation

A dam safety review of the dams will be undertaken by an international dam specialist once additional irrigation schemes and associated dams are identified. The report will be reviewed by the Bank.

The detailed investigation and design studies will be undertaken by a consulting firm if remedial measures are required to address dam safety risks. The TORs will be reviewed by the Bank.

The results of the detailed investigation and design will be reviewed by an international dam specialist and the Bank.

The CSQA Plan, Instrumentation Plan, O&M Plan and EPP will be prepared by the design firm if the dams are categorized as large dams.

The CSQA Plan, Instrumentation Plan, O&M Plan and EPP will be reviewed by the independent dam specialists and the Bank.

An EPP brochure will also be prepared for local communities.

Dam Safety Plans

For large dams including 4 dams (5 reservoirs) that have been identified and additional ones to be identified during implementation, the following Dam Safety Plans should be prepared as per OP 4.37 Dam Safety Policy of the WB. These include:

Construction Supervision and Quality Assurance (CSQA) Plan

The CSQA Plan covers the organization, staffing levels, procedures, equipment and qualifications for supervision of the construction of remedial works on existing dams and ensures that the dam safety related elements of the design are sufficiently addressed during construction. The Plan for each of large dams will be prepared by the detailed design consultant during project implementation and will be submitted to the Bank for review before the detailed design is completed.

Instrumentation Plan

The Instrumentation Plan indicates the required monitoring instruments, including existing ones and newly procured ones, to monitor and record dam behavior and related hydro-meteorological, structural, and seismic factors. The Plan also covers the types, numbers, layout, and specifications of instruments as well as reading frequency and thresholds for triggering warning for each type of equipment. The Plan for each of large dams will be prepared by the detailed design consultant during project implementation and will be submitted to the Bank and one or two independent dam specialists for review before the detailed design is completed.

Operation & Maintenance (O&M) Plan

The O&M Plan covers the organizational structure, staffing, technical expertise, and training required; equipment and facilities needed to operate and maintain the dam: O&M procedures, and arrangements for funding O&M activities, including regular surveillance, monitoring, long-term maintenance and safety inspections.

The O&M Plan for each of large dams will be prepared by the detailed design consultant during project implementation and will be submitted to the Bank and an international dam specialist for review before the detailed design is completed. The Plan should be prepared based on the preliminary O&M Plan (see Annex 6.1) that has been discussed and agreed during preparation.

Emergency Preparedness Plan (EPP)

The EPP specifies the roles and responsibilities of relevant parties when dam failure is considered imminent, or when expected operational flow release threatens downstream life, property, or economic conditions that depend on river flow levels. It include the following items: clear statements on the responsibilities for dam operations decision making and for the related emergency communications; maps outlining inundation levels for various emergency conditions; flood warning system characteristics; and procedures for evacuating threatened areas and mobilizing emergency forces and equipment. Inundation and flood hazard maps should indicate the dam break wave arrival time and duration of inundation, based on dam break modelling and simulation of dam break wave propagation in the downstream areas. Flood damage estimates and potential loss of life should be developed on the basis of the above results.

The EPP for each of large dams will be prepared by the detailed design consultant during project implementation and will be submitted to the Bank and an international dam specialist for review before the detailed design consultancy is completed. The Plan should be prepared based on the framework EPP (see Annex 6.2) that has been discussed and agreed during preparation.

Annex 6.1: Preliminary Operation & Maintenance Plan

1 Introduction

Some 7-8 irrigation systems will be rehabilitated as part of the Agriculture Development Support Project under the Ministry of Agriculture. Four systems have already been preliminarily identified and they all are supplied from reservoirs. These systems are located in the Regions of Mandalay, Sagaing, East Bago and Nay Pyi Taw. These existing dams will supply water for irrigation use to the irrigation areas in Table 8.

This preliminary Operations and Maintenance (O&M) Plan outlines regular operation and maintenance activities of the Male Nattaung Dam (Mandalay), North Yamar Lower and Upper Dams (Sagaing), Swa Dam (East Bago) and the Sinthe Dam (Nay Pyi Taw). The Plan also covers organizational structure, staffing, technical expertise, and training required; equipment and facilities needed to operate and maintain the dam; O&M procedures; and arrangements for funding O&M, including long-term maintenance and safety inspections.

The O&M Plan is one of four Dam Safety Plans required by the Bank Dam Safety Policy (OP 4.37), which includes: (i) the Plan for Construction Supervision and Quality Assurance, (ii) the Instrumentation Plan, (iii) the Emergency Preparedness Plan, and (iv) this O&M Plan.

This Preliminary O&M Plan shall be reviewed and completed as full-fledged O&M Plans for each dam including the aforementioned 4 dams (5 reservoirs) and additional ones to be identified through the preparation of detailed designs for remedial works during the first two years of project implementation, reflecting actual conditions and final rehabilitation design of the dam and associated equipment, such as dam safety assessment report, supplier's O&M Manual of electrical and mechanical equipment. The O&M Plan should also be updated when any significant changes are introduced to the dam operating system and procedures. The full-fledged O&M Plans for each dam will not be subject to disclosure due to security reasons.

1.1 Structure of this Document

This preliminary O&M Plan serves at the basis for preparing the full-fledged O&M Plan and includes the following:

- Key features of the Dam and associated facilities.
- Operational requirements (roles and responsibilities, water management, operating procedures, flow restrictions etc).
- Maintenance requirements.
- Surveillance requirements.

1.2 Key Features of the Dams

The dams indicated below are the result of a preliminary selection process. Technical details on works and operational improvement will be part of the project feasibility studies and detailed design. The proposed dams are all earth-fill dams. The dams have intake structures and spillways but none of the dams have sediment flushing gates or emergency drawdown gates. The characteristics and key features of the preliminary selected dams in the four regions are provided in Table 8.

Table 8: Key features of dams in the preliminary selected irrigation systems

A	System Description		Nay Pyi Taw	Sagaing	Bago-East	Mandalay
1.	**Name and Location**	Name: Region: District/ Townships:	Sinthe Nay Pyi Taw Tat Kone	North Yamar Sagaing Yinmarbin/ Pale+ Yinmarbin	Swa Bago-East Taungo, Yedashe	Male Nat Taung Mandalay Pyin OO Lwin/ Singu
2	**Dam**	Dam name Type: Year of completion : Dam Height [m] Length Crest [m] Storage: [acre feet] Total Live: Dead: Total reservoir command area Gross (acres) Net (acres) Hydropower Domestic Water supply	Sinthe Dam Earthfill 1999-2000 33 411 143,090 125,787 17,303 25,416 15,218 0 30 households	Yamar Lower and /Upper dam Earthfill/Earthfill 1998-1999 20/41 3,170/366 14,057/122,900 11,221/101,660 2,836/21,240 31,000 30,320 0/250kW 0	Swa Chaung Earthfill 2004-2005 30 m 2012 m 216,350 188,180 28,170 35,000 23,467 0 0	Male Nat Taung Earthfill 2007-2008 22 m 3612 m 57,470 50,060 7,410 10,000 6,500 0 0
3.	**Water Resources**	River name: Catchment size (sq miles)	Sinthe Chaung 308	Yamar Chaung 191	Swa Chaung 403	Male Nat Taung 75

2 Management Structure

During the dam operation, the dam owner and operator is responsible for, among others, the following key elements that relate to dam safety:

- Dam safety management;
- Emergency preparedness;
- Asset management;
- Dam surveillance;
- Flood management.

Detailed management structure required for undertaking the above tasks defining clear roles and responsibilities shall be specified in the O&M plan.

2.1 Staffing

A staffing schedule required to carry out all the tasks under the O&M plan shall be prepared. The schedule shall be sufficiently detailed describing the number of staff, qualifications, roles and responsibilities, reporting lines etc. The responsibilities description should also specify details, such as who operates the dam under different condition, who is responsible for operating/inspecting what etc.

The dam will be manned 24 hours per day. Operation, inspection and maintenance of all aspects of the dam are to be undertaken by suitably qualified staff.

Surveillance inspections are to be conducted by staff trained in dam safety inspections. Surveillance data assessments and dam safety decisions are required from qualified engineers experienced in dam safety management.

Adequate training of qualified staff shall be done as part of the O&M plan for successful implementation of these Safety Plans. The operators shall undergo a training covering the technical aspects of the dam equipment and their operation. The training program shall cover both the features and performance of the equipment and their operation, which shall be illustrated both through off site-theoretical and on site-practical training sessions.

3 Dam Operating Procedures

The dam owner/manager is required to carry out all the dam operation activities which include:

- A reservoir first impoundment plan (not relevant for preliminary selected existing and operational dams);
- Reservoir rule curves (e.g. reservoir water level to be kept during different seasons, if relevant);
- Discharges under normal conditions (in line with the urban and irrigaiton water supply as well as in-stream flow requirements); and
- Discharges under abnormal/unusual (flood and drought) conditions.

3.1 Dam Operating Plan

The O&M plan will provide the details of the operating system, including the following:

- Flow control system operations (gates, valves, pumps, etc.);
- Manufacturers information, design reports, installation reports;
- Water level gauge operation; and
- SCADA and alarms (if applicable), etc.
- Sedimentation management plan

The reservoir elevation-area-capacity curve, rating curve of the spillway and other outlet works, as well as the reservoir rule curve will be attached in annexes.

4 Maintenance

A maintenance program for the dam and appurtenant structures shall be prepared in line with the O&M Plan shall define all tasks to be undertaken as scheduled or recommended to ensure:

- Reliable and safe operation;
- Regular inspection;
- Early detection of deterioration;
- Rehabilitation to be carried out in a timely manner to ensure all plant is kept in good condition.

4.1 Maintenance Program

Maintenance program identifies components of the dam and appurtenant structures requiring maintenance, schedule maintenance activities and record what is done when and by whom.

Routine maintenance is that which can typically be scheduled on the basis of time (weekly, monthly, etc.), usage (Number of cycles hours of operation, etc.) or observed condition

from periodic visual inspections that identify excessive wear, corrosion etc. Routine maintenance may range from simple change of lubricants to a complete overhaul.

The maintenance inspection program is carried out at the same time as the dam safety surveillance inspections.

- Check sheets for safety and maintenance inspections of each component of the project shall be included in Appendix (to be prepared).
- A flowchart illustrating what to do if maintenance and / or dam safety issues are identified shall be included in Appendix (to be prepared).

An overview of the regular maintenance programme is shown in Table 9.

Table 9: Regular maintenance inspection program (to be prepared)

Maintenance Location	Activity	Frequency
Main Dam	Maintenance inspection	Monthly, Annually
Spillway	Maintenance inspection	Monthly, Annually
Intake Tower	Maintenance inspection	Monthly, Annually
Intake gate, Low level outlet, Maintenance gates, etc	Electrical and Mechanical Maintenance, Inspection and Testing	Monthly, Annually
Access roads and dam office buildings	Maintenance inspection Drainage channel and culvert watercourse clearing	Monthly, Annually
Emergency maintenance	Maintenance required after an event such as a flood, typhoon, earthquake	As required

4.2 Filing of Maintenance and Inspection Reports

Inspection of the dam shall be scheduled and good records maintained. This shall be monthly/yearly for routine inspection, periodically (5-years) for comprehensive inspection and after critical event, e.g., severe rains, earthquake, storm or extremely high storage.

Following each inspection, the inspection records/reports should be assessed by a maintenance supervisor for organizing the appropriate maintenance activity.

Records of all maintenance activities are to be kept to provide a cross reference with the initial maintenance inspection recommendation.

Routine maintenance inspections at least monthly are appropriate to identify any maintenance needs and to assess an appropriate maintenance response. A Monthly Surveillance Check sheet – Dam Safety and Maintenance shall be prepared and included in the Appendix (to be prepared).

4.3 Time Based Maintenance, Inspections and Testing

Mechanical and electrical equipment require appropriate maintenance and testing. Gates, lifting equipment and power supplies should be continuously maintained during inspections and minor maintenance works done.

The aim of the testing program is to confirm that the equipment is in good working order and is capable of normal and emergency operation. In addition it is necessary for operators to be familiar with the performance of this equipment, especially if it is otherwise infrequently used.

Typical time based maintenance and testing activities for the equipment installed at the dam is to be provided. It is important that the equipment manufacturers' maintenance recommendations are considered and integrated with the generic tasks described below.

5 Dam Safety Surveillance

5.1 Purpose of Surveillance

Scheduling of dam safety surveillance including visual inspections and instrument monitoring shall be clearly detailed in the O&M plan. This would enable checking whether the dam and it is appurtenant structures are performing safely. Surveillance of the Dam is carried out in order to:

- Compile an accurate history of observations relevant to the assessment of dam safety;
- Allow the safety performance of the dam to be regularly assessed and reported;
- Facilitate the early detection and reporting of potential deficiencies or adverse trends, and the monitoring of consequential responses and their outcomes; and
- Fulfil legislative and regulatory requirements.

5.2 Instrumentation Monitoring (to be completed with the Instrumentation Plan)

Instrumentation is required to monitor dam safety particular in the following areas:

- Deformation and movement of the body of the dam;
- Seepage monitoring (which includes the monitoring weirs or quantitative visual observations);
- Piezometer head;
- Reservoir water levels, etc.

5.3 Regular Inspection Program and Frequency

Routine surveillance applies where no known potential safety deficiency exists. The regular inspection program is to be outlined in a table format. Check sheets for inspection of each feature of the project shall be included in the Appendix to the O&M plan. Post-inspection actions shall also be outlined in a process diagram in included in the Appendix.

5.4 Data Collection, Storage and Analysis

5.4.1 Data Collection

Surveillance inspectors are responsible for field data collection, visual observations as well as instrument readings which includes river flow, precipitation, water levels, seepage

monitoring etc. The inspectors shall therefore be appropriately trained in accurate data collection through data collection sheets.

5.4.2 Data Storage

Check sheets used during all inspections should be filed systematically. Copies should be kept on site, as well as being forwarded to the O&M Manager for review. Data recorded this should be stored and analyzed using a spreadsheet. The spreadsheet should be backed up to another office for protection.

5.4.3 Data Analysis

Surveillance data and information will be collected, systematized, analyzed, accessed and compared with the design assumptions in order to detect any abnormal conditions and communication as defined in the communication protocol made. This would enable appropriate actions to be taken in a timely manner.

6 Alarm Levels (to be determined)

6.1 Visual observations

The check sheets prepared and included in the Appendix shall include a visual observation significance rating, to be applied by the inspector to determine when an unusual condition is observed.

6.2 Instrumentation

The following levels of alarm shall be set when involving instrumentation for data analysis:

Level 1: Data Check Alarm

Data is checked to confirm that it is within the physical limits that can be measured by the instrument set-up.

Level 2: Design/Historical Check Alarm

A cautionary limit that while data is within acceptable limits, it is outside the expected limits based on design expectations or those based on historical precedence and trends.

Level 3: Alert Alarm

Data is outside acceptable limits. An alarm of this level would indicate behavior that exceeds acceptable limits.

Design of the alert level alarms is to be specified by a suitably qualified dam engineer.

7 Regular Reporting Program

Table 10 outlines the reporting required for surveillance.

Table 10: Regular reporting program (to be determined)

Report	Frequency
Monthly Dam Safety Reports	Monthly, reviewing information collected in inspection check sheets
Annual Dam Performance Report	Annual submission
5 Year Dam Safety Verification	Every 5 year
Special Purpose Reports	Under the following conditions: a) detection of abnormal conditions of dam seepage or deformation, b) the dam is heavily damaged and/or the condition is deteriorating, c) failure or malfunction of the flow control mechanisms occurs during flood season, d) heavy rain is experienced in the reservoir catchment with the reservoir already full, or e) where there is any suspicion of sabotage.

Maps, drawings, diagrams, key staff schedule, etc. will be attached to Annexes (to be prepared).

Annex 6.2: Framework of Emergency Preparedness Plan

1. Introduction

1.1 Background

Some 7-8 irrigation systems will be rehabilitated as part of the Agriculture Development Support Project under the Ministry of Agriculture. Four systems have already been preliminarily identified and they all are supplied from reservoirs. These systems are located in the Regions of Mandalay, Sagaing, East Bago and Nay Pyi Taw. These existing dams supply water for irrigation

As part of the ADSP, the Irrigation Department of the Ministry of Agriculture is preparing Dam Safety Plans for the Male Nattaung Dam (Mandalay), North Yamar Lower and Upper Dams (Sagaing), Swa Dam (East Bago) and the Sinthe Dam (Nay Pyi Taw) (as per the Bank policy on safety of dam (OP 4.37). The Emergency Preparedness Plan (EPP) is part of the Dam Safety Plans consisting of (i) Plan for Construction supervision and Quality Assurance (for dam improvement works) (ii) Instrumentation Plan, (iii) Emergency preparedness plan, and (iv) Operation and Maintenance plans. For the life of any dam the developer/owner is responsible for ensuring appropriate measures are taken and sufficient resources provided for the safety of dam. The EPP identifies potential emergency conditions of a dam and specifies actions the dam owner should take to address potential problems and enable the dam owner issue early warning and notification to downstream emergency response management units.

1.2 Purpose of the EPP Framework

This EPP framework is prepared to guide the development of the full-fledged EPP including responsible organizations, communication procedures, downstream topographic survey, dam failure modes analysis, inundation simulation, etc.

The full-fledged EPPs will be prepared for each dam, including the aforementioned 4 dams/5 reservoirs and additional dams to be identified through detailed design of remedial works during the first two years of implementation. The full-fledged EPPs will not be disclosed due to security reasons, but a brochure will be prepared for information dissemination to the downstream communities regarding emergency warning notification, evacuation procedure (routes, meeting points), etc.

The purpose of this EPP is to identify imminent failure risks of the dam and appurtenant structures and to undertake emergency actions, including warning issuance to downstream areas and guiding personnel on what actions to take, when and how to take these actions. The plan entails setting out the following:

(i) Define, identify and evaluate events with the potential to compromise the dam and appurtenant structure safety;
(ii) Establish procedures for declaring an event as a dam safety emergency;
(iii) Establish communications to minimize the consequences of the dam safety emergency;
(iv) Detail actions to be taken in response to the dam safety emergency.

The EPP for each dam shall in general cover the following parts.

2. General information

Preparation of section on general information will be done in close collaboration of the various agencies involved in the EPP. These agencies would also be responsible for the review of the EPP.

2.1 Main features of the preliminary selected Dams

The Dams indicated below are the result of a preliminary selection process. Technical details on works and operational improvement will be part of the project feasibility studies and detailed design. Following are the key features of these dams in the four regions.

Main features of Dams

A	System Description		Nay Pyi Taw	Sagaing	Bago-East	Mandalay
1.	**Name and Location**	Name: Region: District/ Townships:	Sinthe Nay Pyi Taw Tat Kone	North Yamar Sagaing Yinmarbin/ Pale+ Yinmarbin	Swa Bago-East Taungo, Yedashe	Male Nat Taung Mandalay Pyin OO Lwin/ Singu
2	**Dam**	Dam name Year of completion : Dam Height [m] Length Crest [m] Storage: [acre feet] Total Live: Dead: Total reservoir command area Gross (acres) Net (acres) HydropowerDomestic Water supply	Sinthe Dam 1999-2000 33 411 143,090 125,787 17,303 25,416 15,218 0 30 households	Yamar Lower and /Upper dam 1998-1999 20/41 3,170/366 14,057/122,900 11,221/101,660 2,836/21,240 31,000 30,320 0/250kW 0	Swa Chaung 2004-2005 30 m 2012 m 216,350 188,180 28,170 35,000 23,467 0 0	Male Nat Taung 2007-2008 22 m 3612 m 57,470 50,060 7,410 10,000 6,500 0 0
3.	**Water Resources**	River name: Catchment size (sq miles)	Sinthe Chaung 308	Yamar Chaung 191	Swa Chaung 403	Male Nat Taung 75

2.2 Roles and Responsibilities

The EPP shall specify the roles and responsibilities of key Government organizations which are responsible for execution of the EPP which is proposed under this framework. The agencies involved in the EPP could include (subject to review and discussions):

- Dam operator: Regional Irrigation Department of respectively Nay Pyi Taw, Sagaing, Bago and Mandalay under the Irrigation Department of the Ministry of Agriculture
- Regional Government of Nay Pyi Taw, Sagaing, Bago and Mandalay
- Hydrology Branch, Irrigation Department (ID), Ministry of Agriculture and Irrigation (MOAI)
- Department of Meteorology and Hydrology, Ministry of Transport;
- National Disaster Operations Centre (NDOC); Multi Hazards Early Warning Center;
- Others, etc.

2.3 Organization of communication

Any issues that are identified are to be reported to the safety officer, who will in turn communicate to the relevant disaster structures. The response to an identified emergency situation should proceed in four step process, which includes the following steps:

- Inform the dam owner (ID, MOAI)
- Inform responsible authorities of the potential emergency situation.
- Inform the communities downstream of the dam of the potential emergency situation.
- Initiate efforts to prevent or delay the dam failure.

It is also important to know what types of emergency repairs could be attempted for different modes of failure. The EPP will provide a list of possible actions, such as emergency rapid drawdown of the reservoir, in order to prevent possible failure. Caution must be exercised by those working around the dam during the implementation of any of these emergency measures. It is also imperative to consult a dam engineer prior to taking any of the suggested actions to delay or prevent dam failure.

The actions and procedures that need to be followed during a situation of emergency must be clear and well defined. A clear communication protocol would therefore be prepared in the EPP, to communicate any emergency situations to prevent; Misunderstandings between key personnel as a result of incorrect communication of information, requests and instructions; Misunderstandings with regards to the level of emergency amongst key personnel, false alarms resulting from incorrect decisions resulting in critical delays in issuing genuine alarms. The EPP would therefore develop a clear communication protocol chart.

Other components on general information on the EPP shall include:

(i) Organization of evacuation;
(ii) Organization of rescue activities;
(iii)Provision of services (police, medical, food water); and
(iv)Cooperation between government structures

The development of EPP on the above will be done in close collaboration of the key agencies involved in the event of emergencies which could include (subject to further review and discussion):

- Dam operator: Regional Irrigation Department of respectively Nay Pyi Taw, Sagaing, Bago and Mandalay under the Irrigation Department of the Ministry of Agriculture
- Regional Government of the regions of Nay Pyi Taw, Sagaing, Bago and Mandalay
- Hydrology Branch, Irrigation Department (ID), Ministry of Agriculture and Irrigation (MOAI)
- Department of Meteorology and Hydrology, Ministry of Transport;
- National Disaster Operations Centre (NDOC); Multi Hazards Early Warning Center
- Dam Designer/ Engineer
- Others, etc.

3. Description of dam potential failure modes

This section of the EPP shall present the results of analysis of the likely failure modes of the dam.

Dam operation staff should be aware of the principal types of failure and their associated telltale signs in order to identify and put in place action plans to either avert or reduce the disastrous impacts of a dam failure.

The typical types of dam failure and their associated signs of embankment dams are in general categorized as follows:

• **Overtopping**

The level of the impounded water in the dam should be closely monitored, especially during periods of heavy rainfall and runoff. If the spillway and reservoir capacities are exceeded, overtopping will occur. Overtopping could result in the upstream or downstream slope of the dam embankment slipping or being washed away. A blockage in the spillway may cause overtopping of the dam.

• **Piping caused by internal erosion of soil from the dam or its foundation**

Piping is usually identified by a rapid increase in the seepage through the dam wall, a muddy discharge at or near the downstream toe of the dam wall, and/or a whirlpool (eddy) in the reservoir. Boils at or near the downstream toe of the dam wall may be early signs that piping has begun.

• **Slide on the upstream or downstream dam embankments**

A slide in the upstream or downstream dam embankments may result in a lowering of the dam crest as well as providing a weakness in the dam wall whereby piping may occur.

• **Failure of the Spillway**.

A sudden failure of the spillway may result in complete failure of the dam. This may be caused by damage to the spillway during a flood event due to weaknesses in the concrete or as a result of debris in the spillway during a flood event.

The analysis of the dam failure with various modes would be undertaken for each dam through detailed investigation and design, and coupled with downstream topographic mapping and flooding simulation for delineating the areas which would be affected in case of the dam failure.

4. Inundation Map

This section of the EPP shall present the results of dam break analysis / downstream flooding simulation and delineate the areas which would be affected in case of the dam failure. The inundation maps therefore clearly show the areas which would be affected in the event of dam failure. The maps shall show the inundation resulting from the following flood events such as:

- A ‘sunny’ day dam break flood – usually associated with an earthquake on a fine day.
- A ‘rainy’ day dam break flood – the dam crest flood combined with dam failure.

The ‘sunny’ day dam break flood occurs with normal low flow in the river. The ‘rainy’ day dam break flood occurs when the dam crest level flood is passing the dam. Flooding simulation will be undertaken for dam break scenarios (to be determined) including flood discharge volume and return period, etc.

On the inundation maps, relevant data such as the maximum water depth, maximum flow volume, flood peak arrival time, is provided for selected locations. The inundation maps will be prepared based on downstream topographic survey, dam break analysis and downstream inundation simulation for each of five dams through detailed design consultancy during the first two years of project implementation. It is suggested that the Upper and Lower Yamar Dams should be combined for producing a single EPP.

5. Monitoring systems and early warning system

The EPP shall define the dam surveillance system to be put in place. The plan shall include identifying equipment/facilities requiring physical/visual inspection, remote monitoring, testing etc. The surveillance frequency identifying what requires daily, weekly, monthly, annual inspection etc. shall also be defined. The persons responsible for the various levels of surveillance shall also be clearly defined.

The surveillance shall include monitoring of factors which include, deformation, movement, vibration and routine factors like flow levels. Inspection of structures which include galleries, spillway, penstocks etc. Tests on all electro mechanical, electronic/electrical equipment shall also be done in the surveillance.

The EPP requires effective monitoring system and early warning system. This comprises of three components:

- Key Dam monitoring instruments
- Early warning system
- Communication system
- Proper and systematic record keeping

a) Dam monitoring instruments

The required instrumentation for the dam shall be designed and installed from provided design specification and approved procedures for supply and installation which shall be elaborated in the detailed design. Instrumentation could include monitoring deformation or movement of the dam body, seepage, reservoir water level etc.

The EPP shall be prepared to enable instrumentation technician identifying potential risks through processing and evaluating data from instrument observations and assessing the levels of flood waters.

Any issues that are identified are to be reported to the safety officer, who will in turn communicate to the relevant disaster structures. As part of the responsibilities of the operations technician located at the Dam, a series of regular checks relating to safety aspects of the dam will need to be undertaken. Any issues noted relating to requirements of these checks, which shall be listed in a table format, should be reported to the Dam Safety Officer. The operations staff is responsible for the identification and assessment of engineering aspects that may affect the safety and integrity of the dam. The Dam Safety Officer shall be:

- Fully acquainted with the monitoring instrumentation installed at the dam and the corresponding performance response of the structures (e.g. limits on expected settlements, expected flow rates in the flow seepage, flow monitoring weirs etc.)
- Fully acquainted with the requirements of the O&M Manual and this EPP;

- Fully informed of the procedures to be followed in informing the relevant disaster management structures; and
- Fully acquainted with the overall disaster management structures.

b) Early warning and identification of emergency conditions

The dam operation staff should be able to identify an emergency condition and should be aware of the principal types of failure and associated tell-tales in order to identify and put in place action plans to either avert or reduce the disastrous impacts of a dam failure. The typical safety issues and the associated signs are summarized in Table 11, which shall be defined in detail in the full-fledged EPP based on the detailed investigation and remedial works design consultancy.

Table 11: Generic warning signs and possible emergency conditions for embankment dams (To be analyzed)

Warning Signs	Possible Emergency Conditions
New seepage area, increased flow from an existing seepage/wet area, or anomalous increases in a monitored drain flow	New or increased seepage emerging at the toe of the dam, on the abutments, on the downstream slope of the dam, or in areas downstream of the dam could be of great concern because it could relate to initiation and development of a seepage-related potential failure mode. Similarly, an increase in any of the monitored seepage/drain flows would indicate changed seepage conditions at the dam site that could possibly relate to initiation and development of a seepage-related failure mode. Close monitoring of the dam should be instituted, and the situation should be promptly investigated.
Evidence of material transport by seepage flow	This is a direct indication of possible seepage erosion or piping. Small amounts of sediment or small seepage rates that are constant could indicate the potential failure mode is just initiating and developing. Muddy seepage that is rapidly increasing is very serious and dam failure could follow quickly.
Anomalous water pressure data	Unusual piezometer water pressure readings (not consistent with historical performance) could indicate changed seepage conditions and performance of the dam and/or foundation and should be promptly investigated. Such data would be of most concern when occurring in conjunction with other evidence of changed seepage conditions (new seepage or wet areas, changes at existing seepage or wet areas, anomalous increases in monitored drain flows, etc.)
Sinkholes, or unusual embankment settlements or deformations	Sinkholes could be due to subsurface removal of embankment or foundation material by seepage flow. Similarly, unusual settlements or deformations could indicate subsurface material is being removed by seepage flow. Sinkholes or unusual settlements or deformations of the dam embankment should be taken seriously and investigated quickly.
Transverse crack (upstream-downstream direction)	This does not mean that a seepage-related failure mode is necessarily underway, but only that increased attentiveness to this possibility is

	warranted. Changes in the seepage performance of the dam (including monitoring of embankment and foundation water pressures) provide the best indication of whether a seepage-related failure mode may have initiated. Close monitoring of the dam should be performed during reservoir filling above the current reservoir level.
Longitudinal crack (parallel to the axis of the dam)	This could be due to sliding instability of the dam, which would be of great concern. This also could be due to embankment settlement, perhaps due to differing rates of consolidation for adjacent zones in the embankment. In any event, the dam should be closely monitored for at least a few days to ensure that no continuing sliding movements are occurring.

Note: This table assumes normal operating conditions only without considering post-earthquake and large flood events.

c) Communication system

Clear communication between dam management (dam instrumentation technician with dam safety officer) and local authorities and the community downstream of the dam, is particularly important, especially in a situation of emergency. A list of people and authorities to contact in the event of an emergency should be displayed in a central place located at the Dam, preferably near to a telephone or radio transceiver. In addition, a list of phone numbers of the key members should be given to all staff working at the dam. This telephone list will need to be checked and updated regularly. A list of the contact numbers for various authorities and persons responsible for the Dam is presented in sample Table 12.

Table 12: Contact list of responsible organizations and officials in case of emergencies (to be prepared)

Name of Organization /Responsibility	Name of Representative	Telephone Contacts
Dam Instrumentation Technician		
Dam Safety Officer		
Head of Dam Operation Office		
Township Administration office		
Multi Hazards Early Warning Center		
Ministry of Agriculture and Irrigation		
Regional Governments		
Department of Meteorology and Hydrology		

d) Other Safety Equipment

In addition to the Early warning system, the following equipped should also be provided:

- Standby generators;
- Hand tools for routine maintenance and repair works;
- Communication system, by radio, landline/mobile telephone, mobile or satellite;
- Transport to the dam for the supervisor, e.g., motorbike.

6. Warning levels and response matrix

The EPP shall provide a well-defined warning levels and response action in the in the event of an emergency. The warning levels and response matrix suggested in Table 13 is indicative and subject to further review and finalization in the full-fledged EPP.

Table 13: Warning levels and response matrix (to be defined)

Warning Level	Proposed action	Proposed communication lines
Level 1 Minor deficiencies	Mobilize personnel and equipment to deal with minor deficiencies at Dam Office	Staff Officer/ Assistant Director informs the Director. In case of Minor deficiency Director instructs Staff Officer/ Assistant Director to deal with minor deficiencies
Level 2 Serious deficiencies	Local public officials have to be informed to be prepared for action if the situation gets worse	Staff Officer/ Assistant Director, who informs Director General of ID, MOAI, who informs Minister need budget for execution of remedial works
Level 3 Very serious deficiencies	Local public officials have to be informed to be prepared for action if the situation gets worse	Staff Officer/ Assistant Director informs managing director who informs Director General of ID, MOAI, who informs Minister; need budget for execution of remedial works
Level 4 Alarming deficiencies	Special Mobile Force, police and local public to be alarmed; radio broadcasting to be interrupted to warn the population; the population to be evacuated	Staff Officer/ Assistant Director informs managing director, who informs Director General of ID, MOAI who informs Minister, who informs the Deputy President. Implementation of EPP necessary

Lists of the names and numbers of people that would need to be contacted in the event of a potential dam failure should be posted in a prominent, readily accessible location at the dam near to a telephone or radio transmitter. A copy of the EPP should also be kept at the dam operation office. In addition, contact lists should be supplied to all technicians and staff working at the dam site. This list should be periodically (at least twice a year) verified and up dated as necessary.

7. Evacuation plan

The EPP shall define practical evacuation procedures which shall include evacuation routes to be used in case of emergencies and also locate safe havens where persons at risk shall relocate to in order to be safe from risk of floods in the event of a dam failure. Various agencies would be involved in the event of evacuation and the EPP would define the roles of the various

agencies. The key agencies involved could include the following offices, but are subject to review and discussion for the full-fledged EPPs:

- President Office
- Governor's Office
- Township Administration office;
- Multi Hazards Early Warning Center
- Red Cross
- Hospitals
- Police, etc.

8. Power supply and safety measures

The power source for those dams from the national grid could be negatively affected during emergency periods.

The impacts of power loss at the dam site may include; loss of power for telephone communication, monitoring equipment and data transmission may also be affected.

The EPP prepared shall clearly analyze the implications of a dam failure or an emergency situation on power supply to the dam operations, emergency activities, rescue activities etc. as well as back-up power supply options (such as generator, etc.)

9. Maintenance testing and training

The EPP shall be reviewed and revised annually, and changes made to reflect changes, e.g. personnel, contacts, updating of equipment, facilities, technical skills etc.

Testing is an integral part of the EPP, and provision should be made for this.

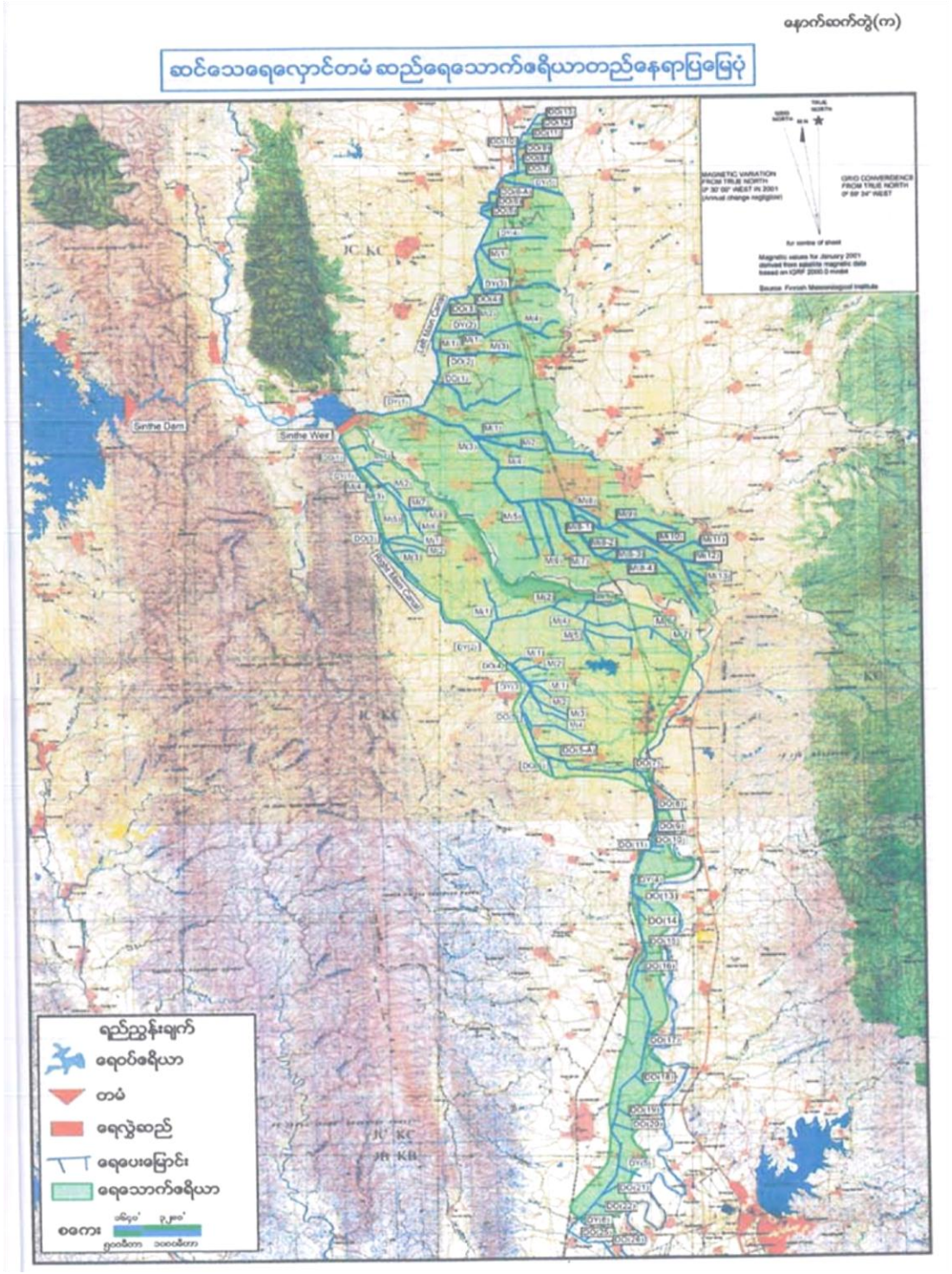
The EPP shall also provide for training of project O&M and Surveillance staff, which is an essential component of having effective response to dam safety emergencies.

There are three essential levels to this training:

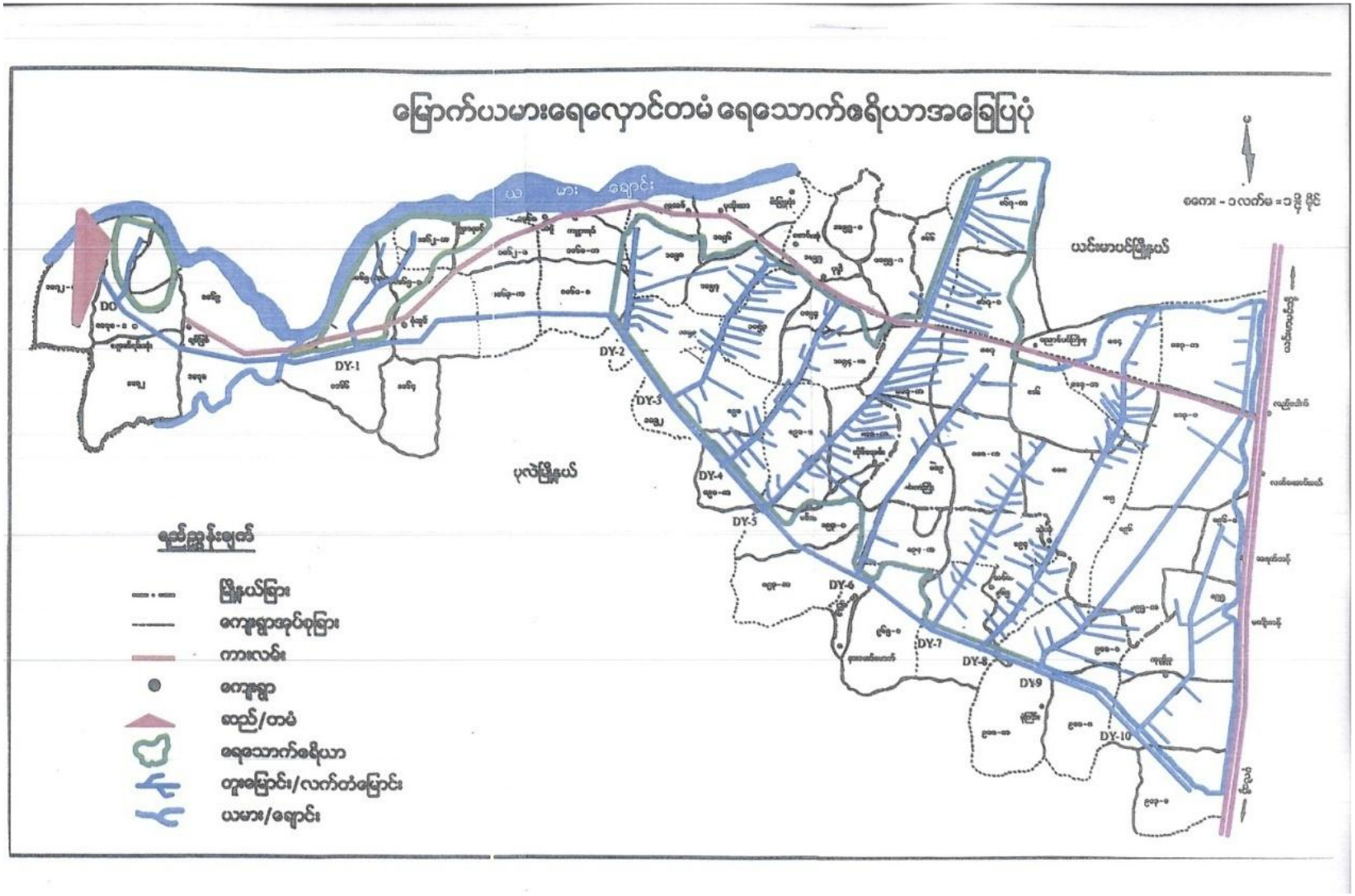
- Initial workshop led by an experienced dam safety engineer training project O&M and Surveillance staff by going through dam safety incident scenarios and developing appropriate response by key project staff and the associated preparations required for appropriate response;
- A field exercise with project staff responding to a simulated dam safety incident arranged with packages containing a description of the incident conditions at initiation of the exercise, along with subsequent information packages to be opened and responded at subsequent times and project locations; and
- A field exercise with project staff and staff from the ministry and other agencies responding to a simulated dam safety incident arranged as described above.

Appendix I: Maps of Irrigation Schemes

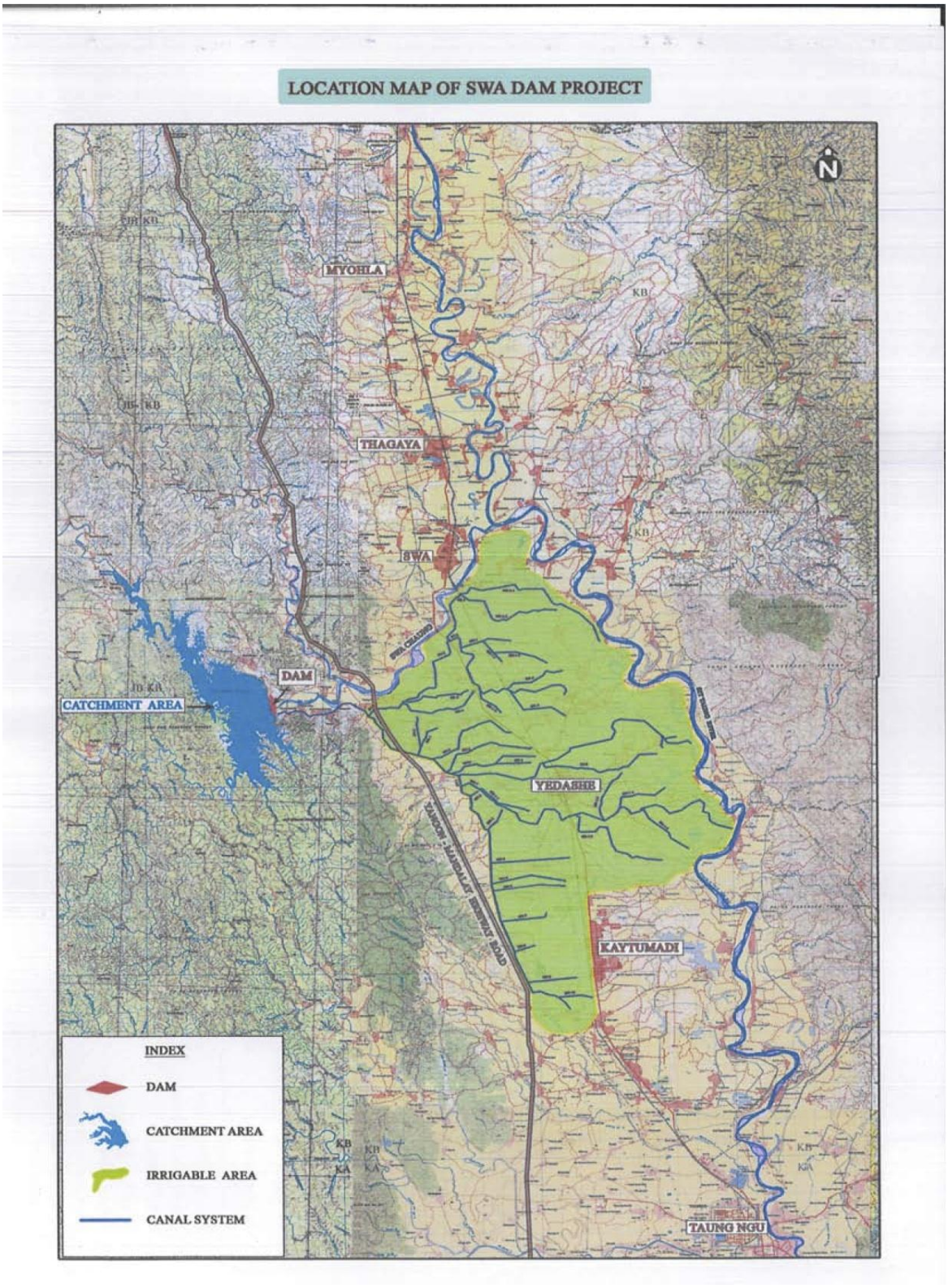
Appendix I (a): Map of Sin The Irrigation Scheme



Appendix I (b): Map of North Yamar Irrigation Scheme



Appendix I (c): Map of Swar Chaung Irrigation Scheme



Appendix I (d): Map of Male Nattaung Irrigation Scheme

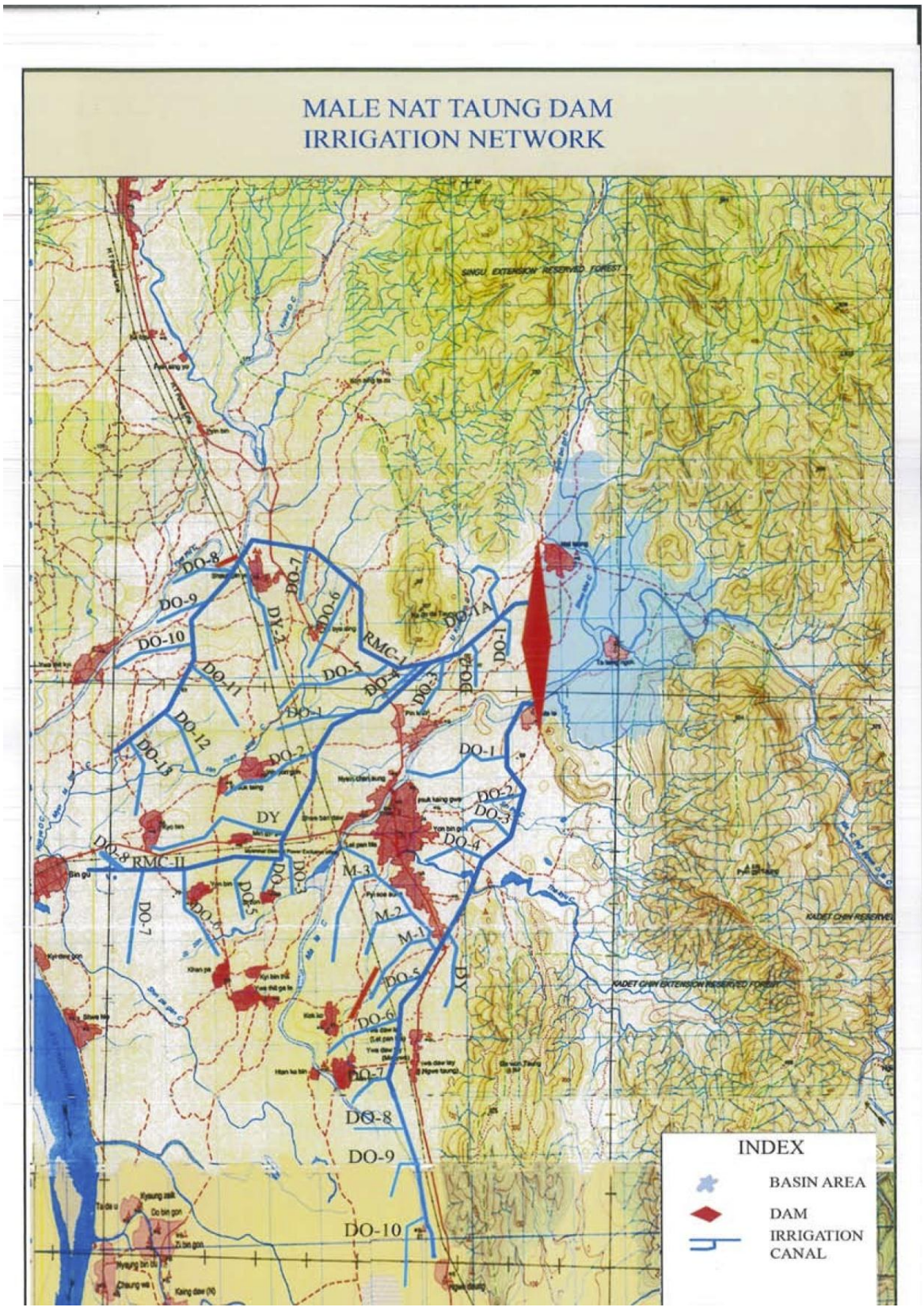


Table 14: Key selection criteria for the project irrigation sites

Feasibility Area	Feasibility Criteria
Economic and Financial	• Potential for significant incremental gains potential in productivity (yields) or cropping intensity (e.g., from 2 crops to 3 crops) • Areas where agricultural commercialization is progressing and there are readily accessible markets/distribution channels/roads.
Technical	• Individual system or autonomous part of larger system • Command Area between 500 and 5,000 ha • Existing irrigation system requiring rehabilitation work • Willingness of farmers/WUAs to take over/contribute to scheme maintenance works.
Social	• The selected sites are free of serious land disputes • Farmers must be able to participate in the decision on the investments/activities.
Environmental	• Meets both Myanmar and the Bank environmental requirements/standards for projects with no irreversible effects. • Not an area affected by water contaminants from mining/industry

Appendix II: Climatic Data of Irrigation Scheme Areas

Table 15: Technical information of selected existing irrigation schemes

Description	Name of Dam			
	Sin The	**North Yamar**	**Swa**	**Male Nattaung**
Map reference Longitude Latitude	93D/4-475455 96 degree 2 minutes 20 degree 9 minutes	84J/12K- 010779 94 degree 34 minutes 21 degree 59 minutes	94A/4V 645280 96 degree 12 minutes 19 degree 11 minutes	93 (B-2) S.R-853018 96 degree 6 minutes 22 degree 34 minutes
Type of dam	Zone Earth Fill Dam	Earthen	Earth Fill Dam	Earthen
Catchment area (sq mile)	308	191	403	75
Height of dam (ft)	109	65	97 (Main dam) 40 (saddle dam)	72
Length of dam (ft)	1350	10400	6600 (Main dam) 16900 (saddle dam)	11850
Dam Storage: Total: acre feet Live: acre feet Dead: acre feet	 143,090 125,787 17,303	 14,057 11,221 2,836	 216,350 188,180 28,170	 57,470 50,060 7,410
Average Annual Rainfall (inches)	33.74	34	83.75	43.6
Average Annual Inflow (Ac-ft)	110000	66430	312040	65000
Total reservoir command area Gross (acres) Net (acres)	 25,416 15,218	 31,000 30,320	 35,000 23,467	 10,000 6,500
Hydropower: installed capacity	0	0/250kW	0	5kW in canal
Domestic water supply	30 households	0	0	0
Groundwater use	100 acres	0	0	0
Type of Conduit	Reinforced Cement Concrete	Reinforced Cement Concrete	Reinforced Cement Concrete	Reinforced Cement Concrete
Size of Conduit	6ft x 4ft (2 Nos) (1.83m x 1.22m) (2 Nos)	6ft x 4ft (2 Nos)	6ft x 4ft (3 Nos)	Left: 3'.Ø (1 No) Right: 6ft x 4ft (1 No)
Length of Conduit (ft)	-	258	362	Left: 251 Right: 221
Conduit Design Discharge (Cusecs)	-	240	750	Left: 50 Right: 200

Technical information of existing irrigation scheme (Contd.)

Description	Name of Dam			
	Sinthe	**North Yamar**	**Swa**	**Male Nattaung**
Type of Spillway	Ogee Type Reinforced Cement Concrete	Reinforced Cement Concrete	Duckbill Type Reinforced Cement Concrete	Reinforced Cement Concrete
Length of Spillway (ft)	510	413	-	
Width of Spillway (ft)	110	100	400	-100
Spillway Design Discharges (Cusecs)	18,490	7,500	52,500	8,000
Length of Emergency Spillway (ft)	-	341	-	-
Width of Emergency Spillway (ft)	-	500	-	-
Length of Main Canal (miles)	Left: 12 Right: 29	15.87	16.67 (1 Nos)	Left: 5 Right: 10
Main Canal Discharges (Cusecs):	Left: 500 Right: 312		-	-
Length of Distributaries (miles):	-	30.4	41.94 (8 Nos)	
Canal Structures	-	487 Nos	916 Nos	Left: 50 Nos Right: 84 Nos
Irrigable Area (acres)				
(Gross):	25,416 (32400)	12,000	35,000	10,000
(Net):	15,218	11,320	23,467	6,500
Irrigated Area: acres	12,712 (16032)	5,900	20,670	5,755

Source: Irrigation Department (2014), Data compiled and shared to ADP technical survey team, Yangon

Note: Gross irrigable area is the total area within system boundaries including villages, roads and non-irrigable areas as marshes and uplands; Net irrigable area: Total service area that can be provided with irrigation water; Irrigated area is the net irrigable area that actually receives irrigation water

Table 16: Annual volume of water inflow to dam (acre-feet)

Year	Sin The Dam (143,090)	North Yamar Dam (14,057)	Swa Dam (216,350)	Male Nattaung Dam (57,470)
2000	125,094	-	-	-
2001	113,869	-	-	-
2002	114,577	-	-	-
2003	81,703	-	-	-
2004	33,718	-	594,385	-
2005	133,678	281,177	750,216	-
2006	57,590	38,557	725,755	-
2007	91,019	191,303	676,896	-
2008	77,174	49,474	487,714	50,084
2009	31,704	219,199	389,218	44,825
2010	60,603	272,826	509,056	159,016
2011	117,490	575,299	906,789	109,435
2012	27,169	135,044	435,708	33,214
2013	92,481	26,809	574,642	97,553

Source: Irrigation Department (2014)

Note: (i) Figure in parentheses refer to maximum water storage capacity of given dam. (ii) Data for North Yamar were combined of data from both upper and lower dams that built across North Yamar Creek.

Figure 3: Annual inflow of dam, 2008-2013

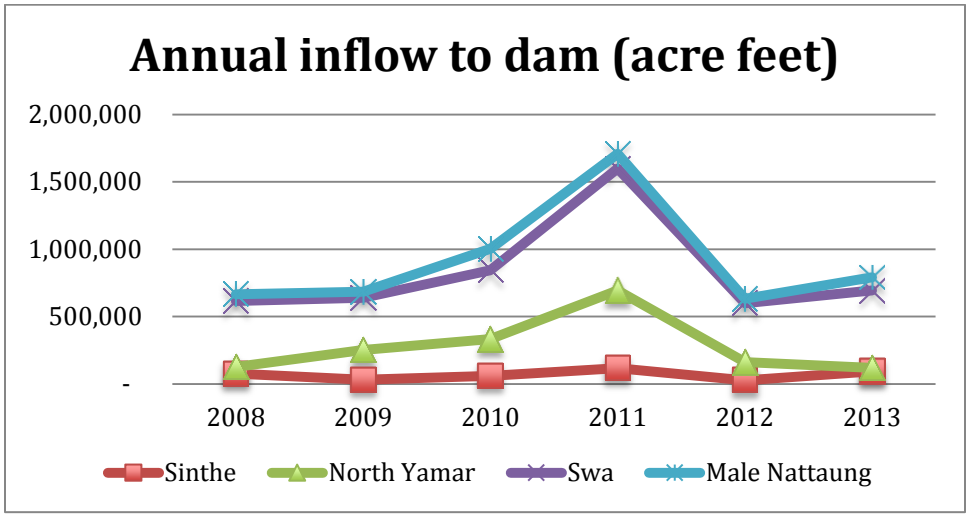


Table 17: Average annual rainfall in the proposed irrigation sites

Year	Sin The Dam	North Yamar Dam	Swa Dam	Male Nattaung Dam
1999	39.83	n.a	n.a	n.a
2000	22.49	n.a	n.a	n.a
2001	35.12	n.a	n.a	n.a
2002	9.12	n.a	n.a	n.a
2003	14.35	n.a	n.a	n.a
2004	11.21	n.a	61.14	n.a
2005	23.58	24.22	51.8	n.a
2006	33.85	24.52	81.45	n.a
2007	22.48	23.15	47.59	n.a
2008	21.32	28.35	43.85	30.33
2009	7.25	41.69	38.77	29.43
2010	20.39	50.64	63.2	67.51
2011	23.72	51.14	110.91	56.94
2012	15.65	28.22	84.82	29.8
2013	23.38	14.08	100.08	42.43

Source: Irrigation Department (2014), Note: n.a refer to not available.

Table 18: Deforestation rate of catchment areas of existing irrigation scheme

Name of Irrigation Scheme	Forest Cover (ha)		Interval Year	Forest Loss (ha)	Annual Forest Cover Loss (ha)	% Change
	Base Year	2013				
a	b	c	d	e = a-b	f = e/d	(f/a)*100
Sin The	28,329	14,103	23	14,226	619	2.18
North Yamar	17,678	9,804	13	7,874	606	3.43
Swa Chaung	70,845	57,655	13	13,190	1,015	1.43
Male Nattaung	12,354	10,816	8	1,538	192	1.56

Source: EcoDev (2014): Analysis of Land Cover Change for Irrigation Schemes from Available Remote Sensing Data, Yangon.

Figure 4: Forest cover change of catchment area of existing irrigation schemes

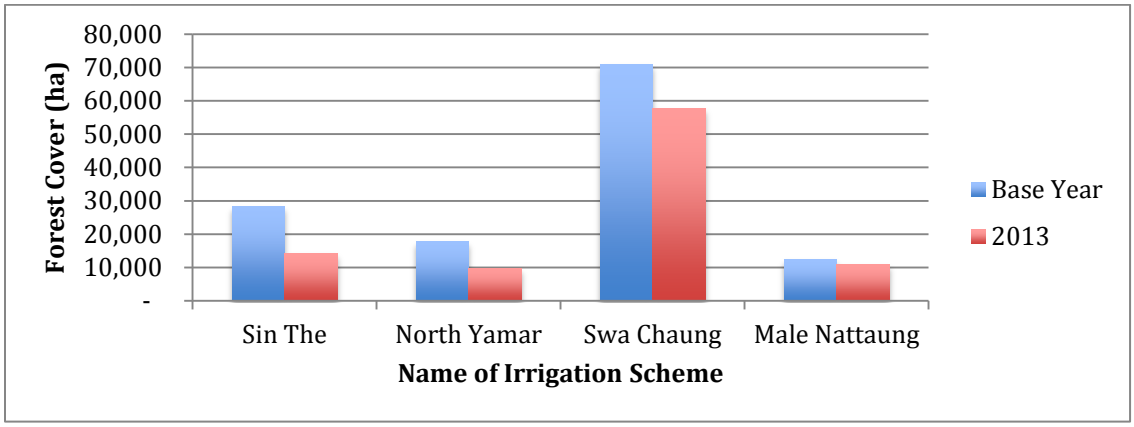


Table 19: Socio-economic data of project area

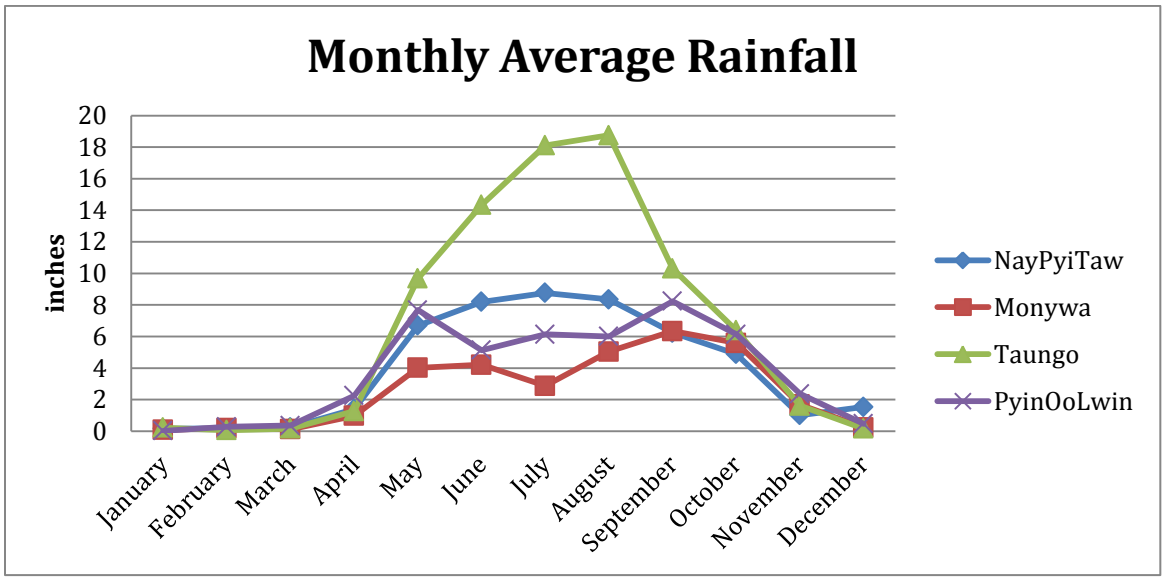
Description	Name of Dam			
	Sinthe	**North Yamar**	**Swa**	**Male Nattaung**
Number of village tracts	33	17	24	10
Number of villages	78	35	133	30
Population in command area (person)	107,926	69,500	80,009	22,800
	22,640	12,500	16,319	5,700
Number of households (Nos)	5,420	3,000	17,000	2,364
Number of farmers (Nos)	8,766	8,100	5780	3336
Number of landless households	nil	nil	Karen spread over the area	nil
Ethnic minorities in command area:				
Average holding size of farmland (acre/household)	5	4	2.5	3
Maximum holding	10	6	20	6
Minimum holding	1.5	2	1.5	2
Average farm plot size (acres),	0.75	0.875	0.5	0.25
	1.25	1.5	0.85	.5
Maximum plot size	0.25	0.25	0.25	.2
Minimum plot size				
Percent coverage of issuing land use certificate to farmer	93.38%	100%	90%	90%
Crop Sown Area (acres)				
Monsoon Paddy	16,032	5,900	23,467	5755
Summer Paddy	5,000	1,185	20,670	1000
Others crop	11,032	1,000	150	560
Yield of major crop sown				
Monsoon Paddy (Basket/acre)	100	80	80	80
Summer Paddy (Basket/acre)	115	90	85	120

Appendix II (a): Monthly Average Rainfall Data of Irrigation Schemes

Month	Sin The Nay Pyi Taw	North Yamar Mon Ywa	Swar Chaung Taungo	Male Nattaung Pyin Oo Lwin
	(inches)	(inches)	(inches)	(inches)
January	0.17	0.08	0.23	0.02
February	0.18	0.2	0.06	0.28
March	0.24	0.12	0.17	0.36
April	1.39	0.98	1.27	2.25
May	6.69	4.02	9.67	7.68
June	8.19	4.21	14.34	5.13
July	8.76	2.87	18.11	6.14
August	8.35	5.04	18.75	6
September	6.24	6.34	10.3	8.24
October	4.89	5.59	6.39	6.14
November	1.02	1.69	1.61	2.37
December	1.53	0.24	0.16	0.47

Source: Irrigation Department (2014), Report on Dam and Irrigation System of Proposed Project Areas: Data provided by Irrigation Department, Ministry of Agriculture and Irrigation, Nay Pyi Taw.

Appendix II (b): Monthly Average Rainfall in Irrigation Schemes

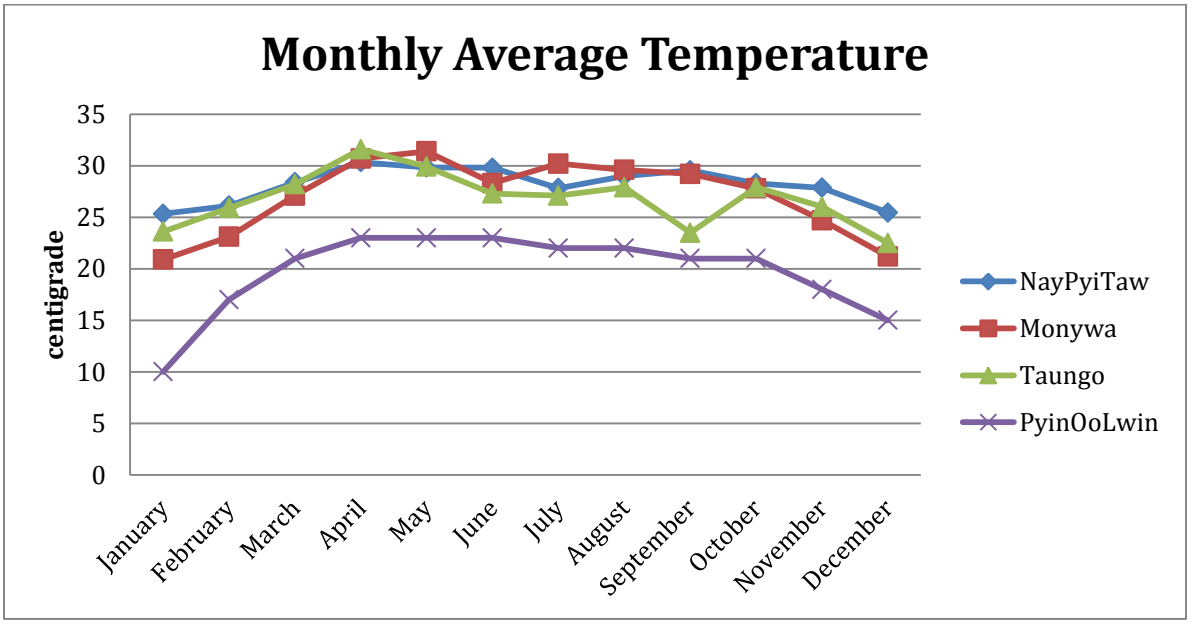


Appendix II (c): Average Temperature Data of Irrigation Schemes

Month	Sin The Nay Pyi Taw (Centigrade)	North Yamar Monywa (Centigrade)	Swar Chaung Taungo (Centigrade)	Male Nattaung Pyin Oo Lwin (Centigrade)
January	25.32	20.9	23.6	10
February	26.11	23.1	25.9	17
March	28.38	27.1	28.2	21
April	30.33	30.7	31.6	23
May	29.83	31.4	29.9	23
June	29.79	28.3	27.3	23
July	27.82	30.2	27.1	22
August	28.99	29.6	27.9	22
September	29.55	29.2	23.5	21
October	28.29	27.8	27.9	21
November	27.86	24.7	26	18
December	25.45	21.2	22.5	15

Source: Irrigation Department (2014), Report on Dam and Irrigation System of Proposed Project Areas: Data provided by Irrigation Department, Ministry of Agriculture and Irrigation, Nay Pyi Taw.

Appendix II (d): Monthly Average Temperature in Irrigation Schemes

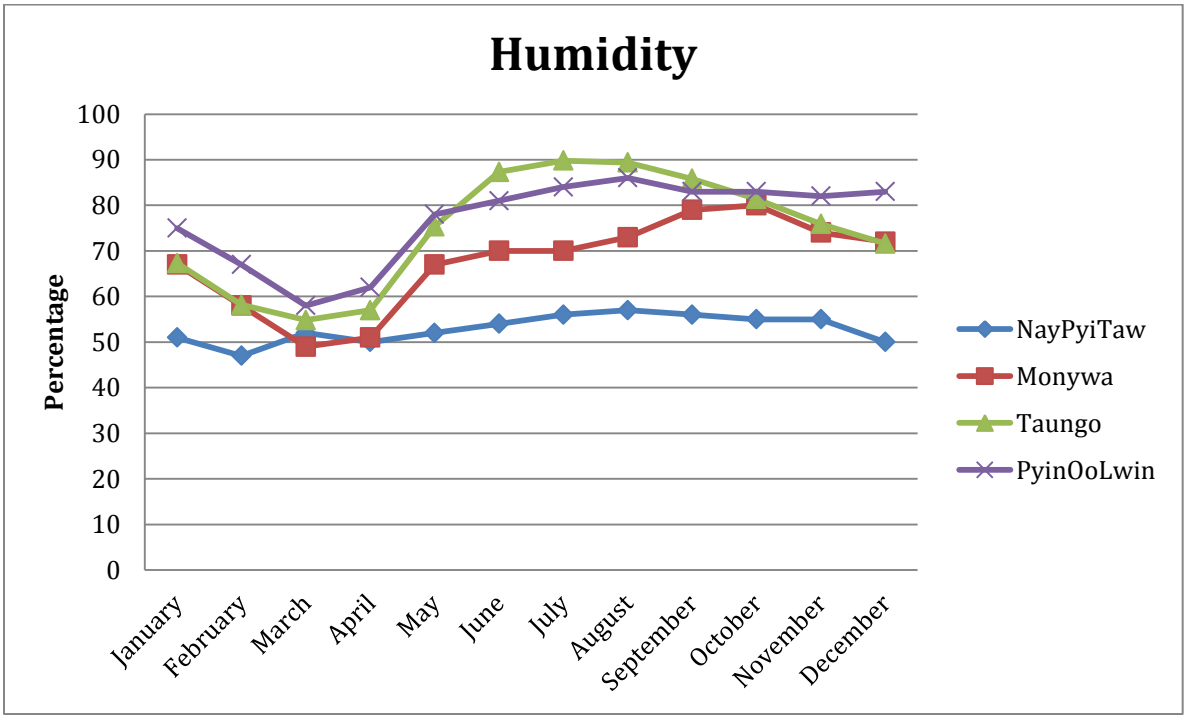


Appendix II (e): Average Humidity Data for Irrigation Schemes

Month	Sin The Nay Pyi Taw (Percentage)	North Yamar Mon Ywa (Percentage)	Swar Chaung Taungo (Percentage)	Male Nattaung Pyin Oo Lwin (Percentage)
January	51	67	67.3	75
February	47	58	58.2	67
March	52	49	54.8	58
April	50	51	57	62
May	52	67	75.4	78
June	54	70	87.3	81
July	56	70	89.8	84
August	57	73	89.4	86
September	56	79	85.8	83
October	55	80	81.4	83
November	55	74	75.9	82
December	50	72	71.6	83

Source: Irrigation Department (2014), Report on Dam and Irrigation System of Proposed Project Areas: Data provided by Irrigation Department, Ministry of Agriculture and Irrigation, Nay Pyi Daw (In Myanmar)

Appendix II (f): Average Humidity in Irrigation Schemes



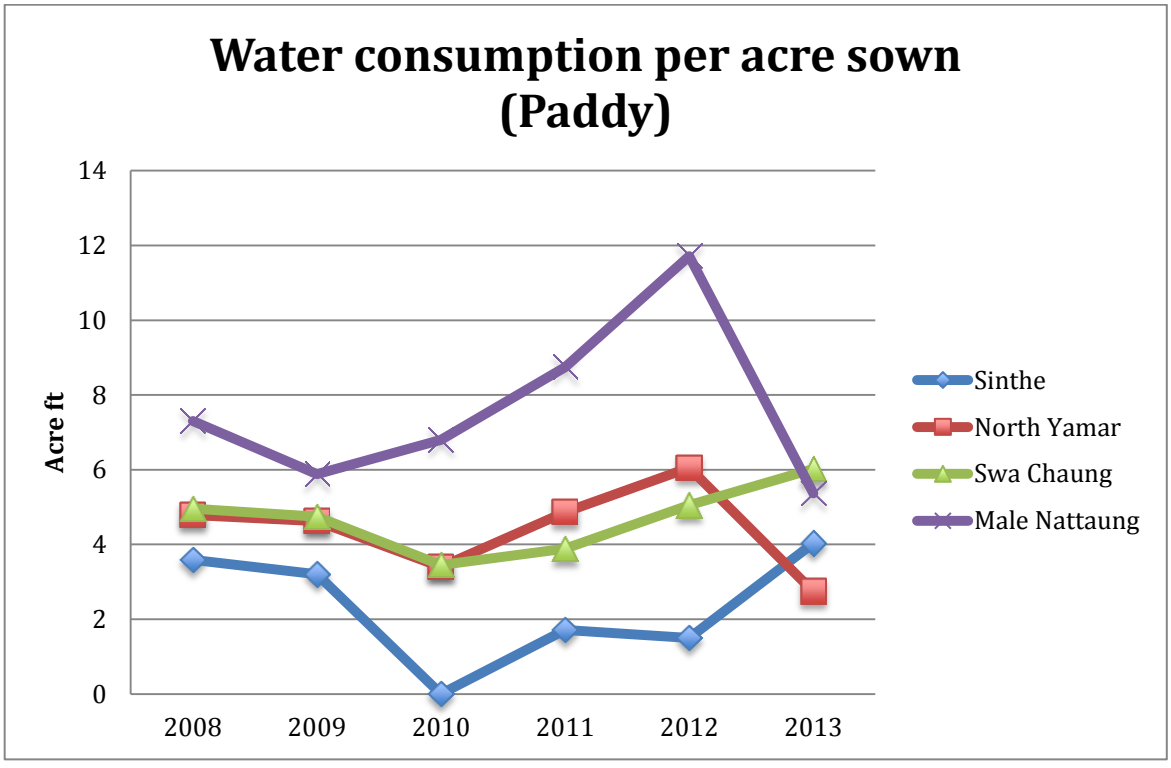
Appendix III: Comparison of Water Consumption in Irrigation Schemes

Appendix III (a): Per Acre-Feet Water Consumption for Growing Paddy

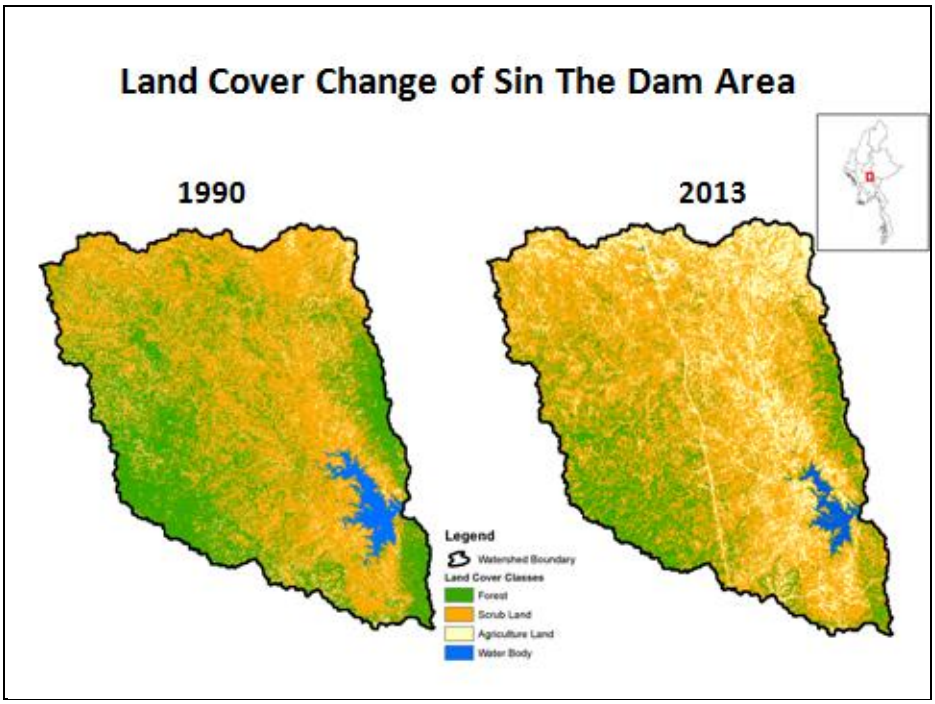
Year	Irrigation Scheme			
	Sin The	North Yamar	Swar Chaung	Male Nattaung
2008	3.6	4.8	5.0	7.3
2009	3.2	4.6	4.7	5.9
2010	-	3.4	3.5	6.8
2011	1.7	4.9	3.9	8.7
2012	1.5	6.0	5.1	11.7
2013	4.0	2.7	6.0	5.4

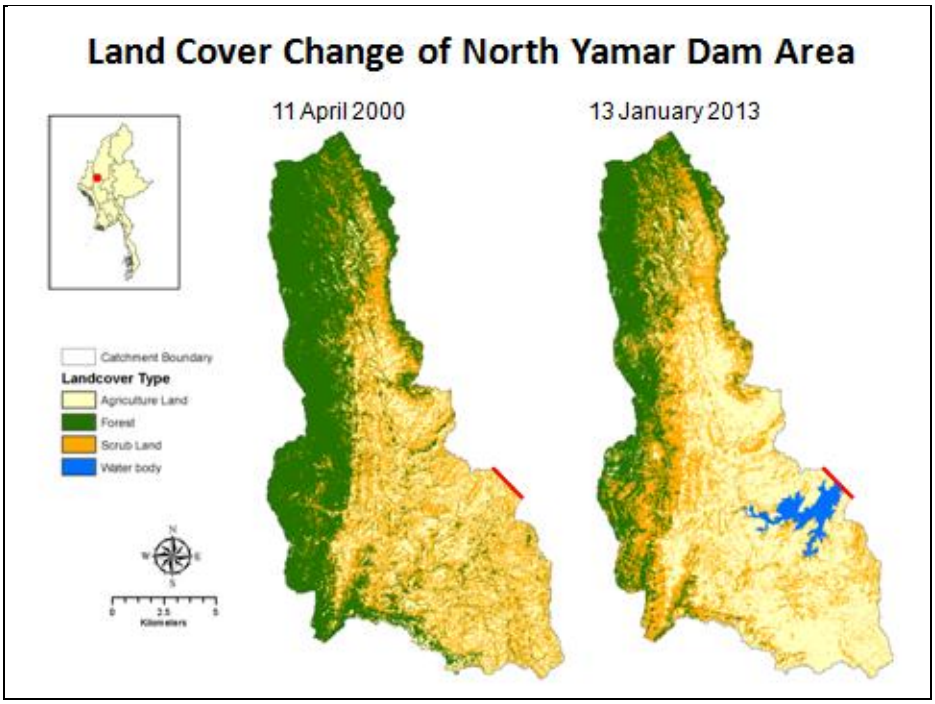
Source: Irrigation Department (2014), Report on Dam and Irrigation System of Proposed Project Areas: Data provided by Irrigation Department, Ministry of Agriculture and Irrigation, Nay Pyi Daw (In Myanmar)

Appendix III (b): Water Consumption for Growing Paddy

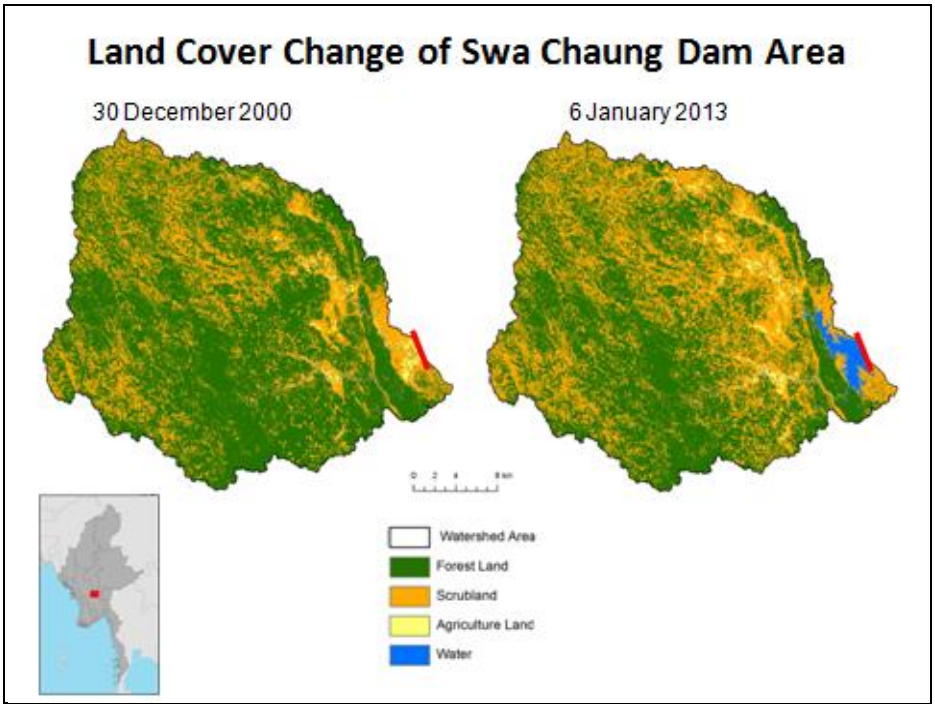


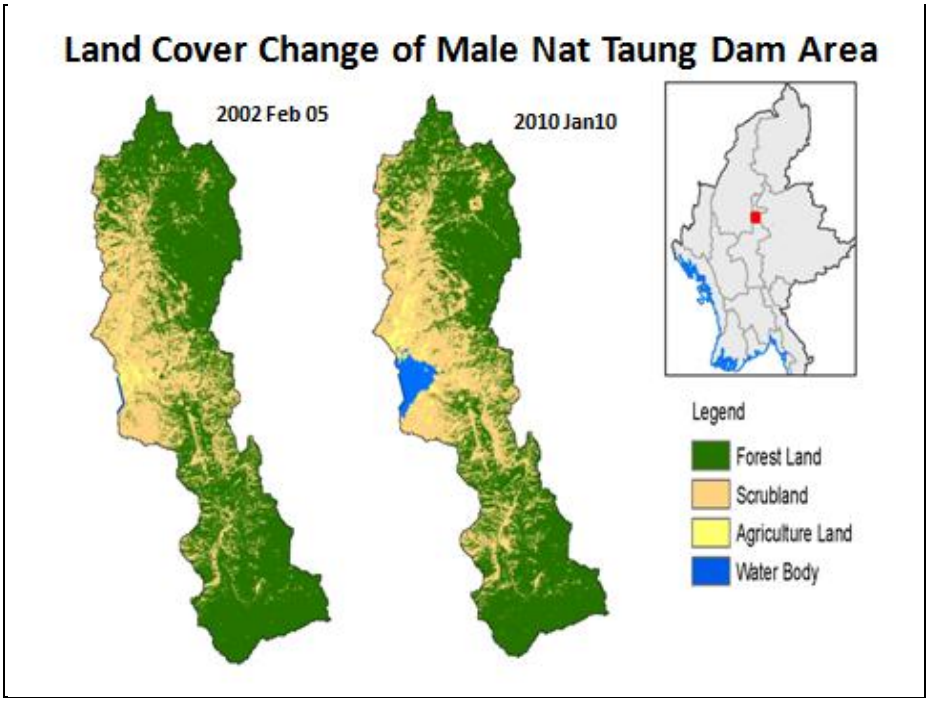
Appendix IV (a): Land Use and Land Cover Change in Catchment of Studied Areas





Source: EcoDev (2014), Analysis of land use land cover changes in catchment of irrigation scheme areas based on available remote sensing data, Yangon.





Source: EcoDev (2014), Analysis of land use land cover changes in catchment of irrigation scheme areas based on available remote sensing data, Yangon.

Appendix IV (b): Matrix of Land Use and Land Cover Change in Studied Areas

Sin The Dam's Catchment Area (1990 vs. 2013)

		Year 2013				
	Land Class Area (ha)	Forest Land	Scrub Land	Agriculture Land	Water Body	Grand Total
Year 1990	1. Forest	11009	15641	1669	10	28329
	2.Scrub	3094	28050	12953	16	44113
	3.Agriculture Land			5343		5343
	4.Water Body		613		1180	1793
	Grand Total	14103	44304	19965	1206	79578

Source: EcoDev (2014), Analysis of land use land cover changes in catchment of irrigation scheme areas based on available remote sensing data, Yangon.

North Yamar Dam's Catchment Area (2000 vs. 2013)

		Year 2013				
	Land Class Area (ha)	Forest Land	Scrub Land	Agriculture Land	Water Body	Grand Total
Year 2000	1. Forest	9804	6353	1449	72	17678
	2.Scrub		6351	6503	475	13329
	3.Agriculture Land			9836	456	10292
	4.Water Body				28	28
	Grand Total	9804	12704	17788	1031	41327

Source: EcoDev (2014), Analysis of land use land cover changes in catchment of irrigation scheme areas based on available remote sensing data, Yangon.

Swar Chaung Dam's Catchment Area (2000 vs. 2013)

		Year 2013				
	Land Class Area (ha)	Forest Land	Scrub Land	Agriculture Land	Water Body	Grand Total
Year 2000	1. Forest	57655	12779	203	208	70845
	2.Scrub		31472	788	996	33256
	3.Agriculture Land			1123		1123
	4.Water Body				351	351
	Grand Total	57655	44251	2114	1555	105575

Source: EcoDev (2014), Analysis of land use land cover changes in catchment of irrigation scheme areas based on available remote sensing data, Yangon.

Male Nat Taung Dam's Catchment Area (2002 vs. 2010)

		Year 2010				
	Land Class Area (ha)	Forest Land	Scrub Land	Agriculture Land	Water Body	Grand Total
Year 2002	1. Forest Land	10816	1490	31	17	12354
	2. Scrub Land		4569	322	251	5142
	3. Agriculture Land			998	156	1154
	Grand Total	10816	6059	1351	424	18650

Source: EcoDev (2014), Analysis of land use land cover changes in catchment of irrigation scheme areas based on available remote sensing data, Yangon.

Appendix V: The Result of Water Quality Testing for Sample Water Collected from Irrigation Schemes

Sr.	Parameter	Sin The			North Yamar	Swar Chaung			Male Nattaung				Standard Limit	
		Site (1) Water from Weir	Site (2) Water from Dam	Site (3) Left canal No.1 near Tat Kone	Site (1) Water from main canal	Site (1) Water from Dam	Site (2) Distributary (A Mat Gyi Khone village)	Site (3) Distributary near Yedashe	Site (1) Canal at Lat Pan Hla Village	Site (2) Water from Dam	Site (3) Seepage from Dam	Site (4) Seepage from Dam	Drinking	Irrigation
1	**pH**	7.8	8.7*	8.4	7.9	8.2	8.1	6.6	8.3	7.8	8.5	7.7	6.5 – 8.5[a]	6.5 - 8.4[f]
2	**Turbidity (FAU)**	< 5	< 5	7	< 5	< 5	< 5	<5	< 5	< 5	94*	<5	<10 FAU[d]	-
3	**Hardness (mg/L)**	140*	140*	58.5	150*	100*	100*	31.5	110*	180*	31.5	72*	<60 mg/L[c]	-
	Carbonate (me/L)	3.5*	3.5*	1.46	3.75*	2.5*	2.5*	0.79	2.75*	4.5*	0.79	1.8*	-	<1.5 me/L[f]
4	**Arsenic (ppb)**	< 4	< 4	-	< 4	< 4	< 4	-	140*	120*	-	-	<10 ppb[a]	-
5	**Aluminum (mg/L)**	0.02	0.02	<0.01	0.02	0.02	0.02	<0.01	0.02	0.03	<0.01	0.02	<0.2 mg/L[a]	-
6	**Potassium (mg/L)**	9.2	11	49*	2.8	2.6	2.0	35*	2.3	1.6	22*	22*	<20 mg/L[c]	-
7	**Iron (mg/L)**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.36*	<0.1	<0.2 mg/L[b]	-
8	**Chloride (me/L)**	0.20	0.41	2.51	0.61	0.20	0.51	0.46	0.61	0.61	1.14	0.46	-	<4 me/L[f]
9	**Nitrite (mg/L)**	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	-	-	<0.5 mg/L[b]	-
10	**Zinc (mg/L)**	< 0.02	< 0.02	-	0.09	< 0.02	< 0.02	-	0.19	0.15	-	-	< 3 mg/L[a]	-

Source: Laboratory Analysis Reports from Eco-Lab (2014)

Note: Figures with asterisk show the above limit situation comparing to the respected standard limit

a WHO standard for Drinking Water (1993)

b EU Standard for Drinking Water

c Other Standards

d USGS Water-Quality Information

e Michigan Water Quality Standards (Rule 64)

f FAO (1995) Guidelines for Interpretation of Water Quality for Irrigation, FAO Irrigation and Drainage Paper 53, Rome

Appendix VI (a): Globally Endangered Species in Myanmar (Reptile)

No	Common name	Scientific name	Status
1	Four-toed Terrapin	*Batagur baska*	Critically Endangered
2	Leatherback	*Dermochelys coriacea*	Critically Endangered
3	Burmese Starred Tortoise	*Geochelone platynota*	Critically Endangered
4	Arakan Forest Turtle	*Heosemys depressa*	Critically Endangered
5	Hawksbill Turtle	*Eretmochelys imbricata*	Critically Endangered
6	Gharial	*Gavialis gangeticus*	Critically Endangered
7	Burmese Peacock Soft shell	*Nilssonia formosa*	Endangered
8	Frog-faced Soft shell Turtle	*Pelochelys cantorii*	Endangered
9	Big-headed Turtle 10	*Platysternon*	Endangered
10		*Enhydris vorisi*	Endangered
11	Yellow-headed Tortoise	*Indotestudo elongata*	Endangered
12	Burmese Roofed Turtle	*Batagur trivittata*	Endangered
13	Green Turtle	*Chelonia mydas*	Endangered
14	Burmese Mountain Tortoise	*Manouria emys*	Endangered
15	Indian Narrow-headed Soft shell	*Chitra indica*	Endangered
16	Jagged-shelled Turtle	*Cuora mouhotii*	Endangered
17	Bengal Eyed Terrapin	*Morenia ocellata*	Vulnerable
18	King Cobra	*Ophiophagus hannah*	Vulnerable
19	Impressed Tortoise	*Manouria impressa*	Vulnerable
20	Southeast Asian Soft shell Turtle	*Amyda cartilaginea*	Vulnerable
21		*Siebenrockiella crassicollis*	Vulnerable
22	Olive Ridley	*Lepidochelys olivacea*	Vulnerable
23	Southeast Asian Box Turtle	*Cuora amboinensis*	Vulnerable
24	Giant Asian Pond Turtle	*Heosemys grandis*	Vulnerable

Source: Forest Department (2011), National Biodiversity Strategy and Action Plan, Myanmar; Ministry of Environmental Conservation and Forestry, The Republic of The Union of Myanmar, Nay Pyi Daw

Appendix VI (b): Globally Endangered Species in Myanmar (Bird)

No	Common name	Scientific name	Status
1	White-bellied Heron	*Ardea insignis*	Critically Endangered
2	Spoon-billed Sandpiper	*Eurynorhynchus pygmeus*	Critically Endangered
3	Pink-headed Duck	*Rhodonessa caryophyllacea*	Critically Endangered
4	Red-headed Vulture	*Sarcogyps calvus*	Critically Endangered
5	Baer's Pochard	*Aythya baeri*	Endangered
6	White-winged Duck	*Cairina scutulata*	Endangered
7	Masked Fin foot	*Heliopais personatus*	Endangered
8	Greater Adjutant	*Leptoptilos dubius*	Endangered
9	Scaly-sided Merganser	*Mergus squamatus*	Endangered
10	Green Peafowl	*Pavo muticus*	Endangered
11	Gurney' s Pitta	*Pitta gurneyi*	Endangered
12	White-browed Nuthatch	*Sitta victoriae*	Endangered
13	Spotted Greenshank	*Tringa guttifer*	Endangered
14	Rufous-necked Hornbill	*Aceros nipalensis*	Vulnerable
15	Plain-pouched Hornbill	*Aceros subruficolli*	Vulnerable
16	Greater Spotted Eagle	*Aquila clanga*	Vulnerable
17	Indian Spotted Eagle	*Aquila hastata*	Vulnerable
18	Pale-capped Pigeon	*Columba punicea*	Vulnerable
19	Yellow-breasted Bunting	*Emberiza aureola*	Vulnerable
20	Lesser Kestrel	*Falco naumanni*	Vulnerable
21	Sarus Crane	*Grus antigone*	Vulnerable
22	Pallas's Fish-eagle	*Haliaeetus leucoryphus*	Vulnerable
23	Lesser Adjutant	*Leptoptilos javanicus*	Vulnerable
24	Sclater' s Monal	*Lophophorus sclateri*	Vulnerable
25	Nicobar Megapode	*Megapodius nicobariensis*	Vulnerable
26	Wallace' s Hawk-eagle	*Nisaetus nanus*	Vulnerable
27	Great Bustard	*Otis tarda*	Vulnerable
28	White-fronted Scops-owl	*Otus sagittatus*	Vulnerable
29	Straw-headed Bulbul	*Pycnonotus zeylanicus*	Vulnerable

30	Indian Skimmer	*Rynchops albicollis*	Vulnerable
31	Beautiful Nuthatch	*Sitta formosa*	Vulnerable
32	Giant Nuthatch	*Sitta magna*	Vulnerable
33	Black-headed Ibis	*Threskiornis melanocephalus*	Vulnerable
34	Blyth's Tragopan	*Tragopan blythii*	Vulnerable
35	Large Green-pigeon	*Treron capellei*	Vulnerable
36	Grey-sided Thrush	*Turdus feae*	Vulnerable

Source: Forest Department(2011), National Biodiversity Strategy and Action Plan, Myanmar; Forest Department, Ministry of Environmental Conservation and Forestry, The Republic of The Union of Myanmar, Nay Pyi Daw

Annex 7: Minutes of the Safeguards Public Consultations

Annex 7: Minutes of the Safeguards Public Consultations

Safeguards Public Consultation Meeting

Minutes
Pyee Soat Village, Yedashe township on Swar Irrigation System
Bago East Region
February 03, 2015

The first safeguards public consultation meeting for the Agricultural Development Support Project (ADSP) was held at Pyee Soat Village, in Yedashe Township, Bago East Region on February 3, 2015. The meeting was organized by the Ministry of Agriculture and Irrigation (MOAI). The MOAI team was led by U Tint Zaw, Deputy Director General of the Irrigation Department, with the ministry staff representing the Department of Agriculture, Department of Agricultural Mechanization, and Settlement Land Records Department involved in the preparation of this project with the Bank. In addition, there were representatives of the district government. The list of farmers, government officials, and other stakeholders participated in the meeting is in the Annex to these Minutes.

Relevant officials from the different departments, who are involved in ADSP, explained the project, its main activities, and expected benefits, through the power point and oral presentations. They also explained that the project implementation will be guided by the Environmental and Social Management Framework and other safeguards documents in compliance with the Bank rules and the legislation of Myanmar.

The presentation from the MOAI was followed by questions and answers.

- U Mya Win from the Inn Gyin Kone Village tract thanked the MOAI and the Bank for proposed assistance with land improvements, farms roads, and drainage canals. He said that since they do not have farm roads and no proper drainage canals, they faced floods and in the harvesting season, scarcity of labor and high wages was also a problem for them to harvest the crops in time. As they have no farm roads, they spent extra cost of carrying the harvested paddy to road sides to dry them up since they also lack in dryers resulting in more losses. As they also lack threshing machines they could not thresh the paddy in time which also affects the quality of paddy when milled. He asked the project to disseminate agricultural knowhow to farmers through extension workers and agricultural machinery through Agricultural Mechanization Department such as threshers and dryers to better cope with rising labor costs.
- U Kyaw Naing from Inn Gyin Kone Village tract and U Tin Soe from Swar Village tract asked if land improvements works can result in situation when some farmers have to forgo one crop season. They said that since many farmers are poor they could not bear to lose one crop season, and they wanted to know if the land improvement pilots are going to affect the planting season. The MOAI answered that most of the irrigation rehabilitation works will be done off-season, with minimum effect on crop planting, following the example of the project with JICA in Bago West. The representative of the Bank clarified that the project team is aware that one crop of some farmers can be affected by land improvement

projects. The project will make sure that less damage done to the farmers as much as possible. Participation of farmers in land improvement pilots is voluntary. Since land improvements raise property value and increase yields, farmers' benefits outweigh cost of one crop foregone. The project will carry out prior consultations with all participating farmers to agree on how to limit negative impact of civil works carried under the project. Farmers who decided not to participate can opt out, sell their land and receive compensation in cash or in-kind as described in the ESMF. In addition, for land improvement pilots, farmers will be encouraged and facilitated to support one another to mitigate impacts, and income support will be provided in the event that income is not restored in two cropping seasons following the land improvement.

- The same farmers also wanted to know if the farmers participating in the project will need to repay back the Bank credit. The MOAI answered "no", the credit will be repaid by the government.

Since there were no more questions raised by the farmers, U Myint Ko from the Department of Agriculture made a closing speech and the meeting was closed.

Consultation Meeting Participants			Framers of Kone Gyi Village Tract		
Serial No.	Name	Village			
1	U Ohn Maung	Pyee Soat			
2	U Chit Oo	Pyee Soat			
3	U Aung Lin Soe	Pyee Soat			
4	U Win Maung	Inn Gyin Kone			
5	U Pwa	Kong Gyi Bu Ta			
6	U Hla Saung	Kong Gyi Bu Ta			
7	U Shwe Thi	Inn Gyin Kone			
8	U Thant Zin Ko	Pyee Soat			
9	Daw Phyu Thay	Pyee Soat			
10	Daw Aye Khaing	Pyee Soat			
11	Daw Khin Shwe	Pyee Soat			
12	Daw Myint Yee	Pyee Soat			
13	Daw Nge	Pyee Soat			
14	Daw Than Myint	Pyee Soat			
15	U Tin Win Naing	Inn Gyin Kone			
16	U Kyaw Lwin	Inn Gyin Kone			
17	U Mya Win	Inn Gyin Kone			
18	U Aung Win	Inn Gyin Kone			
19	U Hla Myint	Inn Gyin Kone			
20	U Than Soe	Inn Gyin Kone			
21	U Naing Zaw Htun	Pyee Soat			
22	U Tin Lwin Soe	Pyee Soat			
23	U Hla Yee	Inn Gyin Kone			
24	U Than Shein	Kone Gyi			
25	U Ka Lar	Inn Gyin Kone			
26	U Tin Htun	Inn Gyin Kone			
27	U Naing Lin Aung	Pyee Soat			
28	U Aung Myo Thu	Inn Gyin Kone			
29	U San Hla	Inn Gyin Kone			
30	U Pu	Inn Gyin Kone			
31	Daw Soe Soe	Kyo Pin Htaik			
32	U Ohn Shwe	Kyo Pin Htaik			
33	U Mya Win	Inn Gyin Kone			
34	U Kyaw Tint	Pyee Soat			
35	U Maung Gyi	Pyee Soat			
36	U Tin Oo	Pyee Soat			
37	U Khin Maung Win	Inn Gyin Kone			
38	Daw khet Khet Lwin	Pyee Soat			
39	Daw Cho Mar Latt	Pyee Soat			
40	U Than Myint	Pyee Soat			
41	U Kyaw Kyaw Lin	Inn Gyin Kone			
42	U Hla Win	Pyee Soat			
43	U Pho Pu	Pyee Soat			
44	U Kyaw Naing	Inn Gyin Kone			
45	U Aung Win	Inn Gyin Kone			
46	U Aye Lwin	Pyee Soat			
47	U Hla Htun	Pyee Soat			
48	U Win Myint	Pyee Soat			
49	U Myo Win	Inn Gyin Kone			
50	U San Lwin	Pyee Soat			
51	U Kyi Soe	Pyee Soat			
52	U Tin Soe	Inn Gyin Kone			
53	U Zaw Paing	Pyee Soat			

U refers male
Daw refers female

	Consultation Meeting Participants			
	Pyee Soat Village Tarct, Yedashay Township, Taunggoo District, Ptrict February 03, 2015			
Serial No	Name	Designation	Department	Ministry
1	U Tint Zaw	Deputy Director General	Irrigation	Ministry of Agriculture & Irrigation(MOAI)
2	U Win Bo	Regional Director	Irrigation	MOAI
3	U Zaw Win Chit	Director	Irrigation	MOAI
4	Daw Hla Oo Nwe	Deputy Director	Irrigation	MOAI
5	U Thein Kyaw	Assistant Director	Irrigation	MOAI
6	U Win Myaing	Deputy Director	Agriculture Mechanization Department	MOAI
7	U Zaw Moe Aung	Deputy Director	Settlement & Land Records(SLRD)	MOAI
8	Daw Khin Mar Mar Nwe	Deputy Director	Department of Agriculture Research	
9	U Yin Htun	Deputy Regional Officer	Department of Agriculture (DOA)	MOAI
10	U Thwin Myint	District Officer	DOA	MOAI
11	U Aung Win	Staff Officer	DOA Township Office	MOAI
12	U Win Mon	Staff Officer	AMD Township Office	MOAI
13	U Win Myint	Staff Officer	Industrial Crops Department Township Office	MOAI
14	U Min Zaw	Deputy Staff Officer	SLRD	MOAI
15	U Aung Kyaw Myint	Staff Officer	Township Irrigation Departmnt	MOAI
16	Daw Cho Nwe Than	Drawing (1)	Regional Irrigation Dept.	MOAI
17	U Myo Naing	Deputy Staff Officer	Township Irrigation Departmnt	MOAI
18	U Htay Kyaw	Township Administrator		
19	Dr. Khin Myo Win	Deputy Research Officer	Dept. of Agricultural Research (DOR)	MOAI
20	Daw Wai Wai Myint	Township Officer(Planning)		
21	U Kyaw Soe Khaing	Staff Officer	Irrigation Department	MOAI
22	U Myo Win	Village Administrator	Kangyikone Village Tract	

Feb. 08 meeting.

apologies

၁။ ဦးတင့်ဇော် (ဒုတိယညွှန်ကြားရေးမှူးချုပ်၊ ဆည်မြောင်းဦးစီးဌာန)

၂။ ဦးဝင်းဖိုလ် (ညွှန်ကြားရေးမှူး၊ တိုင်းဒေသကြီး၊ ဆည်မြောင်းဦးစီးဌာန)

၃။ ဦးဇော်ဝင်းချစ် (ညွှန်ကြားရေးမှူး၊ ဆည်မြောင်းဦးစီးဌာန)

၄။ ဒေါ်လှဦးနွယ် (ဒုတိယညွှန်ကြားရေးမှူး၊ ဆည်မြောင်းဦးစီးဌာန)

၅။ ဦးသိန်းကျော် (လက်ထောက်ညွှန်ကြားရေးမှူး၊ တောင်ငူခရိုင်၊ ဆ/မ(ထိန်း))

၆။ ဦးဝင်းမြိုင် (ဒုတိယညွှန်ကြားရေးမှူး၊ စက်မှုလယ်ယာ)

၇။ ဦးဇော်မိုးအောင် (ဒုတိယညွှန်ကြားရေးမှူး၊ ကြေးတိုင်နှင့်မြေစာရင်းဦးစီးဌာန)

၈။ ဒေါ်ခင်မာမာနွယ် (ဒုတိယညွှန်ကြားရေးမှူး၊ စိုက်ပျိုးရေးသုတေသနဦးစီးဌာန)

၉။ ဦးယဉ်ထွန်း (ဒုတိယတိုင်းဦးစီးမှူး - စိုက်ပျိုးရေးဦးစီးဌာန)

၁၀။ ဦးသွင်မြင့် (ခရိုင်ဦးစီးမှူး - စိုက်ပျိုးရေး)

၁၁။ ဦးအောင်ဝင်း (ဦးစီးအရာရှိ - မြို့နယ်စိုက်ပျိုးရေးဦးစီးဌာန)

၁၂။ ဦးဝင်းမွန် (ဦးစီးအရာရှိ - မြို့နယ်စက်မှုလယ်ယာဦးစီးဌာန)

၁၃။ ဦးဝင်းမြင့် (ဦးစီးအရာရှိ - မြို့နယ်စက်မှုသီးနှံဦးစီးဌာန)

၁၄။ ဦးမင်းဇော် (ဒုတိယဦးစီးမှူး - ကြေးတိုင်နှင့်မြေစာရင်းဦးစီးဌာန)

၁၅။ ဦးအောင်ကျော်မြင့် (ဦးစီးအရာရှိ - မြို့နယ်ဆည်မြောင်းဦးစီးဌာန)

၁၆။ ဒေါ်ချိုနွယ်သန်း (ပုံဆွဲ (၁) - ခရိုင်ဆည်မြောင်းဦးစီးဌာန - ထိန်း)

၁၇။ ဦးမျိုးနိုင် (ဒုတိယဦးစီးမှူး - မြို့နယ်ဆည်မြောင်းဦးစီးဌာန)

၁၈။ ဦးဌေးကျော် (မြို့နယ်အုပ်ချုပ်ရေးမှူး)

၁၉။ ဒေါက်တာခင်မျိုးဝင်း (လက်ထောက်သုတေသနအရာရှိ၊ စိုက်သု)

၂၀။ ဒေါ်ဝေဝေမြင့် (မြို့နယ်ဦးစီးမှူး၊ စီမံကိန်း)

၂၁။ ဦးမျိုးဝင်း (ကျေးရွာအုပ်ချုပ်ရေးမှူး၊ ကုန်းကြီးကျေးရွာအုပ်စု)

၂၂။ ဦးကျော်စိုးခိုင် (ဦးစီးမှူး၊ ဆည်မြောင်းဦးစီးဌာန)

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့် မြန်မာ့လယ်ယာထိုက်ပျိုးရေးအတွက်

မြေ ... [illegible]

အစည်းအဝေးတက်ရောက်သူများစာရင်း Feb 03

(တော်ရှာကုန်း၊ ရေတာရှည်မြို့နယ်၊ ပြည်ထောင်စုကျေးရွာ) (၃၂.၂၀၁၅ . [illegible])

စဉ်	အမည်	ကျေးရွာအမည်	ကျေးရွာအုပ်စုအမည်	လက်မှတ်
၁။	ဦးအုန်းမောင်	မြည်စုပ်	ကျုံကြီး	[illegible]
၂။	ဦးချစ်ဦး	မြည်စုပ်	ကျုံကြီး	[illegible]
၃။	ဦးအောင်လှိုင်ဦး	"	"	[illegible]
၄။	" ဝင်းမောင်	အင်ကြင်းကုန်း	"	[illegible]
၅။	ဦးမြ	ကျုံကြီးအုတ်ကျင်း	"	[illegible]
၆။	" ကျော်အောင်	"	"	[illegible]
၇။	" ရွှေသီး	အင်ကြင်းကုန်း	"	[illegible]
၈။	" သန့်ခင်ကို	ဗြိစုပ်	"	[illegible]
၉။	ဒေါ်ဖြူသေး	"	"	ဖြူသေး
၁၀။	" အေးခိုင်	"	"	မအေးခိုင်
၁၁။	" ခင်ရွှေ	"	"	[illegible]
၁၂။	" ခင်မြင့်ရီ	"	"	Khin
၁၃။	" ဝေယံ	"	"	[illegible]
၁၄။	" သန်းမြင့်	"	"	သန်းမြင့်

စဉ်	အမည်	ကျေးရွာအမည်	ကျေးရွာအုပ်စုအမည်	လက်မှတ်
၁၅.	ဦးတင်မိုးဝင်း	အင်းကြောင်းကုန်း	ကုန်းကြီး	
၁၆	,, ကျော်လှိုင်	,,	,,	
၁၇.	,, မြဝင်း	,,	,,	
၁၈.	,, အောင်မြင့်	,,	,,	
၁၉.	,, လှမြင့်	,,	,,	
၂၀	,, သန်းစိုး	,,	,,	
၂၁	,, နိုင်ဇော်ထွန်း	ဖြိုးစုပ်	,,	
၂၂	,, တင်လှိုင်စိုး	,,	,,	
၂၃	,, လှရီ	အင်းကြောင်းကုန်း	,,	
၂၄	,, သန်းဗိုလ်	ကုန်းကြီး	,,	
၂၅	,, ကုလား	အင်းကြောင်းကုန်း	,,	
၂၆	,, တင်ထွန်း	,,	,,	
၂၇.	,, နိုင်လင်းအောင်	ဖြိုးစုပ်	,,	
၂၈	,, အောင်ချိုသူ	အင်းကြောင်းကုန်း	,,	
၂၉	,, စံလှ	,,	,,	
၃၀	,, ယု	,,	,,	
၃၁	ဒေါ်စိန်စိုး	ကြို့ပင်ဘိုက်	,,	

စဉ်	အမည်	ကျေးရွာအမည်	ကျေးရွာအုပ်စု အမည်	လက်မှတ်
၃၂	ဦးအုန်းဘွဲ့	ကြို့ပင်ထိုက်	ကုန်းကြီး	
၃၃	ဦးဖေဝင်း	ယင်းဖြူကွင်း	"	
၃၄	" ကျော်တင်	ပြည့်စုံ	"	
၃၅	" မောင်ကြီး	"	"	
၃၆	" တင်ဦး	"	"	
၃၇	" ခင်မောင်ဝင်း	အင်းကြင်းကုန်း	"	
၃၈	ဒေါ်ခက်ခက်ဆွင်	ပြည့်စုံ	"	
၃၉	" ချိုသာလက်	"	"	
၄၀	ဦးသန်းမြင့်	"	"	
၄၁	" ကျော်ကျော်လင်း	အင်းကြင်းကုန်း	"	kyaw
၄၂	" လှဝင်း	ပြည့်စုံ	"	
၄၃	" ဖိုးပု	"	"	လှဝင်း
၄၄	" ကျော်ခိုင်	အင်းကြင်းကုန်း	"	
၄၅	" အောင်ဝင်း	"	"	
၄၆	" အေးဆွင်	ပြည့်စုံ	"	

စဉ်	အမည်	ကျေးရွာအမည်	ကျေးရွာအုပ်စု အမည်	လက်မှတ်
၄၇။	ဦးလှထွန်း	ဖြူညိုစုပ်	ကုန်ကြီး	
၄၈။	" ဝင်းမြင့်	"	"	
၄၉။	" မျိုးဝင်း	အင်ကြင်းကုန်း	"	
၅၀။	" စန်းလွင်	ဖြူညိုစုပ်	"	
၅၁။	" ကြည်မိုး	"	"	
၅၂။	" တာဝိုး	အင်ကြင်းကုန်း	"	
၅၃။	" ဇော်ဝိုင်	ဖြူညိုစုပ်	"	

embankment
oncall ... canal inspection part

Zaw win chit

09-5008932 / 8331913

Feb-04 - ID - U Zaw Win
Feb-05 - ID - U Kyaw Thu
Feb-06 - ID - U Hla Shwe

Safeguards Public Consultation Meeting

Minutes

Nyaung Lun Village Tract, Tatkone Township, Sin The Irrigation System

Naypyitaw Council Area

February 04, 2015

The second safeguards public consultation meeting for the Agricultural Development Support Project (ADSP) was held at Nyaung Lut Village in Tatkone Township, Naypyitaw Council on February 4, 2015. The meeting was organized by the Ministry of Agriculture and Irrigation (MOAI). The MOAI team was led by U Tint Zaw, Deputy Director General of the Irrigation Department with the Ministry staff representing the Department of Agriculture, Department of Agricultural Mechanization, Department of Agriculture Research, and Settlement and Land Records Department involved in the preparation of this project with the Bank. In addition, there were representatives of the district government. The list of farmers, government officials, and other stakeholders participated in the meeting is in the Annex to these Minutes.

Relevant officials from the different departments, who are involved in ADSP, explained the project, its main activities and expected benefits, through the power point and oral presentations. They also explained that the project implementation will be guided by the Environmental and Social Management Framework and other safeguards documents in compliance with the Bank rules and the legislation on Myanmar.

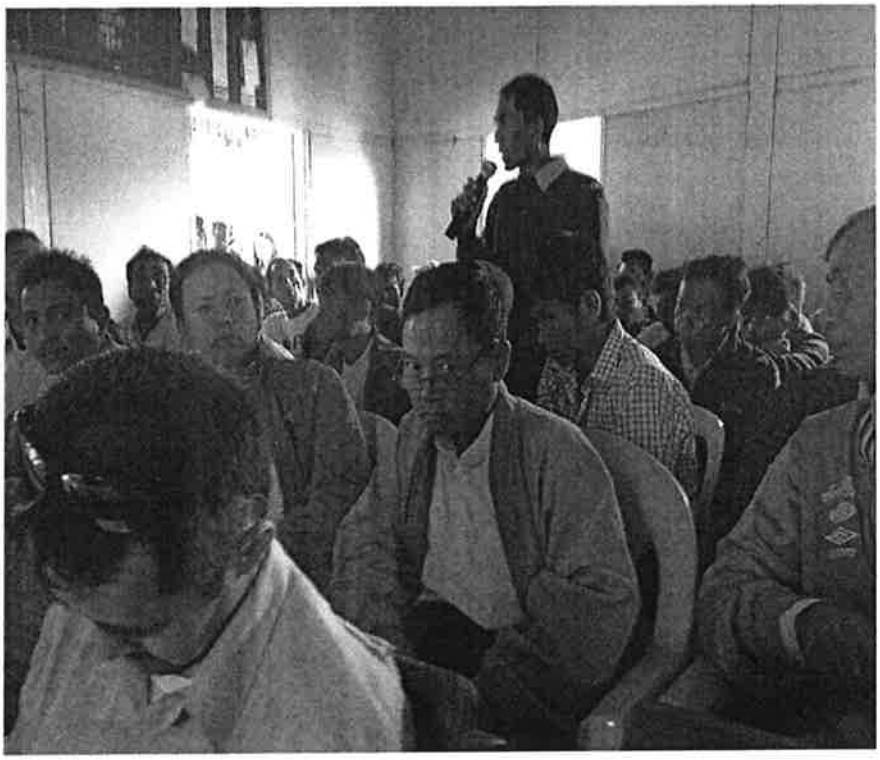
The presentation from MOAI was followed by questions and answers and some from the farmers, which appeared not to part of the potential project areas:

- Head man from Kye Taing village related that 1,200 acres from their township would like to access the irrigated water from the Sin The Dam. He wanted to know that if it is possible to extend the irrigated area to their village, to irrigate for 1,000 acres. He said that they need the water especially for the wet season paddy since this year they lost heavily since they did not have water at the paddy flowering period. (Aung Yay). He implored if it is possible for the Irrigation Department to extend the irrigable area to their village or dig tube well for ground water. The MOAI explained that the expansion goes beyond the ADSP, this project will seek to improve the existing infrastructure.
- U Tin Aung from East Nyaung Lun village tract said that about 500 acres from his village is not within the Sin Thay Irrigable area and requested the concerned officials from the Irrigation Department to repair the farmer's dams. They have been repairing these by themselves through the years but recently they could not afford to do it anymore. He requested that if Irrigation Department would help them on this matter it would be feasible for them to seed 500 acres. However, his area is not included in the Sin The Irrigable area but within the North Na Win dam area.
- U Win Naing from Thi Kone Village, Nyaung Lun Village Tract proposed that if it is possible for the Irrigation Department to extend the irrigation systems to the North of their village.

- U Chit, a farmer also a village Headman from Nyuang Lun Village tract thanked the MOAI and the World Bank for the proposed assistance in the rehabilitation of the Sin The irrigation system. He said that Sin Thay system was built since 1999 but no maintenance has been done all these years which have resulted blockage of sediments and rocks in the canals resulting in less inflow of irrigated water to the irrigable areas He said that major maintenance and grading need to be done. He expressed that the famers want water but not gold. He said that he was happy for the ADSP project and thanked Bank for it.
- U Ye Maung, a farmer within the Sin Thay Irrigable area, related that due to the contour elevation of the irrigable area, his farm is higher than the out let canal and if possible he requested the irrigation department for another out let canal.
- U Tin Win, a farmer from Nyaung Lun Village tract welcomed and thanked the Bank and related that the contour level of the left canal was not good from D4 to D5 and need repairs. He said that due to his farm location on a higher elevation than the canal, he asked if he could get more irrigation water.
- U Chita farmer from East Nyaung Lun Village, thanked the support of the World Bank and especially for the availability of irrigable of water for the crops. He said that he would like to have good quality seeds on green Mung bean, like Yezin 14 produced by the Department of Agricultural Research. He also expressed that farmers also need dissemination of agricultural knowhow and good agricultural practices from the Agricultural Extension workers and welcomed that it was included in the ADSP and the formation of Water user group. He said that it should be formed for the proper utilization of the irrigation water and also farmers to take care on the maintenance of the canals.
- U Kyaw Htay from Oakshit Kone Village, Nyaung Lun Village Tract, described about the status of the damage in the distribution canals and that in order to get the irrigated water the farmers have to repair the canals by themselves and requested the Irrigation department to look into and repair them.

No concern was raised about environmental and social issues in this potential project site.

Since there were no more questions raised by the farmers, U Zaw Won, Assistant Director from the Department of Irrigation made a closing speech and the meeting was closed.



List of Participants (Farmers)	
Nyuang Lun Village Tract	
Serial No.	Name
1	U Nyunt Win
2	U Maung Aye
3	U maung Kyin
4	U Tin Soe
5	U Maung Soe
6	U Mylnt Zaw
7	U Soe Nyunt
8	U Kyaw Oo
9	U Win Bo
10	U Mone Gyi
11	U Khin Maung Myint
12	U Aung Tin Kyaing
13	U Aung Wln
14	U Khine Win
15	U Tin Win
16	U Aung Ko Win
17	U Tin Aung
18	U Min Naung
19	U Win Naing
20	U Khin Maung Swe
21	U Nyunt Aung
22	U Kan Aung
23	U Sunny
24	U Myat Htun
25	U Maung Thyn
26	U Kyaw Htay
27	U Naing Lin
28	U Than Toe Aung
28	U Soe Naing
30	U Aung Htwe
31	U Nyunt Aye
32	U Tin Pe
33	U Nyunt Hlaing
34	U maung Mar
35	U Ye Zaw
36	U Nyunt Maung
37	U Wln Oo
38	U Aye Ko
39	U Tin Oo Maung
40	U Than Soe
41	U Kyi Win
42	U Nyo Maung
43	U Kyaw Oo
44	Daw Than Win
45	Daw Myint Mylnt Khine
46	Daw Moe Yee
47	U San Kyaw
48	U Thien Wln
49	U Kyaw Win
50	U Kyaw Myo Lwin
51	U Aung Htwe
52	U Kyaw Win
53	Daw Cho
54	U Chit
	Note; There will be same names for two different person, not double counting

Consultation Meeting Participants				
Sin Thay Dam, Tatkone Township, Naypyitaw Council Area, Feb.04				
Government Officials and Staffs				
Serial No	Name	Designation	Department	Ministry
1	U Tint Zaw	Deputy Director General	Irrigation	Ministry of Agriculture & Irrigation(MOAI)
2	U Zaw Win Chit	Director	Irrigation	MOAI
3	Daw Hla Oo Nwe	Deputy Director	Irrigation	MOAI
4	U Win Myaing	Deputy Director	Agricultural Mechnization Dept.	MOAI
5	Daw Khin Mar Mar Nwe	Deputy Director	Department of Agriculture Research	MOAI
6	U Htin Kyaw	Assitant Researcher	Dept. of Agri. Research	MOAI
7	Daw Nu Nu Lwin	Staff Officer	Planning Department	Ministry of National Planning and Economic Development
8	Dr. Myint Mon	Staff Officer	Livestock Breeding& Veterinary Dept	Ministry of Livestock Breeding& Rural Development
9	U Myint Thein	Deputy Staff Officer	Settlement & Land Records	MOAI
10	U Kyaw Win	Deputy Staff Officer	Agricultural Mechnization Dept.	MOAI
11	U Thant Zaw Oo	Staff Officer	Agricultural Mechnization Dept.	MOAI
12	U Nay Myo Lin	Land Surveyor(4)	Settlement & land Records	MOAI
13	U Bo Min	Assistant Director	Department of Agriculture	MOAI
14	Daw Aye Myat Kyi	Assistant Director	Department of Agriculture	MOAI
15	Daw Aye Than Dar Oo	Deputy Assisatnt Director	Department of Agriculture	MOAI
16	U Win Oo	Deputy Regional Officer	Department of Agriculture	MOAI
17	U Chit Swe Oo	Township Officer	Department of Agriculture	MOAI
18	U Kyaw Kyaw Oo	District Officer	Department of Agriculture	MOAI
19	Daw Wai Wai Lwin	Staff Officer	Irrigation Department	MOAI
20	U Myint Lwin	Staff Officer	Irrigation Department	MOAI
21	U Nyunt Maung	Deputy Assistant Director	Settlement & Land Records	MOAI
22	U Aung Kyaw Min	Land Surveyor(4)	Settlement & Land Records	MOAI
23	U La Kha Taung	Staff Officer	Irrigation Department	MOAI
24	U Myint Oo	Staff Officer	Irrigation Dept.	MOAI
25	U Win Nyo Htun	Deputy Staff Officer	Irrigation Dept.	MOAI
26	U Nan Aung	Deputy Staff Officer	Irrigation Dept.	MOAI
27	U Maung Kyaw		Irrigation Dept.	MOAI
28	U Min Min	Deputy Director	Irrigation Dept.	MOAI
29	U Htun Tint		Irrigation Dept.	MOAI
30	U Aung Myo Hein	Clerk	General Administrative Department	Ministry of Home Affairs
31	U Nay Myo Htun	Clerk	General Administrative Department	Ministry of Home Affairs
32	U Nyein Than Oo	Clerk	General Administrative Department	Ministry of Home Affairs

တပ်ကုန်းမြို့နယ် ရေဘော်ကွင်းကျေးရွာအုပ်စု ရက်စွဲ- ၄ . ၂ . ၂၀၁၅ .

စဉ်	တောင်သူအမည်	နေရပ်	သက်ဆိုင်ရာလက်မှတ်	မှတ်ချက်
၁.	ဦးညွန့်ဝင်း	ရေဘော်ကွင်း အုပ်စု	[signature]	
၂.	ဦးအောင်ဆေး	〃	[signature]	
၃.	ဦးအောင်ကျော်	〃	[signature]	
၄.	ဦးတင်ဦး	〃	[signature]	
၅.	ဦးမောင်ဦး	〃	[signature]	
၆.	ဦးမြင့်အောင်	〃	[signature]	
၇.	ဦးနိုးညွန့်	〃	[signature]	
၈.	ဦးကျော်ဦး	〃	[signature]	
၉.	ဦးဝင်းအို	〃	[signature]	
၁၀.	ဦးဖုန်းကြီး	〃	[signature]	
၁၁	ဦးခင်မောင်မြင့်	〃	[signature]	
၁၂	ဦးကျော်တင်မိုင်	〃	[signature]	
၁၃	ဦးအောင်ဝင်း	〃	[signature]	
၁၄.	ဦးခိုင်ဝင်း	〃	[signature]	
၁၅	ဦးတင်ဝင်း	〃	[signature]	
၁၆	ဦးအောင်ကိုဝင်း	〃	[signature]	
၁၇	ဦးတင်အောင်	〃	[signature]	
၁၈.	ဦးမင်းနောင်	〃	[signature]	
၁၉.	ဦးဝင်းနိုင်	〃	[signature]	
၂၀.	ဦးခင်မောင်ဆွေ	〃	[signature]	
၂၁	ဦးညွန့်အောင်	〃	[signature]	
၂၂	ဦးကံအောင်	〃	[signature]	
၂၃	ဦးသန်းဦး	〃	[signature]	
၂၄	ဦးစိုးထွန်း	〃	[signature]	
၂၅	ဦးမောင်သန်း	〃	[signature]	

တပ်ကုန်းမြို့နယ်　ဝေဘာဝကျေးရွာအုပ်စု　ရက်စွဲ - ၄ . ၂ . ၂၀၁၇ .

စဉ်	တောင်သူအမည်	နေရပ်	တက်ရောက်သူလက်မှတ်	မှတ်ချက်
၂၆	ဦးကျော်ဆွေ	ဗွောင်ကွန်းအုပ်စု	[illegible]	
၂၇	ဦးနိုင်လင်း	〃	[illegible]	
၂၈	ဦးထွန်းဇော်ဟေ	〃	[illegible]	
၂၉	ဦးစိုးနိုင်	〃	[illegible]	
၃၀	ဦးအောင်မွေး	〃	Aung	
၃၁	ဦးထွန်းအောင်	〃	[illegible]	
၃၂	ဦးတင်လေး	〃	[illegible]	
၃၃	ဦးထွန်းမိုင်	〃	[illegible]	
၃၄	ဦးမောင်မာ	〃	Mg Ma	
၃၅	ဦးဂျဲဆော	〃	[illegible]	
၃၆	ဦးထွန်းအောင်	〃	[illegible]	
၃၇	ဦးဝင်းဦး	〃	[illegible]	
၃၈	〃 ဖိုးကို	〃	[illegible]	
၃၉	〃 တင်ဦးအောင်	〃	[illegible]	
၄၀	〃 သန်းမိုး	〃	[illegible]	
၁	〃 ကြည်ဝင်း	〃	[illegible]	
၂	〃 ညိုအောင်	〃	[illegible]	
၃	〃 ကျော်ဦး	〃	[illegible]	
၄၄	〃 သန်းဝင်း	〃	[illegible]	
၅	〃 မြင့်ဦး	〃	[illegible]	
၆	〃 မိုးကို	〃	[illegible]	
၄၇	ဦးအုန်းကျော်	〃	[illegible]	
၈	〃 သိန်းဝင်း	〃	[illegible]	
၄၉	〃 ကျော်ဝင်း	〃	[illegible]	
၅၀	〃 [illegible]	〃	[illegible]	

တပ်ကူနိုးဆော် - နယ်ပင်　　ဂေါဒံဗြဲပျိုးကျေးရွာအုပ်စု　　ရက်စွဲ - ၄ ၊ ၂ ၊ ၂၀၁၇

စဉ်	တောင်သူအမည်	နေရပ်	တက်ရောက်ကြောင်းလက်မှတ်	မှတ်ချက်
၁၁/	ဦးအောင်ဆွေ ၊	ဂေါင်းပုံ ၊ နယ်ပင်	အောင်ဆွေ -	
၁၂/	ဦးကျော်ဝင်း ၊	"	[signature]	
၁၃/	ဒေါ်ဒို	"	[signature]	
၁၄/	ဦးချစ်	"	ဦးချစ်	
	၁၄ ဦး	ဂေါဒံဗြဲပျိုး ၊ နယ်ပင်	-	

ဌာနဆိုင်ရာ ဝန်ထမ်းများ တက်ရောက်စာရင်း

Feb: 04 ရက်စွဲ - ၄ ၊ ၂ ၊ ၂၀၀၅

	ဝန်ထမ်းအမည်	ရာထူး	ဌာနအမည်	
၁	ဦးတင်ဖေ	ဒုတိယညွှန်ကြားရေးမှူးချုပ်	ဆည်မြောင်းနှင့်မိုးဌာန	
၂	ဦးဇော်ဝင်းချစ်	ညွှန်ကြားရေးမှူး	ဆည်မြောင်း	
၃	ဒေါ်မြနီနွယ်	ဒု-ညွှန်ကြားရေးမှူး	ဆည်မြောင်း	
၄	ဒေါ်ခင်လှနွယ်	ဒု-ညွှန်ကြားရေးမှူး	မိုးလေဝသနှင့်ဇလဗေဒ	
၅	ဦးထင်ကျော်	ဒု-လ/ထ (၂)	။	
၆	ဒေါ်ဦးနုနွယ်	ဦးစီးမှူး	စီးပွားကျိုး	
၇	ဒေါ်ဖြူ	။	ရေး/က	
၈	ဦးမြင့်သိန်း	ဒု-ဦးစီးမှူး	မြေတိုင်း	
၉	ဦးကျော်ဝင်း	ဒု-ဦးစီးမှူး	စက်မှုလယ်ယာ	
၁၀	ဦးသန့်ဇော်ဦး	ဦးစီးမှူး	။	
၁၁	ဦးနေမျိုးလင်း	မြေတိုင်း (၄)	မြေတိုင်း	
၁၂	ဦးမိုးလင်း	လ/ထဦးစီးမှူး	မိုးလေဝသ	
၁၃	ဒေါ်အေးမြင့်ကြည်	။	။	
၁၄	ဒေါ်အေးသန္တာဦး	ဒု-လ/ထဦးစီးမှူး	။	
၁၅	ဦးဝင်းဦး	ဒုလက်ထောက်ဦးစီးမှူး	မိုးလေဝသ	
၁၆	ဦးချစ်ဆွေဦး	မြို့နယ်ဦးစီးမှူး	။	
၁၇	ဦးကျော်ကျော်ဦး	ခရိုင်မှူး	။	
၁၈	ဒေါ်စန္ဒာထွန်း	ဦးစီးမှူး	ဆည်မြောင်း	
၁၉	ဦးမြင့်ကျွန်	ဦးစီး	။	
၂၀	ဦးအုန်းအောင်	လ/ထဦးစီးမှူး	မြေတိုင်း	
၂၁	ဦးအောင်ကျော်လင်း	မြေတိုင်း (၄)	။	
၂၂	ဦးဂနီအောင်	ဦးစီးမှူး	ဆည်မြောင်း	
၂၃	။ မြင့်ဦး	။	။	
၂၄	။ ဝင်းညွှန့်	ဒု-ဦးစီးမှူး	။	
၂၅	။ နိုင်အောင်	။	။	
၂၆	။ အောင်ကျော်	လ/ထစာရေး	။	

ဝန်ထမ်းများ တက်ရောက်သူ စာရင်း

ဝန်ထမ်းအမည်	ရာထူး	ဌာနအမည်	လက်မှတ်
ဦးဝင်းဝင်း	ဒု-ကျောင်းအုပ်ကြီး	ဆ၀၃၅ ကျောင်း	
,, ထွန်းဝင်း	လ/ထ ကျောင်းအုပ်	〃	
,, ကျော်မိုးထိုက်	ဆရာ-၁	ရွှေ/ကုပ်	
,, နေမျိုးအောင်	〃	〃	
,, ငြိမ်းဟိန်းဦး	〃	〃	

တပ်ကုန်းမြို့နယ် ရေသာစိုက်ပျိုးရေး ရွာအုပ်စု ရက်စွဲ- ၄.၂.၂၀၁၁

စဉ်	တောင်သူအမည်	နေရပ်	လက်မှတ်	မှတ်ချက်
၁.	ဦးမင်းဆွေ	တံခွန်ရွာ	[signature]	
၂.	ဦးထွန်းဦး	"	[signature]	
၃.	ဦးဆွေ	"	[signature]	
၄.	ဦးမင်းနိုင်	"	[signature]	
၅.	ဦးမြတ်ကြီး	"	[signature]	
၆.	ဦးသန်းအောင်	"	[signature]	
၇.	ဦးကျော်ကျော်	"	[signature]	
၈.	ဦးသိန်းနိုင်	"	[signature]	
၉	ဦးသိန်း	"	[signature]	
၁၀.	ဦး-နီ	"	[signature]	
၁၁	မောင်ဇော်	"	[signature]	
၁၂	ဦးမင်း	"	[signature]	
၁၃.	ဦးဖိုး	"	[signature]	
၁၄	ဦးလှ	"	[signature]	
၁၅	ဦးဝင်းမြင့်	"	ဝင်းမြင့်	
၁၆	ဦးကျော်ထွန်း	"	[signature]	
၁၇	ဦးစိန်မောင်	"	[signature]	
၁၈	ဦးစံရွှေ	"	[signature]	
၁၉	ဦးကျော်ရွှေ	"	[signature]	
၂၀	ဦးတင်မြင့်	"	[signature]	
၂၁.	ဦးချစ်အောင်	"	[signature]	
၂၂.	ဦးဇော်မြင့်	"	[signature]	

၂၂ ဦး ကိုယ်ခံ ...

တယ်ကုန်းမြို့နယ် ရေဘော်ကျွန်းကျေးရွာအုပ်စု ရက်စွဲ - ၄ . ၂ . ၂၀၁၅.

စဉ်	အဖွဲ့ဝင်အမည်	နေရပ်	ဘက်ဆိုင်ရာလက်မှတ်	မှတ်ချက်.
၁.	ဦးလှမြင့်	ကြိုးတာကင်း		
၂.	ဦးကျော်သိန်း	"		
၃.	ဦးမြင့်သိန်း	"		
၄.	ဦးကျော်စိုး	"		
၅.	ဦးအောင်မြင့်	"		
၆.	ဦးမြင့်ဦး	"		
၇.	ဦးဝင်းအောင်	"		
	၇ ဦး	ကြိုးတာကင်း		

တပ်ကုန်းမြို့နယ် ဒေသဖွံ့ဖြိုးရေးကော်မတီ ရက်စွဲ - ၄ ၊ ၂ ၊ ၂၀၁၅

စဉ်	အမည်	နေရပ်	သက်ဆိုင်ရာလက်မှတ်	မှတ်ချက်
၁	ဦး ထွန်းရီ	ဥက္ကာစံရွာ [illegible]	(signature)	
၂	ဦး ကျော်ရွှေ	"	(signature)	
၃	ဦး တင်ဝင်း	"	(signature)	
၄	ဦး စိုးနိုင်	"	(signature)	
၅	ဦး မြင့်ဆွေ	"	(signature)	
၆	ဦး ကျော်ဆင်	"	(signature)	
၇	ဦး ပင်	"	(signature)	
၈	ဦး အောင်ဇော်	"	(signature)	
၉	ဦး ကျော်ရွှေ	"	(signature)	
၁၀	ဦး ရင်	"	(signature)	
၁၁	ဦး ထိုက်		(signature)	
၁၂	ဦး ဖေလှိုင်		(signature)	
၁၃	ဒေါ်ဝင်းဝင်းမွှေး	ရှာရ	(signature)	
၁၄	ဦးအောင်မြင့်	ပြောင်းမြို့ပင်	(signature)	
၁၅	" သန်းအောင်	"	(signature)	
၁၆	" ဝင်းသိုက်	"	(signature)	
	ဝင်ဦး	ဥက္ကဋ္ဌ [illegible]		

Safeguards Public Consultation Meeting

Minutes

Ma Lei Nat Taung Irrigation System, Mandalay Region

February 05, 2015

The third safeguards public consultation meeting for the Agricultural Development Support Project (ADSP) was held at Ma Lei Nat Taung, Village Tract, Mandalay Region, on February 5, 2015. The meeting was organized by the Ministry of Agriculture and Irrigation (MOAI). The MOAI team was led by U Tint Zaw, Deputy Director General of the Irrigation Department with the Ministry staff representing the Department of Agriculture, Department of Agricultural Mechanization, and Settlement and Land Records Department involved in the preparation of this project with the Bank. In addition there were representatives of the district government. The list of farmers, government officials, and other stakeholders participated in the meeting is in the Annex to these Minutes.

Relevant officials from the different departments, who are involved in ADSP, explained the project, its main activities, and expected benefits, through the power point and oral presentations. They also explained that the project implementation will be guided by the Environmental and Social Management Framework and other safeguards documents in compliance with the Bank rules and the legislation of Myanmar.

The presentation from MOAI was followed by questions and answers and some from the farmers which are not included in the project area.

- U Win Swe, farmers from Ma Lei Village Tract related about the problems they faced after the heavy rains. He said that canals break open after heavy rains and farmers volunteered and repaired it. He said the break down occurs in the first section of the canal. They have requested the Irrigation Department for repair works but said that it takes time. He said that farmers need distribution of timely water and would prefer the Irrigation department to take action on the timely distribution of water and repair of the canals.
- A farmer from Me Lei Village said that he had about 3 acres of farm land beside the left canal DO1 but however due to contour land leveling, his farm is higher than the canal and could not access the water. He said that he has to block the canal in order to get the water and has to do it yearly. He said that there is always a major break down from this canal and would like to request Irrigation Department for repair it since caused serious damage to their crops.
- U Myint San, a farmer also related that he did not get sufficient irrigated water left canal from DY1 &2 and have to pump water from the canal every year. Last year he had to use about 3 barrels of fuel for pumping up water. He said that farmers cooperate and repair the canals every year but still faced water shortage and request Irrigation Department to look into it
- Daw Ma, a woman who is also involved in farming from Aye Chan Tha village, said that due to water released from the left discharge canal she cannot seed any crop since the water floods her farms and also cannot rear fishes either. She asked

the ID to repair the discharge canal she would be able to seed her five acres and rear fishes.

- Ko Than Kyaw Oo a farmer from 16 Ga-nge-kwin said that previously under the Armed forces plan they cleared the area, reclaimed it to grow cotton. After the plan to grow cotton by the army was abolished, they were left in that area and changed crops to Paddy. However they were not recognized by the Settlement and Land Records Department and were not issued Land use rights known as Form 7. They were not able to get Agricultural loans from the Myanmar Agricultural Development Bank (MADB) and were heavily in debt since they have to lend from the village money lenders at the interest rate of 10 percent per annum and requested SLRD to issue then Form 7 to be eligible for the MADB's Agricultural loans.

Since there were no more questions raised by the farmers, U Kyaw Thu, Assistant Director from the Department of Irrigation, made a closing speech and the meeting was closed. It was attended by more than 100 farmers.

List of Participants (Farmers)		
Malei Nat Taung Village Tract		
Serail No	Name	Village
1	U Tin Thein Win	Yone Pin Kone
2	U Tin Soe Win	Yone Pin Kone
3	U Saing Myat Thu	Yone Pin Kone
4	U Kyaw Kyaw	Yone Pin Kone
5	U Than Lwin	Yone Pin Kone
6	U Khin Maung Aye	Yone Pin Kone
7	U Myint Thein	Pin Lei Gyi
8	U Myo Win Htun	Pin Lei Gyi
9	U Myint Maung	Ma Lei
10	U Chit Htun	Ma Lei
11	U Thein Lwin	Wa Yone Kone
12	U Mylnt San	Kyauk Taing
13	U Kyaw San Win	Administrator/ Wa Yone Kone
14	U Nyunt Sein	Administraror/MaLei
15	U Htun Maung	Nat Taung
16	U Sey	Aye Chan Tha
17	U Than Myint	Aye Chan Tha
18	U Tin Htun	Nat Taung
19	U Maung Aye	Ma Lei
20	U Kyaw Htet	Ma Lei
21	U Pho Nge	Ma Lei
22	U Zaw Myo Win	Ma Lei
23	U Zaw Myo Htun	Ma Lei
24	U Nay Myo	Ma Lei
25	U Pye Pho Aung	Ma Lei
26	U Tin Myo Htun	Nat Taung
27	U Htwe	Nt Taung
28	U Tint Lwin	Mln Ywar
29	U Myo Myint	Let Pan Hla
30	U Aye One	Let Pan Hla
31	Daw Aye Than	Aye Chan Thar
32	U Than Saung	Administraror/MaLei
33	U Kan Oo	Aye Chan Thar
34	Daw Aye Mye	Nat Taung
35	U Htun Myint	Ma Lei
36	Daw Khine Zin Oo	Aye Chan Thar
37	Daw Ohn Mar Khin	Aye Chan Thar
38	Daw Mar	Aye Chan Thar
39	Daw Ohn Myint	Aye Chan Thar
40	Daw Thynn Thynn Mar	Aye Chan Thar
41	Daw Zin Kyaw Htet	Aye Chan Thar
42	Daw Shwe Zin Oo	Aye Chan Thar
43	Daw Naing	Aye Chan Thar
44	U Zaw	Aye Chan Thar
45	Daw Ohn Mar Zin	Aye Chan Thar
46	U Than Naing Oo	Aye Chan Thar

47	U Than Kyaw Oo	Aye Chan Thar
48	U Kyaw Zin Win	Aye Chan Thar
49	Daw Nyein Hla	Aye Chan Thar
50	U Tar	Nat Taung
51	Daw Ohn Mar Soe	Pin Lei Gyi
52	U Zaw Myo Thant	Yone Pin Kone
53	U Zaw Zaw	Yone Pin Kone
54	U Chit Thwin	Min Ywar
55	U Maung Tin	Min Ywar
56	U Soe Moe Aung	Nat Taung
57	U That Zin Aung	Nat Taung
58	U Zin Mun Aye	Min Gyi Kone
59	U Min Lu	Min Ywar
60	U Maung Myint	Nat Taung
61	U Thein Lwin	Ma Lei
62	U San Ton	Ma Lei
63	U Ye Taw	Ma Lei
64	U Swe Oo	Administrator/Lat Pan Hla
65	U Myint Paing	Nat Taung
66	U Nyi Nyi Lin	Nat Taung
67	U Maung Htoke	Ta Laing Kone
68	Daw Hla	Aye Chan Tha
69	U Win Hlaing	Ma Lei
70	U Naing Htoo	Ma Lei
71	U Aung Chit	Ma Lei
72	U Kyaw Soe	Nat Taung
73	U Thein Htun	Nat Taung
74	Daw Waing	Nat Taung
75	Daw Naing	Nat Taung
76	Daw Aye	Nat Taung
77	Daw Than Aye	Nat Taung
78	U Min Min	Nat Taung
79	U Myo Win Sint	Pin Lei Gyi
80	U Aye Maw	Yone Pin Kone
81	U Thein Kyaw	Yone Pin Kone
82	U Khin Maung Latt	Yone Pin Kone
83	U San Lwin	Yone Pin Kone
84	U Kan Saing	Pin Lei Gyi
85	U Kyaw Tint	Pin Lei Gyi
86	U Win	Pin Lei Gyi
87	U Saw	Pin Lei Gyi
88	U Zaw Myint	Aye Chan Thar
89	U Myo Win Sint	Pin Lei Gyi

Consultation meeting Particpants				
Participant of Ma Lei Nat Taung Irrigation System., Mandalay Region, February 05				
Government Officials and Staffs				
Serial No	Name	Designation	Department	Ministry
1	U Tint Zaw	Deputy Director General	Irrigation	Ministry of Agriculture & Irrigation(MOAI)
2	U Zaw Win Chit	Director	Irrigation	MOAI
3	U Win Myaing	Deputy Director	Agricultural Mechnization Dept.	MOAI
4	U Kyin Maung	Deputy Regional Officer	Department of Agriculture	MOAI
5	U Tint Lwin	Districy Officer	Department of Agriculture	MOAI
6	U Maung Kyaw Thynn	Township Administrator	General Administrative Department	Min stry of Home Affairs
7	U Aung Swe Oo		Settlement & Land Records	MOAI
8	U Kyaw Kyaw Nyunt	Township Offucer	Department of Agriculture	MOAI
9	Dr. Aung Win		Livestock Breeding& Veterinary Dept	Ministry of Livestok & Fisheries
10	U Tin Maung Ohn	Ma Lei Nat taung Project		
11	U Win Naing	Assistant Director	Irrigation Department	MOAI
12	U Tin Htun	Deputy Director(Design)	Irrigation Department	MOAI
13	U Kyaw Thu	Deputy Director	Irrigation Department	MOAI
14	U Toe Naing		Settlement & Land Records	MOAI
15	U Aye Kyaw		Department of Agriculture	MOAI
16	U Kyaw Kyaw Nyunt		Department of Agriculture	MOAI
17	U Ko Ko Zaw		Industrail Crop Development Dept.	MOAI
18	Daw Ni Ni Win		Industrail Crop Development Dept.	MOAI
19	Daw War War Soe San		Department of Agriculture	MOAI
20	U Aung Thu		Department of Agriculture	MOAI
21	U Ye Win Htay		Department of Agriculture	MOAI
22	Daw Thit Thit Htwe		Department of Agriculture	MOAI
23	Daw Khin Htay Myint		Department of Agriculture	MOAI
24	Daw Ohn Mar Soe		Department of Agriculture	MOAI
25	Daw Baby Win		Department of Agriculture	MOAI
26	Daw Ngu War Kyaw		Department of Agriculture	MOAI
27	U Than Htun	District Officer	Agricultural Mechnization Dept.	MOAI
28	Daw Myint Myint Mu	Deputy District Officer	Department of Agriculture	MOAI
29	U Sein Maung		Department of Agriculture	MOAI
30	U Thien Aung		Department of Agriculture	MOAI
31	Daw Swe Swe Myint		Department of Agriculture	MOAI
32	Daw Kay Thi Htwe		Department of Agriculture	MOAI
33	Daw Hnyin		Department of Agriculture	MOAI
34	Daw Pyone Pyone Aye		Department of Agriculture	MOAI
35	Daw Ni Lar Aye		Department of Agriculture	MOAI
36	Daw Saung Yin		Department of Agriculture	MOAI
37	U Set Maung		Department of Agriculture	MOAI
38	Major Police Office Shwe Khin		Township Polic Office	
39	U Yar Nyunt	Construction		

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့်မြစ်မော့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း ဖွံ့ဖြိုးတိုးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ

အခမ်းအနား Feb. 06

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁	ဦးတင်သိန်းဝင်း	ရှံပင်ကျွန်း	[illegible]
၂	" တင်ဦးဝင်း	"	[illegible]
၃	" မြင့်သိန်း	ပင်လယ်ကြီး	မြင့်သိန်း
၄	" မျိုးဝင်းထွန်း	"	မျိုးဝင်းထွန်း
၅	" ခိုင်မြတ်သူ	ရှံပင်ကျွန်း	[illegible]
၆	" ကျော်ကျော်	"	[illegible]
၇	" သန်းလွင်	"	[illegible]
၈	" ခင်မောင်အေး	"	[illegible]
၉	" မြင့်မောင်	မာလဲ	[illegible]
၁၀	" သိန်းလွင်	ဇါးရုံကျွန်း	[illegible]
၁၁	" မြင့်ဆွေ	ကျောက်တိုင်	[illegible]
၁၂	" သိန်းဝင်း	"	[illegible]
၁၃	" ကျော်ဆန်းဝင်း	ဇီးရုံကုန်း၊ အုပ်ချုပ်ရေးမှူး	[illegible]
၁၄	" ချစ်ထွန်း	မာလဲ	[illegible]
၁၅	" အုန်းစိန်	မင်းရွာ၊ အုပ်ချုပ်ရေးမှူး	[illegible]
၁၆	" ထွန်းမောင်	ကျက်တောင်	[illegible]

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့်မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း
ဖွံ့ဖြိုးတိုးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ
အခမ်းအနား

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁၇	ဦးစံဝယ်	[illegible]	စံဝယ်
၁၈	" သန်းမြင့်	"	သန်းမြင့်
၁၉	" တင်ထွန်း	[illegible]	တင်ထွန်း
၂၀	" [illegible]	[illegible]	[illegible]
၂၁	" [illegible]	"	[illegible]
၂၂	" စိုးငယ်		ငယ်
၂၃	" ကျော်ညိုးဝင်း		[illegible]
၂၄	" ကျော်ညိုး[illegible]		[illegible]
၂၅	" [illegible]ညို		[illegible]
၂၆	" [illegible]		[illegible]
၂၇	" [illegible]	[illegible]	[illegible]
၂၈	" ဦးအေး	"	[illegible]
၂၉	" တင့်လွင်	[illegible]	[illegible]
၃၀	" မျိုးမြင့်	လက်ပံရွာ	[illegible]
၃၁	" အောင်[illegible]	"	[illegible]

police [illegible]

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့်မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း

ပံ့ပြိုးတိုးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ

အစမ်းအနား

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၃၂			
၃၃			
၃၄			
၃၅			
၃၆			
၃၇			
၃၈			
၃၉			
၄၀			
၄၁			
၄၂			
၄၃			
၄၄			
၄၅			
၄၆			

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့်မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း ဖွံ့ဖြိုးတိုးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ

အခမ်းအနား

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁။	ဇော်ဇော်ဦး	အောင်ချမ်းသာ	[signature]
၂။	ဥက္ကာဆွေ	အောင်ချမ်းသာ	[signature]
၃။	၊၀၇	အောင်ချမ်းသာ	[signature]
၄။	မသူဇာစိုး	ပဲလယ်ကြီး	[signature]
၅	ဒေါ်အုန်းမြင့်	အောင်ချမ်းသာ	[signature]
၆	သင်းသင်းမော်	〃	[signature]
၇	ရင်ကျော်ထက်	〃	[signature]
၈	ရွှေရင်ဦး	〃	[signature]
၉	ဝင်းဦး	〃	[signature]
၁၀	ကိုဇော်	〃	[signature]
၁၁	သူဇာရင်	〃	[signature]
၁၂	ဝိုးဝေ	ရွက်ဝေ	[signature]
၁၃	ဦးသန်းဦးဦး	အောင်ချမ်းသာ	[signature]
၁၄	သန်းကျော်ဦး	〃	[signature]
၁၅	ကျော်ရင်ထူး	〃	[signature]
၁၆	ဒေါ်ညိုမာလှ	〃	[signature]

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့်မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း ဖွံ့ဖြိုးတိုးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ

အစမ်းအနား

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁၇။	ဦးကျော်မျိုးသိန်း	ရုံးပတ်ကျော်	
၁၈။	" ဇော်ဇော်	"	
၁၉။	" ချမ်းညွန့်	မင်းရွာ	
၂၀။	" ဆောင်ဇော်	"	
၂၁။	" ဦးမြင့်အောင်	ဆိပ်ကြောင်	
၂၂။	" သိန်းဇော်အောင်	"	သိန်းဇော်အောင်

အခမ်းအနားတက်ရောက်သူများစာရင်း

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁/	[illegible]		
၂/	ဝင်းခင်ဌေး	[illegible]	
၃/	[illegible]	[illegible]	
၄/	" [illegible]	[illegible]	
၅/	" [illegible]	"	
၆	[illegible]	[illegible]	
၇	ဒေါ်နီနီဝင်း	[illegible]	
၈	ဦးအောင်[illegible]	[illegible]	
၉	ဦးရဲဝင်းဌေး	"	
၁၀	ဒေါ်သစ်ထွေး	"	
၁၁	ဒေါ်ခင်ဌေးမြင့်	"	
၁၂	ဒေါ်[illegible]	"	
၁၃	ဒေါ်ဘေဘီဝင်း	"	
၁၄	ဒေါ်[illegible]ကျော်	"	
၁၅	[illegible]အောင်မြင့်	[illegible]	
၁၆	" [illegible]	[illegible]	
၁၇	" [illegible]	"	

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့်မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း
ဖွံ့ဖြိုးတိုးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ

အခမ်းအနား

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁၇	[illegible]	မာလဲ	[illegible]
၁၈	[illegible]	NMJMy. [illegible]	[illegible]
၁၉	[illegible]	[illegible]	[illegible]
၂၀	[illegible]	〃	[illegible]
၂၁	[illegible]	[illegible]	[illegible]
၂၂	[illegible]	[illegible]	[illegible]
၂၃	[illegible]	[illegible]	
၂၄	[illegible]	မာလဲ	[illegible]
၂၅	[illegible]	မာလဲ	[illegible]
၂၆	[illegible]	〃	[illegible]
၂၇	[illegible]	[illegible]	[illegible]
၃၀	[illegible]	〃	[illegible]
၃၁	[illegible]	〃	[illegible]
၃၂	〃 [illegible]	〃	[illegible]
၃၃	〃 [illegible]	〃	[illegible]
၃၄	[illegible]	〃	[illegible]

ကမ္ဘာဘက်ခြေးဝဲဖြင့်ဆောင်ရွက်မည့်မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း ပံ့ပိုးကူညီးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ အစမ်းအနား

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁။			
၂။			
၃။			
၄။			

၁။ ဦးအေးမောင်	၄၄ ရုံးပစ်ကျွန်း	[illegible]
၂။ " သိန်းကျော်	"	[illegible]
၃။ " စံမောင်လတ်	"	[illegible]
၄။ " စိုးထွန်း	"	[illegible]
၅။ " ကော်ဆိုင်	ပင်လယ်ကြီး	[illegible]
၆။ " ကျော်တင်	"	[illegible]
၇။ ဖော်မြင့်	အေးချမ်းသာ	[illegible]
၈။ " ပွင်း	ပင်လယ်ကြီး	[illegible]
၉။ " ဘော	"	ဘော

ကမ္ဘာဘက်ခြေးငွေဖြင့်ဆောင်ရွက်မည့်ဖြန့်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း
ပံ့ပြိုးတိုးတက်မှုအထောက်အကူပြုစီမံကိန်းနှင့်ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ

အစမ်းအနား

စဉ်	အမည်	ဌာန/ကျေးရွာအုပ်စု	လက်မှတ်
၁			
၂			
၃			
၄			
၅			
၆			
၇			
၈			
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၁၂			
၁၃			
၁၄			
၁၅			

Safeguards Public Consultation Meeting

Minutes

North Ya Mah Irrigation System, Kye Tha Pya Village Tract, Pale Township

Monywa Region

February 06, 2015

The fourth safeguards public consultation meeting for the Agricultural Development Support Project (ADSP) was held at Kye Tha Pya Village Tract, Pale Township, Monywa Region on February 6, 2015. The meeting was organized by the Ministry of Agriculture and Irrigation (MOAI). The MOAI team was led by U Tint Zaw, Deputy Director General of the Irrigation Department with the Ministry staff representing the Department of Agriculture, Department of Agricultural Mechanization, and Settlement and Land Records Department involved in the preparation of this project with the Bank. In addition there were representatives of the district government. The list of farmers, government officials, and other stakeholders participated in the meeting is in the Annex to these Minutes.

Relevant officials from the different departments, who are involved in ADSP, explained the project, its main activities, and expected benefits, through the power point and oral presentations. They also explained that the project implementation will be guided by the Environmental and Social Management Framework and other safeguards documents in compliance with the Bank rules and the legislation of Myanmar.

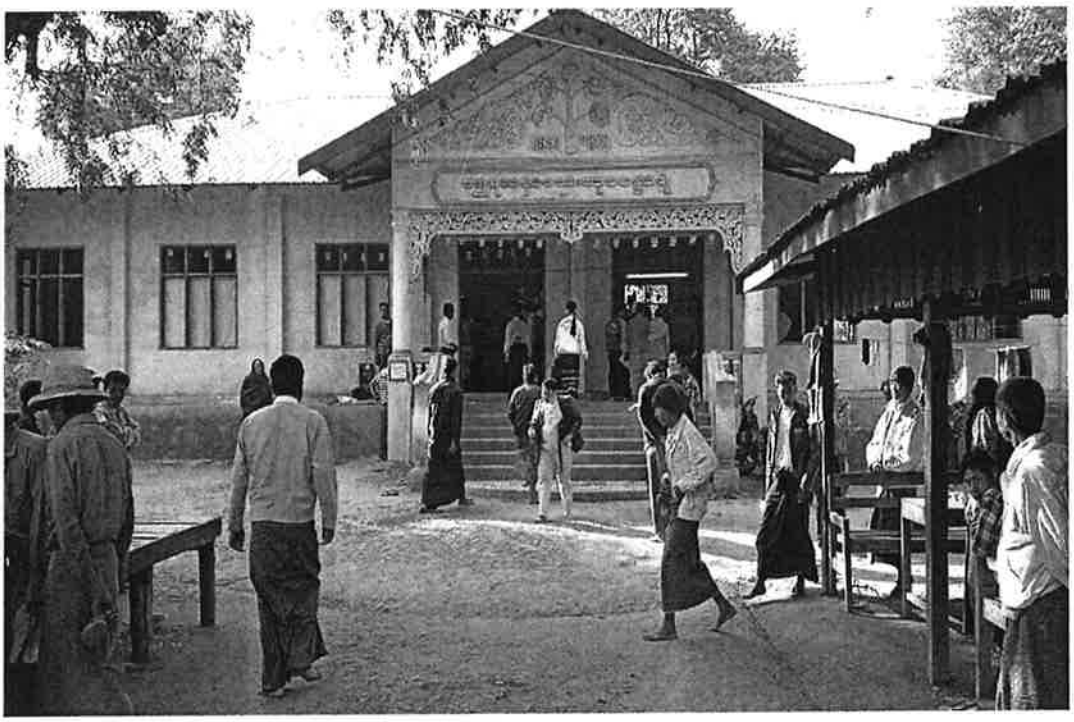
The presentation from MOAI was followed by questions and answers and some from the farmers which are not included in the project area.

- U Pe Ohn, farmers from Kye Tha Pya village, assured that farmers from his village will cooperate and coordinate with the World Bank on implementing North Ya Mah project. However, he went on to say that there was a problem with Canal 2. He said that over the years the Canal has been gradually degenerating and that the main canal also needs to be fixed. The farmer's need the water and all are facing difficulties. He said that there is a need for land consolidation works. Due to uneven contour levels of the land, there are problems with the feeder and drainage canals. Water cannot flow freely and fields are flooded with water from the drainage canals, destroying the crops. He also said that the farmers are also in need of good variety of quality seeds and he was happy to learn that it was included as one component in the ADSP.
- One of the farmers complained of broken discharge canal out lets. He said that the farmers tried to repair it but they cannot do and request the Irrigation Department to repair it including to the correct the water distribution system.
- Ko Aung Tun, a farmer from Kye Tha Pya Village, thanked the Bank though his farm is not within the project area. He said that the southern part of his village is flooded by the water from the discharge canal due to the damaged canal embankment (canal inspection part) and request Irrigation Department to repair it. He said that the farmers have tried their best to repair the canal embankment but

could not afford to do so and he wanted to know whether it could be repaired through the Bank loans.

- U Pho Win also requested the Irrigation Department to repair the bridge crossing the canal embankment.
- One farmer also wishes to know how many acres will be included in land improvement works in North Ya Mah project.
- Ko Naing Tun, a farmer wanted to know that if roads for bullock carts will be included in the system. He said the farmer's needs roads for carts because since in time of emergency such as snake bites they have to use their carts to go to the nearest hospital. If they used the road on the canal embankments they have to pay heavy fines and since most of the transportation the farmers used are bullock carts he would like the Irrigation Department to include roads for the bullock carts.

Since there were no more questions raised by the farmers, U Hla Shwe, Director from the Department of Irrigation, made a closing speech and the meeting was closed.



[illegible]

အစည်းအဝေးတက်ရောက်သူများစာရင်း

၂/၂

"[illegible]"

ရက်စွဲ၊ ၉ - ၂ - ၂၀၁၅

စဉ်	အမည်	ရာထူး	ဌာနအမည်	လက်မှတ်
၁။	ဒေါ်[illegible]	[illegible]	[illegible]	
၂။	ဒေါ်[illegible]	[illegible]	"	
၃။	ဦး[illegible]	[illegible]	"	
၄။	ဦး[illegible]	[illegible]	"	
၅။	ဒေါ်[illegible]	[illegible]	[illegible]	
၆။	[illegible]	"	[illegible]	
၇။	ဦး[illegible]	[illegible]	[illegible]	
၈	ဒေါ်[illegible]	[illegible]	"	
၉။	ဦး[illegible]	[illegible]	[illegible]	
၁၀။	" [illegible]	[illegible]	"	
၁၁	" [illegible]	[illegible]	[illegible]	
၁၂	ဦး[illegible]	[illegible]	[illegible]	
၁၃။	ဦး[illegible]	[illegible]	[illegible]	
၁၄	ဦး[illegible]	[illegible]	[illegible]	
၁၅	ဦး[illegible]	[illegible]	[illegible]	
၁၆	ဦး[illegible]	[illegible]	[illegible]	
၁၇	ဦး[illegible]	[illegible]	[illegible]	
၁၈	ဦး[illegible]	[illegible]	[illegible]	
၂၀	ဦး[illegible]	[illegible]	[illegible]	
၂၁	ဒေါ်[illegible]	[illegible]	[illegible]	

[illegible]

ကမ္ဘာ့ဘဏ် ချေး ငွေဖြင့် ဆောင်ရွက်မည့် [illegible] ① .
[illegible] ဝိုင်းကိုးပြီး [illegible] တွေ့ဆုံဆွေးနွေးပွဲ "

အစည်းအဝေးတက်ရောက်သူများစာရင်း

" ကော်ဘွဲ့များ၊ [illegible] " ရက်စွဲ ၊ ၆ - ၂ - ၂၀၁၅

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၁	ဦး မောင်အုန်း	ကျေးသာမျာ:	ကျေးသာမျာ:	[illegible]
၂ .	" သန်းထွန်း	"	"	[illegible]
၃	" မျိုးဝင်း	"	"	[illegible]
၄ .	" မငွေလင်း	"	"	မငွေးလင်း
၅	" တင် .	"	"	တင်
၆	" ခင်ဝင်း			ခင်ဝင်း
၇	" မြင့်ငွေ			[illegible]
၈ .	" ဝင်းကျော် .			ဝင်းကျော်
၉ .	" မြင့်မောင်			[illegible]
၁၀	" မောင်မောင်			[illegible]
၁၁ .	" ကျော်နိုင်ဝင်း			[illegible]
၁၂	" တင်မောင်ထွေး			[illegible]
၁၃	" ကျော်ဦး			[illegible]
၁၄	" ဝင်းမောင် .			[illegible]
၁၅	ဇော်လင်းကျော်			[illegible]
၁၆	ဦး သန်းဇော်			[illegible]
၁၇	" မှုန်းဇော်			[illegible]
၁၈	ကိုင်ဝင်း			[illegible]
၁၉	ကိုင်ဇော်			[illegible]
၂၀	မောင်စိုးအောင်			[illegible]

ဒေသခံပြည်သူများ

စဉ်	အမည်	ရာထူး	ရွာ	လက်မှတ်
၂၂	ကိုအေးမြင့်	[illegible]	[illegible]	
၂၃	ဦးစိုးမြင့်	ဒု-ရွာမှူး	အသုံးကြော်	
၂၄	ဦးအောင်မြတ်	ရွာမှူး	အသုံးကြော်	
၂၅	ကိုလင်းထွန်း	ဥ ရပ်ကွက်မှူး	[illegible]	
၂၆	ကိုဇော်ဦး	ရ/ထ ဥက္ကဋ္ဌ	[illegible]	

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ ၊ ၆ - ၂ - ၂၀၁၉

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၂၁	ဦးမိုးရှူး	ကျေးသမျှား	ကျေးသမျှား	[illegible]
၂၂	״ ဖေဇော်ကြွက်	״	״	[illegible]
၂၃	״ ဘား	״	״	[illegible]
၂၄	ဒေါ်ခင်မြိုင်	״	״	[illegible]
၂၅	ဦးလှဖေကျော်	״	״	[illegible]
၂၆	״ ခင်လေးအောင်	״	״	[illegible]
၂၇	״ မျိုးရွှေ	״	״	[illegible]
၂၈	״ ကျော်အောင်	״	״	[illegible]
၂၉	״ ဝင်းနိုင်	״	״	[illegible]
၃၀	״ အောင်မြင့်ကျော်	״	״	[illegible]
၃၁	ဒေါ်ခွင်းနု	״	״	[illegible]
၃၂	״ မာမာမွန်	״	״	[illegible]
၃၃	״ ခွင်း	״	״	[illegible]
၃၄	ဦးမြင့်နိုင်	״	״	[illegible]
၃၅	״ သန်းဝင်း (၂)	״	״	[illegible]
၃၆	״ ဇော်ဟန်မြင့်	״	״	[illegible]
၃၇	״ အောင်နိုင်	״	״	[illegible]
၃၈	״ အောင်လင်း	״	״	[illegible]
၃၉	״ ညွန့်လှိုင်	״	״	[illegible]
၄၀	״ ကိုဝင်း			[illegible]

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ ၊ ၆ - ၂ - ၂၀၁၃

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၄၁	ဦး ဇော်ဝင်း	ကျွန်းသာယာ	ကျွန်းသာယာ	[illegible]
၄၂	ဦး ကျော်ဝင်း	〃	〃	[illegible]
၄၃	〃 ဇော်မျိုးဝင်း	〃	〃	[illegible]
၄၄	〃 အောင်နိုင်	〃	〃	[illegible]
၄၅	〃 အောင်ကိုဦး	〃	〃	[illegible]
၄၆	〃 မျိုးဝင်း	〃	〃	[illegible]
၄၇	〃 ထွန်းဦး	〃	〃	[illegible]
၄၈	〃 ဖေမြင့်	〃	〃	[illegible]
၄၉	〃 အောင်ကြူ	〃	〃	[illegible]
၅၀	〃 ဝင်းမျိုးသူ	〃	〃	[illegible]
၅၁	〃 ဒေါ်ခင်မြိုင်	〃	〃	[illegible]
၅၂	ဦး ကျော်မျိုးနိုင်	〃	〃	[illegible]
၅၃	ဦး သန်းဝေ	〃	〃	[illegible]
၅၄	〃 ကိုးဝင်း	〃	〃	[illegible]
၅၅	[illegible] သန်းထွန်း	မုံသဉ	မုံသဉ	[illegible]
၅၆	〃 ကိုးခင်းထွန်း	ကျော်နှင်	သာကြီးတော	[illegible]
၅၇	〃 ကိုဝင်း	〃	〃	[illegible]
၅၈	ချစ်ဝေ	သာကြီးတော	〃	[illegible]
၅၉	ကျော်ကိုမျိုး	ကျွန်းသာယာ	ကျွန်းသာယာ	[illegible]
၆၀	မြင့်သောင်း	〃	〃	[illegible]

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ ၊ ၄ - ၂ - ၂၀၁၅

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၆၁	ဦးချစ်ရွှေ	ကျေးသာယာ	ကျေးသာယာ	[illegible]
၆၂	ဦးဝင်းခိုင်မြင့်	[illegible]		[illegible]
၆၃	ဦးမြဦး	မဝိုးမ	မဝိုးမ	[illegible]
၆၄	" သန်းဦး	"	"	[illegible]
၆၅	" ကျေးမောင်	ကျေးသာယာ	ကျေးသာယာ	[illegible]
၆၆	" တင်မောင်	"	"	[illegible]
၆၇	" မောင်မြ	"	"	[illegible]
၆၈	" ညိုဝင်း	"	"	[illegible]
၆၉	" တင်မြိုင်	အောင်ကုန်း	အောင်ကုန်း	[illegible]
၇၀	" ကျော်ဟန်	ကျေးသာယာ	ကျေးသာယာ	[illegible]
၇၁	" ကိုးမောင်	"	"	[illegible]
၇၂	" ဝင်းကျော်	"	"	[illegible]
၇၃	" မောင်မာ	"	"	[illegible]
၇၄	" လှကြိုင်	[illegible]	[illegible]	[illegible]
၇၅	" တင်ဝင်း	[illegible]	"	[illegible]
၇၆	" လှမောင်			[illegible]
၇၇	" ညီလေး	[illegible]		[illegible]
၇၈	" ဘိုဦး			[illegible]
၇၉	" မောင်ကြီး			[illegible]
၈၀	" ကာလေး			[illegible]

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ ၊ ၆ - ၈ - ၂၀၁၅

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၈၁	ဦးပေါ်သာ		ရွာသစ်	သာ
၈၂	" ညိုဝေ	ကျေး-၁၁ မှာ	ကျေး ၁၁ မှာ	[illegible]
၈၃	" ရန်အောင်	၈၂ မှာ ၅၄	ကျေး ၁၁ မှာ	[illegible]
၈၄	" တင်အို	ကျေး ၁၁ မှာ	"	အို
၈၅	" ညွန့်ကျော်	"	"	ကျော်
၈၆	" ညွန့်အို	"	"	ညွန့်အို
၈၇	" အောင်ဝင်း	"	"	ဝင်း
၈၈	ဒေါ်သန်းခင်	"	"	ခင်
၈၉	" မြလင်း	"	"	မြလင်း
၉၀	ဦးကိုကိုအောင်	"	"	ကိုကိုအောင်
၉၁	" ကျော်ထွန်း	"	"	ထွန်း
၉၂	" အောင်ကြိုင်	"	"	ကြိုင်
၉၃	" မြင့်ကို	"	"	ကို
၉၄	" ပေါ်သာ	"	"	ပေါ်
၉၅	" ရှိန်	"	"	ရှိန်
၉၆	" ကြည်အောင်	"	"	ကြည်အောင်
၉၇	ဒေါ်ခင်မအေးမူ	"	"	[illegible]
၉၈	" ကြည်မြ	"	"	[illegible]
၉၉	ဒေါ်ရွှေယဉ်ဝင်း	"	"	[illegible]
၁၀၀	ဦးဝေမင်းမြင့်	"	"	မြင့်

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ၊ ၆ - ၂ - ၂၀၁၅

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၁၀၁	ဦးဖေမောင်ခင်	ကျွဲသမျှ	ကျွဲသမျှ	[illegible]
၂	ဦးမြင့်[illegible] 6/2/2015	〃	〃	[illegible]
၃	〃 မြင့်ဝေ	〃	〃	[illegible]
၄	〃 တင်ရွှေ	ကြောင်းကျ	ကြောင်းကျ	[illegible]
၅	〃 ကျော်ဖြိုး	ကျွဲ[illegible]	ကျွဲ[illegible]	ကျော်
၆	〃 မြင့်ဇံ	〃	〃	[illegible]
၇	〃 သန့်[illegible]	ကျွဲသမျှ	ကျွဲသမျှ	[illegible]
၈	〃 မင်းဝေ	[illegible]		[illegible]
၉	〃 ကျော်ဆန်း	ကျွဲသမျှ	ကျွဲသမျှ	ကျော်ထိုက်
၁၁၀	〃 [illegible]	〃	〃	[illegible]
၁	〃 ကြိုးဝင်း	[illegible]	[illegible]	[illegible]
၂	〃 မြသောင်း	ကျွဲသမျှ	ကျွဲသမျှ	သောင်း
၃	〃 မိုးကြီး	〃	〃	မိုး
၄	[illegible]	〃	〃	[illegible]
၅	ကြိုးဝင်းနိုင်	〃	〃	[illegible]
၆	[illegible]			[illegible]
၇	[illegible]			[illegible]
၈	ဦးကြည်ဝင်း	[illegible]		[illegible]
၉	〃 [illegible]	[illegible]		[illegible]
၁၂၀	〃 [illegible]	〃		[illegible]

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ၊ ၆ - ၂ - ၂၀၁၅

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၁၁၁	[illegible]	[illegible]		[illegible]
၂	[illegible]	[illegible]	[illegible]	[illegible]
၃	[illegible]	〃	〃	[illegible]
၄	[illegible]	〃	〃	[illegible]
၅	[illegible]	〃	〃	[illegible]
၆	[illegible]	〃	〃	[illegible]
၇	[illegible]	[illegible]		[illegible]
၈	[illegible]	〃		[illegible]
၉	[illegible]	〃		[illegible]
၁၂၀	[illegible]	〃		[illegible]
၁၂၁	[illegible]	〃		[illegible]
၂	[illegible]	[illegible]	[illegible]	[illegible]
၃	[illegible]	〃	〃	[illegible]
၄	[illegible]	〃	〃	[illegible]
၅	[illegible]	[illegible]	[illegible]	[illegible]
၆	[illegible]	[illegible]	[illegible]	[illegible]
၇	[illegible]	〃	〃	[illegible]
၈	[illegible]	〃	〃	[illegible]
၉	[illegible]	〃	〃	[illegible]
၁၃၀	[illegible]	[illegible]	[illegible]	[illegible]

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ ၊ ၉ - ၂ - ၂၀၁၅

စဉ်	အမည်	ရာထူး ကျေးရွာ	ဌာနအမည်	လက်မှတ်
၁၃၁	ဦး ကောင်းကြီး	ကျေး၊ ၁၁၊ ရွာ		ဝေး
၂	〃 ဝေ	ပုညီ	ပုညီ	[illegible]
၃	〃 ကောင်းကြည်	〃	〃	ဒေါ်မြ
၄	〃 ကောင်းမြင့်သန်း	〃	〃	ဒေါ်မြ
၅	〃 သောင်းခ	ကျေး၊ ၁၁၊ ရွာ	ကျေး၊ ၁၁၊ ရွာ	သောင်း ခ
၆	〃 မိုးမြ	〃	〃	မြ
၇	〃 ခိုင်ဇော်လင်း	〃	〃	ခိုင်ဇော်လင်း
၈	〃 ညိုမောင်ဆွေ	〃	〃	ဆွေ
၉	မြင့်ချို	〃	〃	မြင့်ချို
၁၄၀	ဒေါ်သန်းခိုင်	〃	〃	သန်းခိုင်
၁	ဦး ချိုဆွေ	〃	〃	ချိုဆွေ
၂	〃 မျိုးကျော်	ဝင်း၊ ၁၀		[illegible]
၃	〃 မှုသိန်း	〃		[illegible]
၄	〃 သောင်းဝေ	〃		[illegible]
၅	〃 ဘဝ၊ ထွန်း	〃		MZ
၆	〃 ကျော်ဆွေဝင်း	ကျေး၊ ၁၁၊ ရွာ		ကျော်ဆွေဝင်း
၇	〃 ဇော်ကြီး	〃		[illegible]
၈	〃 ဝင်းကြီးချို	〃		ဝင်းကြီးချို
၉	〃 မိုးဇော်	〃		ဇော်
၁၅၀	〃 ဝင်းနိုင်	〃		ဝင်းနိုင်

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ ၊ ၆ - ၂ - ၂၀၁၉

စဉ်	အမည်	ကျေးရွာအုပ်စု	ကျေးရွာ	လက်မှတ်
၁	ဦးကိုနိုင်	ပုလိုး ၁၁၁	ရွာသစ်ရွာ	
၂	" [illegible]	[illegible]		
၃	" [illegible] (ဟဲကျေး)	"		
၄	" [illegible]	[illegible]		
၅	ဒေါ်[illegible]	"		
၆	ဦးကျော်[illegible]	ပုလဲ		
၇	ဦး[illegible]	[illegible]		
၈	ဦး [illegible] (ဟဲကျေး)	[illegible]	[illegible]	
၉	" [illegible]	"	"	
၁၀	" [illegible]	[illegible]	[illegible]	
၁	" ကျော်လင်း	[illegible]	"	
၂	" [illegible]	[illegible]	"	
၃	" [illegible] (ဟဲကျေး)	[illegible]	[illegible]	
၄	" [illegible]	"	"	
၅	" [illegible] (ဟဲကျေး)	[illegible]	[illegible]	
၁၆	" [illegible] (ဟဲကျေး)	[illegible]	[illegible]	

အစည်းအဝေးတက်ရောက်သူများစာရင်း

ရက်စွဲ ၊ ၆ - ၂ - ၂၀၁၅

စဉ်	အမည်	ကျေးရွာ (ရာထူး)	ဌာနအမည်	လက်မှတ်
၁၅၇	ဦးထွန်းဝင်း	ကျောက်တလားများ		ထွန်းဝင်း
၁၅၈	" သန်းမြ	"		သန်းမြ
၁၅၉	" ကျော်ဝင်း	"		ကျော်ဝင်း
၁၆၀	" [illegible]	"		[illegible]
		တက်ရောက်သူ စုစုပေါင်း (၁၆၀) ဦး		

Safeguards Public Consultation Meeting

Minutes

Irrigation Department, Ministry of Agriculture and Irrigation,

February 10, 2015

The fifth safeguards public consultation meeting for the Agricultural Development Support Project (ADSP) was held in Yangon, at the office of the Irrigation Department of the Ministry of Agriculture and Irrigation (MOAI) on February 10, 2015. The MOAI team was led by U Tint Zaw, Deputy Director General of the Irrigation Department with the Ministry staff representing Department of Agriculture, Department of Agricultural Research, Department of Agricultural Mechanization, and Settlement and Land Records Department involved in the preparation of this project with the Bank. In addition there were representatives of the regional and district governments. The list of the meeting participants is in the Annex to these Minutes.

Relevant officials from the different departments, who are involved in ADSP, explained the project, its main activities, and expected benefits, through the power point and oral presentations. They also explained that the project implementation will be guided by the Environmental and Social Management Framework and other safeguards documents in compliance with the Bank rules and the legislation of Myanmar.

Although the participation was limited (as the ADSP consultations coincide with consultations around the Land Use Policy being held in Nay Pyi Taw), but well represented with local and international civil society organizations and the private sector,[24] the DDG Irrigation pointed out that this level of engagement through public consultation in an Agriculture project is unprecedented in Myanmar. He stated that the Government of Myanmar has allocated human resources to prepare an Environmental and Social Management Framework, which will be looking at a variety of issues, such as land issues and safety of dams during the project preparation. The ESMF was made available to the public and is posted in the government website. The DDG invited participants to visit the website and review the available documentation.

The main issues raised by the participants of the consultations and the Projects answers are summarized below.

Issues/Comments	**Response**
General Issues	
Participants were supportive of the project and emphasized the importance of the agricultural development to local communities and to national economic development.	Noted.

[24] Oxfam, Food Security Working Group, and Irrigation Company A.T.C. Supply, CO. LTD.

Members of the Land Management Group and Food Security Group, which would have otherwise participated in the ADSP consultations, were attending the consultations on the Land Use Policy currently being organised in NPT.	Noted. ADSP consultations were advertised widely among different stakeholders. This is the last meeting in a series of consultations held in four different locations throughout the country in the last week. Overall, the consultations have been well attended with local communities, civil society, private sector and other stakeholders.
Participants congratulated the Project for its public consultation process and pointed out specific dissemination materials that provided summarized information to participants as a good practice. Some participants applauded the fact that the GoM was allowing other non-state actors to support agricultural development, such as the World Bank and the private sector.	The Project has conducted an intense process of public consultation and the comments received have been incorporated into Project design. The Project has supported the GoM with websupport, has the Ministry Web Site faces technical challenges.
Technical Issues	
Participants wondered how is the project dealing with Land Issues including legacy issues and conflict	Land conflicts have different natures. The Project includes specific land selection criteria. Every potential beneficiary farm experiencing any kind of dispute will undergo an assessment aimed at discerning the specifics of the particular grievance. If the nature of the land conflict can be solved within the scope of the project, ADSP will work on that selected site. If, on the contrary, the nature of the land conflict goes beyond the scope of the project, the ADSP will facilitate to the extent possible conflict resolution but will continue searching another potential project site. One of the main challenges relating land issues consists on lack of appropriate titling and ownership mapping. The ADSP aims at facilitating the reissue of adequate land certification and accurate property mapping.
Participants asked for further clarification regarding the Project institutional arrangement at the local level and how it is enhancing coordination between farmers, water user associations, local government, township level institutions, and other relevant stakeholders.	Adequate coordination among different actors is a process that will take time. The Project will build on existing institutions and facilitate adequate participation and informed decision making.

Participants asked how is the Project dealing with crop diversification issues	Crop diversification depends on the environment, existing infrastructure and institutions. Right now there is little infrastructural development, incipient institutions, and a predetermined environment in Myanmar, which limits farmers' individual choices and makes them depend on each other. The Project will aim at piloting in small areas and institutional and infrastructural approach - which ideally will allow for participatory and coordinated decision making around agricultural issues including crop diversification.
Participants wondered the specifics on the grievance redress mechanisms included in the project	The ADSP will build on existing grievance mechanisms throughout the country. Therefore, it is hard to discern at this moment what the grievance mechanisms are going to specifically entail as they may vary from area to area. Water users groups, agricultural communities, and other relevant stakeholders solve their grievances in informal setting without written policies and procedures. There is a need to develop a robust institutional framework for adequate grievance redress. As part of the ADSP the GoM will hire facilitators that will help in stakeholder engagement issues, including grievance redress mechanisms.
Participants wondered on how the Project is going to incorporate rapid legal and institutional development especially round safeguard issues.	The ADSP will build the capacity of the PMU in dealing with safeguard with a combination of technical assistance and training. ADSP implementation will be carried out as established in the Environmental and Social Management Framework (ESMF). The World Bank is also assisting the GoM in developing its safeguard capacity in two main avenues: (i) through specific capacity building activities pertaining specific investments (such as ADSP), and (ii) through a Safeguard Capacity Development Technical Assistance to the Ministry of the Environment, Conservation and Forestry and other line ministries.

ကမ္ဘာ့ဘဏ်ချေးငွေဖြင့် ဆောင်ရွက်မည့် မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း
ဖွံ့ဖြိုးတိုးတက်မှုအထောက်အကူပြု စီမံကိန်းနှင့် ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ
အစမ်းအနားတက်ရောက်လာသူများစာရင်း

စဉ်	အမည်	ရာထူး	ဌာန	လက်မှတ်
၁				
၂				
၃				
၄				
၅				
၆				
၇				
၈				
၉	ANA NUNEZ	ENVIRONTENTAL SPECLALIST	WORLD BANK	
၁၀				
၁၁		Regional Manager	ATC Supply (1993) Co,Ltd	
၁၂				
၁၃				
၁၄		Poly Manager	Oxfam	
15	Kyaw Soe Lynn		World Bank	
၁၆				
၁၇				
၁၈				
၁၉				

ကမ္ဘာ့တော်ရေးငွေဖြင့် ဆောင်ရွက်မည့် မြန်မာ့လယ်ယာစိုက်ပျိုးရေးလုပ်ငန်း ဖွံ့ဖြိုးတိုးတက်မှုအထောက်အကူပြု စီမံကိန်းနှင့် ပတ်သက်၍ ရှင်းလင်းဆွေးနွေးပွဲ အစမ်းအနားတက်ရောက်လာသူများစာရင်း

စဉ်	အမည်	ရာထူး	ဌာန	လက်မှတ်
၁	[illegible]	[illegible]	[illegible]	
၂	[illegible]	[illegible]	[illegible]	
၃	[illegible]	[illegible]	Food Security Working Group	
၄	[illegible]	[illegible]	[illegible]	
၅	[illegible]	[illegible]	[illegible]	
၆	[illegible]	[illegible]	[illegible]	
၇	[illegible]	[illegible]	[illegible]	
၈	[illegible]	[illegible]	[illegible]	
၉	[illegible]	[illegible]	[illegible]	
၁၀	EHRUCH AYNER	CEO	ATC SUPPLY	
၁၁	[illegible]	[illegible]	[illegible]	