Environmental Assessment and Review Framework

Draft

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MYA: Emergency Support for Chin State Livelihood Restoration

Prepared by the Ministry of Livestock, Fisheries, and Rural Development for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 11 February 2016)

Currency unit	–	kyat/s (MK)
MK 1.00	=	$0.000814
$1.00	=	MK 1,227.85

ABREVIATIONS

DRD	-	Department of Rural Development
EA	-	executing agencies
EAR	-	environmental assessment report/s
EARF	-	environmental assessment review framework
ECL	-	environmental conservation law
EIA	-	environmental impact assessment
EMP	-	environmental management plan
FIL	-	foreign investment law
GIU	-	grant implementation unit
GMU	-	grant management unit
GRM	-	grievance redress mechanism
IA	-	implementing agencies
MOECAF	-	Ministry of Environmental Conservation and Forestry
MLFRD	-	Ministry of Livestock, Fisheries, and Rural Development
SIA	-	social impact assessment
SPS	-	safeguard policy statement

NOTE

(i) In this report, "$" refers to US dollars, unless otherwise stated.

CONTENTS

I. INTRODUCTION

1. Heavy rains caused floods and landslides in several parts of Myanmar from June 2015 onward. On 30 July, Cyclone Komen brought strong winds and additional heavy rains that resulted in widespread flooding across 12 of the country's 14 states and regions. On 31 July, the President declared Chin and Rakhine states, and Magway and Sagaing regions as natural disaster zones. In Chin State, the monthly rainfall of July measured at the weather station in Hakha was equal to a 1-in-1,000-year rainfall. The combination of heavy rainfall, strong winds, high soil saturation, and unstable soils in hilly areas caused widespread and devastating landslides particularly in Chin State.

1. Impact of the Floods and Landslides on Chin State

2. Chin is the poorest state or region in Myanmar and therefore highly vulnerable. Total poverty incidence in 2010[1] was 73.3% compared to the national average of 25.6% and second poorest Shan (East) at 46.4%. In Chin State, 90% of households are engaged in agriculture, almost 50% higher than the other disaster affected regions. While 33% of flooded land in other regions was replanted within 2 months of the floods, only 6% could be so replanted in Chin due to the predominance of landslides rather than simple floods. The damage to roads in Chin State continues to pose a major logistical challenge for assessments and assistance delivery.

3. **Impact on Transport and Rural Access**: Landslides destroyed a large part the rural transport network which allows people to access markets for the sale and purchase of goods and to access services provided by both public and private sectors. Approximately 460 miles of rural roads, out of a total of 2,310 miles, (about 20%) require repair and restoration in 9 townships statewide. These rural roads are generally of earth construction, from 4 to 18 feet wide, and are categorized as village-to-village and village-to-town roads. The roads have been constructed by and managed by the Department of Rural Development (DRD),

4. As with rural roads, many bridges were damaged or washed away as a result of the floods and landslides. DRD estimates that a total of 310 bridges will need to be repaired. These bridges (ranging from 4 to 20 feet wide and up to 500 feet long) include wooden, Bailey, and suspension bridges, as well as box culverts and pipe culverts.

5. **Impact on Community Infrastructure.** By 2015 some 60% (811) of villages in Chin had some level of electricity supply schemes comprising mini-hydro, generators, solar panels and bio-gas. The floods and landslides damaged systems in 25 villages - 23 mini-hydro and 2 villages with a total of 180 solar panels. None require full replacement.

6. Gravity fed water supply systems, spread over several miles, were vulnerable to the landslides and many were damaged, especially from broken pipes but also damage to small dams and tanks. Much effort has been made to restore WASH systems as a priority of Government and development partners. Fifty (57) village water supplies, serving 26,100 people in 44 villages, need restoration.

7. Some agricultural lands in Chin State are covered with sediment and debris from landslides. The landslides will have a longer-term impact as land rehabilitation may take several years. Small irrigation systems require repairs and clearing of channels and fields, which have been blocked by mud and debris. For community fisheries, the impact was greater as fish ponds were flooded and fish escaped. Fish ponds requiring restocking as well as repair and cleaning.

[1] "Integrated Household Living Conditions Survey (IHLCS) in Myanmar, 2009-2010"

2. The Proposed Project

8. The Department of Rural Development of the Ministry of Livestock, Fisheries, and Rural Development has requested a Grant, from the Japan Fund for Poverty Reduction (JFPR), to repair of village access roads and community infrastructure in 7 townships (Ha Kha, Htan, Ta Lan, Falam, Tedim, Tonzaang, Mindat, and Matupi) in Chin State. A description of the project outputs and activities is provided in section III.A.

3. Purpose of the Environmental Assessment Review Framework

9. **Emergency Assistance Loans**. For emergency assistance loans, the completion of standard environmental assessments and environmental management plans may not be possible before ADB Board approval. In such cases, an environmental assessment and review framework are to be prepared. Components and subprojects identified during project implementation are to be assessed following the requirements specified in Appendix 1 of SPS 2009 (Safeguard Requirements 1: Environment).

10. The purpose of this Environmental Assessment Review Framework (EARF) is to: (i) describe the proposed activities to be financed under the Grant; (ii) specify the requirements that will be followed for project screening and categorization, environmental assessment including provisions for meaningful consultation with stakeholders and information disclosure requirements and, where applicable, safeguard and environmental criteria that are to be used in selecting subprojects and/or components; (iii) specify implementation procedures; (iv) specify monitoring and reporting requirements; and (v) describe the institutional responsibilities for the preparation, implementation, and progress review of safeguard documents for subprojects.

11. The EARF shall serve as guide to ensure compliance with the environmental assessment requirements under the 2009 ADB's Safeguard Policy Statement (SPS) as well as the environmental assessment requirements of the Government of Myanmar.

II. MYANMAR ENVIRONMENTAL IMPACT ASSESSMENT SYSTEM

12. The Myanmar Environmental Impact Assessment (EIA) System is in transition. The Environmental Conservation Law (2012) mandated the formal EIA System. The Environment Conservation Department was established within the Ministry of Environmental Conservation and Forestry in January 2012. Environmental Conservation Rules (2013) provided more detail on the authorities and responsibilities of MOECAF for Environmental Impact Assessment. The Environmental Impact Assessment Procedure (2015) provides the requirements of environmental impact assessment, review, and approval process, (ii) responsibilities for environmental plans and; (iii) the supervision of and monitoring compliance with environmental management plans

A. Legal and Regulatory Framework

13. The objective of the Environmental Policy (1994) is "to achieve harmony and balance between socio-economic, natural resources and environment through the integration of environmental considerations into the development process enhancing the quality of the life of all its citizens. Environmental protection should always be the primary objective in seeking development."

14. The Environmental Conservation Law (2012) provides the mandate for Environmental Impact Assessment and assigns the duty and power the Ministry of Environmental Conservation and Forestry to develop and implement "a system of environmental impact assessment and social impact assessment as to whether or not a project or activity to be undertaken by any Government department, organization or person may cause a significant impact on the environment".

15. The Environmental Conservation Rules (2013), Chapter XI Environmental Impact Assessment provides for environmental screening and where required – for the proponent to conduct an environmental impact assessment, and to prepare and submit and environmental impact assessment report to the Ministry (i.e., Ministry of Environmental Conservation and Forestry).

16. The Rules also give the Ministry authority determine the categories of plan, business, service or activity which shall carry out environmental impact assessment. Also, the Ministry may, so as to scrutinize whether or not it is necessary to conduct environmental impact assessment or conduct initial environmental examinations. The Rules also require the proponent to prepare an environmental impact assessment or initial environmental examination and submit it to the Ministry.

17. The Environmental Impact Assessment Procedure (2015) provides the procedures for environmental screening, scoping, preparation of an IEE, preparation of EIA, preparation of an Environmental Compliance Certificate (ECC). The procedures also delineate responsibilities for monitoring compliance with Environmental Management Plans (EMPs) and ECCs.

18. National Environmental Quality (Emission) Guidelines (2015) provide emission and effluent discharges levels permitted for different sectors and technologies. These Guidelines have been primarily excerpted from the International Finance Corporation (IFC) Environmental Health and Safety (EHS) Guidelines, which provide technical guidance on good international industry pollution prevention practice for application in developing countries..

19. **Ambient Environmental Quality Guidelines**. ADB is providing assistance through GMS EOC in Bangkok for the development of Ambient Water Quality Guidelines. Air Quality Guidelines are also needed.

20. Technical Guidelines for Environmental Impact Assessment (under preparation) provides technical guidance for assessing environmental impacts and preparation of the IEE and EIA reports.

21. **International Environmental Agreements**. The Union of Myanmar is a party to relevant international environmental conventions, treaties and agreements on the principles and actions necessary for sustainable development and environmental protection. It has ratified on 1994 both the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change. These international conventions explicitly reference the application of environmental assessment to address the effects of human activities. The Convention on Biological Diversity, in particular, promotes the use of appropriate procedures requiring environmental impact assessment of proposed projects that are likely to have significant adverse effects on biological diversity.

B. Environmental Conservation Department of MOECAF

22. The Environmental Conservation Department (ECD) has responsibility for the administration on the environmental impact assessment process. It is has responsibility for developing EIA regulations, guidelines, and procedures. It also has responsibility for the review of environmental assessment documents. It also has responsibility for supervision and monitoring compliance with environmental management plans associated with environmental impact assessments.

23. Within the ECD at the Union level, there is a Natural Resource and Environmental Impact Assessment Division. Currently, there are less than ten (10) staff directly involved in processing and review of environmental impact assessment documents. The ECD currently has a backlog of EIA Reports to be processed. It is generally recognized that their technical capacity for EIA review needs to be strengthened. ADB is currently building the capacity for environmental safeguards under TA 8786-MYA. Environmental Safeguards Institutional Strengthening.

24. There is at state level ECD for Chin State. Their capacity for EIA Review is limited. It is understood that the IEEs and EIAs will be reviewed at the Union Level.

C. Environmental Impact Assessment Procedure (29 December 2015)

25. The Environmental Impact Assessment Procedure was approved on 29 December 2015. Under the Procedure, the MOECAF has the responsibility and authority to:

i. define Project screening criteria;
ii. approve technical guidelines for IEE and EIA;
iii. review and approve IEE Reports;
iv. provide guidelines for, and approve TOR of, EIA;
v. review and approve EIA Reports;
vi. review and approve EMP, Construction Phase EMP and Operational Phase EMP;
vii. determine and impose conditions applicable to any Ministry approval of an IEE, EIA or EMP;
viii. monitor and enforce implementation of the EMP, including any amendments thereof occasioned once the detailed design of the proposed Project has been finalized or by or on account of experience during implementation of the Project;

ix. require any Project to update its EMP and to submit such updated EMP to the Ministry for review and approval according to a schedule defined by the Ministry; and

x. perform other duties and functions relating to IEE/EIA as stipulated by the Union Government.

D. ADB Safeguard Policy Statement 2009

26. ADB's SPS (2009) sets out the policy objectives, scope and triggers, and principles for Environmental safeguard areas to be followed across all aspects of its operations. ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental impacts and risks. Borrowers/clients comply with these requirements during the project preparation and implementation phases. ADB's Safeguard Requirements 1: Environment)) are provided in Appendix 3.

27. **Environmental Health and Safety Guidelines.** The Myanmar National Environmental Quality (Emission) Guidelines (2015) will be adopted for environmental impact assessments undertaken under this EARF. In cases where these Guidelines are not applicable, the World Bank Group Environment, Health, Safety Guidelines will be used.

E. Screening and Categorization

1. Myanmar Requirements for Screening and Categorization

28. Based on Environmental Impact Assessment Procedures (para 23 -29, see below)

"23. Screening

(a) The Project Proponent shall submit the Project Proposal to the Ministry for Screening. In accordance with this Procedure, the submission of the Project Proposal for Screening is the same as the submission of an application for Prior Permission.

(b) The Ministry will send the Project Proposal to the Department to determine the need for environmental assessment.

(c) Following the preliminary Screening and verification that the Project Proposal contains all required documents and related materials, subject to Articles 8, 9, 10, 11, 26 and 27 the Department shall make a determination in accordance with Annex 1 'Categorization of Economic Activities for Assessment Purposes', taking into account Article 25 and the additional factors listed in Article 28 in order to designate the Project as one of the following, and then submit their designation to the Ministry:

i) an EIA Type Project, or

ii) an IEE Type Project, or

iii) A Non IEE or EIA Type Project, and therefore not required to undertake any environmental assessment.

24. The Ministry shall also make a determination whether an EMP shall be required in respect of any Project.

25. An EIA is required in all cases where the Project will be located in or will have foreseeable adverse effects on any legally protected national, regional or state area, including without limitation: (i) a forest conservation area (including biodiversity reserved area); (ii) a public forest; (iii) a park (including marine parks); (iv) a mangrove swamp; (v) any other sensitive coastal area; (vi) a wildlife sanctuary; (vii) a scientific reserve; (viii) a nature reserve; (ix) a geophysically significant reserve; (x) any other nature reserve nominated by the Minister; (xi) a protected cultural heritage area; and (xii) a protected archeological area or area of historical significance.

26. Notwithstanding any categorization set forth in Annex 1 'Categorization of Economic Activities for Assessment Purposes', the Ministry reserves the right to change the type of the Project as necessary, if the Ministry determines that special circumstances so warrant to require a Project that would otherwise be required to complete and submit an IEE or an EIA or to exempt a Project from completing any IEE or EIA assessment.

27. For purposes of Screening, the Ministry may at its discretion elect to treat Projects that are logically or economically linked, or which have the same or related proponents, or which are sequential in time, as a single Project. Components of basic infrastructure (such as an access road, transmission tower or waste disposal facility) that are required for a larger Project (such as a mine or a power plant) shall be considered to be part of that larger Project. In such circumstances, the Ministry may determine whether an IEE or an EIA will be required for the Projects that are treated as a single Project.

28. In accordance with Article 23, in making its determination as to the type of environmental assessment a Project or Project expansion will require, the Department shall in addition to the provisions in Article 25 and the type and size categorization in Annex 1 'Categorization of Economic Activities for Assessment Purposes' consider the following factors in accordance with Ministry guidance:

a) the need for the Project to deal with an emergency situation;
b) the interest of public health and safety;
c) the interest of national security;
d) the lifespan of the Project;
e) protection of cultural and religious norms, and historical and religious heritage;
f) protection of areas having a fragile ecosystem;
g) areas affected by cyclones, strong storms, flooding, earthquake (including the Sagaing Fault) and areas vulnerable to natural disaster;
h) protection of water resources (lakes, reservoirs, rivers, groundwater aquifers) that serve or may in the future serve as primary sources of public drinking water;
i) recreation zones and pearl production areas;
j) conservation and protection of biodiversity;
k) introduction of exotic or alien species;
l) adoption of new technologies;
m) population density;
n) national, regional and global climate change conditions;
o) likely transboundary impacts;
p) likely residual impacts or effects occurring some years after Project closure; and
q) other factors as the Ministry may determine.

29. Within fifteen (15) working days of receiving the complete Project Proposal, the Department shall determine the type of environmental assessment (EIA, IEE, or none) which the Project will require, and the Department shall inform the Project Proponent in writing as to such determination in accordance with the Ministry guidance."

2. ADB Requirements for Screening and Categorization

29. ADB carries out project screening and categorization at the earliest stage of project preparation when sufficient information is available for this purpose. Screening and categorization is undertaken to (i) reflect the significance of potential impacts or risks that a project might present; (ii) identify the level of assessment and institutional resources required for the safeguard measures; and (iii) determine disclosure requirements.

30. **Environment Categorization.** ADB uses a classification system to reflect the significance of a project's potential environmental impacts. A project's category is determined by the category of its most environmentally sensitive component, including direct, indirect,

cumulative, and induced impacts in the project's area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are assigned to one of the following four categories:

(i) **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment (EIA) is required.

(ii) **Category B.** A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination (IEE) is required.

(iii) **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

(iv) **Category FI.** A proposed project is classified as category FI it involves investment of ADB funds to or through a financial intermediary.

F. ADB Environmental Categorization

31. For ADB, the project is classified category B for Environment. Categorization is based the most environmentally sensitive component and that Category A subprojects are specifically excluded. As this emergency assistance, an environmental assessment and review framework (EARF), has prepared in accordance with ADB's Safeguard Policy Statement (2009) and government laws and regulations. Subproject selection criteria have been formulated to avoid significant adverse environmental impacts. Subprojects that have potential to cause significant irreversible, diverse or unprecedented adverse environmental impacts (Category A under ADB SPS (2009)) are not eligible for funding under the Grant. All subprojects will be screened. Subprojects will be categorized either B or C. For category B projects, initial environmental examinations and environmental management plans (EMPs) will be prepared. EMPs will incorporated in bidding documents and contract documents to be implemented by contractors and monitored by the implementing agencies.

G. Assessment of Environmental Safeguard Capacity of Department of Rural Development

32. The Department of Rural Development (DRD) has limited environmental safeguard capacity. DRD does experience with EARFs as they currently implementing the World Bank funded ($80 million) project, National Community Driven Development Project. Environmental and social safeguards are being implemented under Environmental and Social Management Framework. However, it understood that this is being implemented by international and national consultants.

33. A national and environmental impact assessment and monitoring specialist will be needed to support implementation of this EARF.

III. OVERVIEW OF SUBPROJECTS TO BE ASSESSED AND ANTICIPATED ENVIRONMENTAL IMPACTS

A. Overview of Subprojects

34. The proposed project has four outputs.

35. **Output 1 – Restored Village Access:** Rural roads and bridges will be restored promoting the concept of build-back better to at least the pre-disaster situation to ensure increased resilience to future disasters. The lengths, locations and cost of repair of damaged roads and bridges in the 7 townships targeted under the JFPR will be reviewed and confirmed in consultation between DRD, State officials, community leaders and ADB during project implementation. Subprojects will comprise (i) priority village-to-village and village-to-town roads and bridges for construction using labor-based methods, and (ii) complementary sections of village-to-village and village-to-town roads and bridges using machine-based construction methods. The design process will pay particular attention to drainage and slope stability and protection with improved vegetative cover for prevention of further landslides. Future sustainability of the access improvements will be enhanced by application of locally adapted design criteria and specifications; capacity building for DRD engineers to review plans for infrastructure restoration to optimize resilience for future disaster events; and capacity building for communities on O&M.

36. **Output 2 – Restored Community infrastructure:** The project will repair: (i) power systems (mini-hydro and solar) in 25 villages; (ii) village water supplies in 44 villages; and (iii) priority community infrastructure (e.g. restoration of irrigation systems and reclaiming farmland) funded from cost savings and contingences were available. Future sustainability of community infrastructure will be enhanced by application of locally adapted design criteria and specifications; capacity building for DRD engineers to review plans for infrastructure restoration to optimize resilience for future disaster events; and capacity building for communities on O&M.

37. **Output 3 – Community disaster risk management capacity strengthened:** The JFPR will support a process of capacity building based on recent experience and draw on regional and international best practice for community based disaster risk reduction (CBDRR). This process will include strengthening disaster risk management systems at state, township, village tract and village level using disaster risk information in preparing respective disaster management plans at all levels and strengthening their linkages with development planning processes; and capacity building of state and local government officials, civil society organizations and communities in identifying risk, prioritizing risk reduction measures and implementing non-structural measures to strengthen disaster resilience.

38. **Output 4 – Project management capacity strengthened:** Consultants will be engaged to provide capacity to the DRD Grant Management Unit (GMU) at the Union level to plan, manage, supervise and report on JFPR progress during project implementation. DRD management capacity at the State and township level will be strengthened through the management support provided by a project management and implementation contractor for Outputs 1 and 2.

B. Anticipated Environmental Impacts

39. The proposed activities for the subproject are expected to have positive environmental benefits. Improvements to roads and bridges are expected to reduce the potential for damage from landslides, localized flooding, and soil erosion. Improvements to renewable power

systems (micro-hydro and solar) will reduce dependency fossil fuel generators. Restoration of farmland, irrigation systems, and fish ponds will improve agro-ecological productivity.

40. In most cases, the proposed of activities will have insignificant impacts provided that good environmental safeguard practices are used. However, the potential impacts summarized below.

1. Anticipated Impacts of Roads and Bridges

41. In general, the potential impacts from construction of roads and bridges are:

i. **Soil Erosion and Dust Emissions:** Construction activities will involve vegetation clearing, land excavation, quarrying, cut and fill, formation of windrows, and stockpiles of gravel. All of these, if not performed carefully can result in soil erosion in arid areas. They activities can cause soil to dislodge and increase the rate of soil loss from an area beyond that occurring under natural conditions. This movement of soil will also give rise to dust emissions. Therefore, it will be necessary to introduce intensity specific mitigation measures to counter the impacts of soil erosion and dust emissions.

ii. **Noise Levels:** The operation of heavy equipment on construction sites such as excavators, diggers, bulldozers, dumper trucks, rollers, stone crushers and controlled rock blasting result in noise generated well above the ambient noise levels in rural areas. It is important to introduce noise control measures as part of the construction stage mitigation measure to bring construction noise levels down to an acceptable level

iii. **Surface Water Quality and Availability.** Construction works in or near water bodies can obstruct water flow and lead to drying of river and streambeds or exacerbate flooding. Operation of machinery can lead to contamination of water quality from gasoline, oil, grease, and chemicals. Improper handling of fuel and chemicals can lead to accidental spills or leaks of toxic substances. Water pollution can also occur from sediment laden runoff and inadequate sanitation (i.e., improper toilet facilities and improper solid waste disposal).

iv. **Groundwater Quantity:** If groundwater is identified as sensitive in the area where the subproject is to be located, then it is important to develop mitigation measures that restrict and monitor abstraction to avoid over exploitation and reduce the potential for groundwater pollution.

v. **Soil and Groundwater Contamination:** With large scale construction activities where heavy machinery is operated, soil contamination by oil and chemical leaks has a significant probability of occurrence. Groundwater contamination by construction wastes and medium scale spills is also possible. As is contamination from inadequate sanitation and improper waste disposal. The subprojects will need to factor in this probability and develop systems and mechanisms to handle such incidents, including the final disposal of contaminated soil, and containment of contaminants in groundwater.

vi. **Drainage:** The drainage patterns in areas may have been damaged by the accumulation of debris and heavy silt. It is important to develop mitigation measures that ensure that construction does not disrupt the natural drainage patterns of the area.

vii. **Solid Waste and Hazardous Waste.** Improper collection and disposal of construction waste may have impacts on vegetation, critical habitat, and water quality. Improper handling, transport, and storage of fuels and chemicals can lead to accidental spills or leaks of toxic substance with resultant impacts on water quality, vegetation, and critical habitat. Improper transport, handling, storage and disposal of hazardous wastes can have impacts on workers, communities, and the environment

viii. **Fish and other Aquatic Fauna.** Contamination of surface water, siltation, and reduction of instream flows may lead to adverse impacts on fish, fish habitat and other aquatic animals.

ix. **Other Potential Impacts**. Other potential impacts include direct loss of vegetation and trees during clearance, impacts on physical cultural resources, health and safety risks during construction, road safety issues during operation; and risks to communities in the case structural failure of roads and bridges.

2. Anticipated Impacts of Power Systems

42. The impacts associated with rehabilitation of the small solar power systems are considered to be insignificant. Rehabilitation is expected to be restricted to replacement of solar panels and equipment.

43. Micro hydro rehabilitation is to be limited to repairs and restoration of existing facilities. For micro hydro, it is assumed that no new construction of access roads, generating facilities (i.e., dam, intake, headrace, forebay, penstock, power station, turbine, generator and tailrace) or transmission lines will be take place. The potential impacts are:

i. contamination of water bodies and disruption of streamflow associated from use of equipment to removal of silt, overburden, and debris;
ii. contamination on water bodies and degradation of critical habitat and vegetation from disposal of silt, overburden, and debris;
iii. contamination of water quality from construction, use of equipment in or near water;
iv. contamination of water bodies due to accidental spills or leaks of toxic substances (e.g., chemicals, and fuels;
v. improper transport, handling, storage and disposal of hazardous wastes can have impacts on workers, communities, and the environment
vi. temporary disruption of streamflow;
vii. contamination of surface water, siltation, and reduction of instream flows may have adverse impacts on fish, fish habitat and other aquatic animals;
viii. damage to vegetation and critical terrestrial habitat associated with repairs along the headrace and penstock alignments;
ix. impacts associated with improper disposal of damaged generating facilities and transmission facilities;
x. impacts associated with repairs to access roads (see impacts on roads and bridges above);
xi. impacts due to improper handling of solid waste and hazardous waste;
xii. inadequate wastewater management; and
xiii. impacts due to improper health and safety precautions.

3. Anticipated Impacts of Water Supply Systems

44. Water supply systems need be repaired to provide potable water (meeting drinking water standards) for the villages. Repairs are expected to be limited to replacement of broken pipes, repairs to small dams, and repairs to or replacement tanks, the potential impacts are:

i. contamination of water quality from use of equipment in or near water bodies;
ii. temporary disruption of streamflow;
iii. damage to vegetation and critical terrestrial habitat along the alignment of the water lines; and
iv. impacts due to improper handling and disposal of solid waste and hazardous waste.

4. Anticipated Impacts of Repair and Restoration of Farmland, Irrigation systems and Fishponds

45. In general, the potential impacts should not be significant. Minor impacts on land and vegetation may occur through the use of equipment for removal of silt and debris from farmland, irrigation channels, and fishponds. Minor impacts may occur on water bodies, vegetation, and critical habitat from improper disposal of silt and debris.

IV. PROCEDURES FOR ENVIRONMENTAL ASSESSMENT OF SUBPROJECTS

A. Subproject Selection Criteria

46. The following subprojects will not be eligible for funding under the project:

i. Subprojects including activities listed on the Prohibited Investment Activities List in Appendix 5 of SPS; or
ii. Subprojects that do not comply with national environment, health and safety laws and regulations; or
iii. Subprojects that have potential to cause significant irreversible, diverse or unprecedented adverse environmental impacts (Category A under ADB SPS (2009)).

47. Potentially eligible subprojects will be subjected to the following subproject selection criteria related to environment safeguards prior to selection:

i. No subprojects that have the potential to directly or indirectly result in conversion or degradation of natural habitat (such as primary forests or wetlands) will be included
ii. No subprojects that fall in part or in whole within a legally protected area, an area supporting high biodiversity value or qualifying as critical habitat will be included
iii. No subprojects that utilize water from or discharge to a water body in a legally protected area, an area supporting high biodiversity value or qualifying as critical habitat will be included
iv. Subprojects falling in part or in whole within a protected area buffer zone will only be selected if the restoration work is entirely limited to the pre-cyclone footprint
v. Subprojects that are within natural habitat or in proximity to surface water bodies will have minimal or no operational impacts when compared to the pre-cyclone situation
vi. Subprojects that are within proximity to residential or other sensitive human receptors will have minimal or no operational impacts when compared to the pre-cyclone situation
vii. No subprojects where the structural failure of infrastructure may threaten the safety of local communities will be included
viii. No subprojects that have the potential to directly or indirectly result in permanent damage physical cultural resources of national or international importance will be included
ix. No subprojects that will result in removal of any physical cultural resources will be included
x. Subprojects falling in part or in whole within an area of high cultural heritage value may only be selected if restoration work is entirely limited to within the pre-cyclone footprint.

B. Subproject Screening

48. At the subproject selection stage, all potential subprojects shall be screened and assigned a category in accordance with Myanmar Environmental Assessment Procedure (2015) and the ADB SPS (2009). See Section II.E above for details of the Environmental Screening Requirements.

49. Relevant categories are:

Myanmar Environmental Impact Assessment Procedure (2015)	ADB SPS 2009
EIA Type Project	Category A – requires EIA
IEE Type Project	Category B – requires IEE
Neither an EIA nor an IEE Type Project and therefore may not be required to undertake any environmental assessment.	Category C - no environmental assessment is required although environmental implications need to be reviewed

50. All subprojects will be screened using the Environmental Screening Checklist (Appendix 1).

51. Candidate subprojects with potential for significant adverse impacts and requiring an environmental impact assessment (EIA) (i.e., Category A) will be rejected (see subproject selection criteria above).

52. Candidate subprojects requiring an initial environmental examination (IEE), will prepare the IEE in accordance with Myanmar Environmental impact Assessment Procedure (2015) and the ADB SPS (2009).

53. Candidate subprojects requiring no further environmental assessment (Category C), will have their environmental implications reviewed. At a minimum, these projects will be required to follow the Environmental Codes of Practice (Appendix 2).

C. Environmental Codes Practice

54. Environmental Codes of Practices[2] have been adapted from the ongoing National Community Development Driven Development Project: Environmental and Social Management Framework. Subprojects under the National Community Development Driven Development Project are similar in terms of type and scale. As DRD is the executing agency for the National Community Development Driven Development Project, implementation experience and lessons learned with the Environmental Codes of Practices can be shared with relevant staff of the proposed emergency assistance project.

55. All subprojects are to follow the Environmental Codes of Practices.

D. Preparation of Initial Environmental Assessments

56. In the case where an IEE is required, DRD will obtain prior confirmation of environmental safeguard requirements from the Environmental Conservation Department of MOECAF and ADB. For ADB, the environmental safeguard requirements are provided in Appendix 3.

[2] The Environmental Codes of Practices have been adopted from Appendix 8 Environmental Codes of Practice. National Community Development Driven Development Project: Environmental and Social Management Framework. Government of Myanmar, 19 March 2015.

57. The IEE format shall be in accordance with Myanmar Environmental Impact Assessment Procedure (2015) and the ADB Safeguard Requirements 1: Environment (see Appendix 3).

58. The EMP, which is developed as part of the IEE, describes the environmental management measures that will be carried out to mitigate negative impacts or enhance the environment during implementation, and the environmental monitoring to be conducted to ensure that mitigation is provided and is effective in reducing impacts, or to determine the actual impacts of a subproject. EMPs will outline specific mitigation measures, environmental monitoring requirements, and related institutional arrangements, including budget requirements for implementation. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the project is designed, constructed, and operated in compliance with applicable laws and regulations and meets the requirements specified in this document and the ADB SPS (2009).

E. Review of IEEs

59. The DRD will be responsible for the internal quality control of IEEs (and EMPs). The documents will be presented to relevant stakeholders[3] for consultation. The GMU will be responsible for finalizing the IEE.

60. The DRD shall endorse the final IEEs (and EMPs). DRD will submit the IEEs to Environmental Conservation Department of MOECAF and to ADB.

61. Construction cannot begin until the appropriate environmental clearances are given by the Environmental Conservation Department of MOECAF and approval is given by ADB.

F. Environmental Management during Subproject Implementation

62. All IEEs and EMPs will be prepared prior to the finalizing of bidding documents. The EMP will become part of the bidding documents. The bidding documents will include requirements to incorporate necessary funds to implement the EMP. The EMP will form part of the contract document. As necessary, it will be updated during the construction phase of a project.

63. The applicable Government of Myanmar environmental permits/approval/concurrence and ADB approval will be obtained prior to any contract award for civil works.

64. Contractors will be responsible for implementation of the EMPs during the construction phase. DRD will responsible for implementation on any pre-contract award and/or preconstruction measures in the EMP.

65. In the event of any design changes or unanticipated impacts, the IEE will have to be updated as per the ADB SPS (2009) requirements.

G. Monitoring Environmental Performance

66. The DRD is responsible for supervision and monitoring of the contractor's implementation of the EMPs. To ensure that potential environmental problems are detected and addressed appropriately, supervision and monitoring will take place during implementation. DRD will conduct periodic (at least monthly for all construction sites but ideally more frequently for higher risk subprojects) supervision and environmental compliance monitoring of subprojects activities. The DRD will prepare on semi-annual

[3] The primary stakeholders will be the villagers, local government and local community organizations. Under the ADB SPS, it may be necessary to translate the IEE into the local language.

environmental safeguard monitoring reports and submit this report to ADB. The first report will be submitted six months after start of construction and a final report within six months of completion.

67. For efficient implementation of the Project, the environmental safeguard reporting schedule should coincide with the overall Project progress reporting schedule. The environmental safeguard monitoring reports will be disclosed on ADB's website.

V. IMPLEMENTATION ARRANGEMENTS

68. The Department of Rural Development (DRD) with the Ministry of Livestock Fisheries and Rural Development (MLFRD) will be the executing agency (EA) and implementing agency for the Project. DRD will establish a grant management unit (GMU) at the DRD head office in Nay Pyi Taw. The GMU will be responsible for the project's overall management and coordination. The GMU will be headed by a project director and a deputy project director/project manager who is responsible for management and supervision of the activities. The DRD has assured that at least five full time senior staff shall be assigned to the GMU dedicated to the project.

69. A grant implementing unit (GIU) will be established in Hakha in Chin State. Seven sub-GIUs will be established at the respective DRD township offices to coordinate and supervise the subproject activities at the township level.

70. The GMU will comprise experienced professional technical and accounting staff, including a finance officer (accountant), procurement officer, infrastructure officer {engineer), environment specialist, and a social safeguard specialist. For rural engineering design and supervision, the township DRD will serve as the technical hub to provide engineering services, including basic design, cost estimation, construction support to townships, and supervision of civil works. Consultants and/or NGOs will be recruited to provide technical and capacity support to the GMU and GIUs, conduct technical audits and monitor the implementation of project interventions.

A. Environmental Safeguard Responsibilities

71. The GMU will be responsible for environmental safeguards, including:

i. environmental screening and categorization of subprojects;
ii. preparation of the initial environmental examinations;
iii. preparation of environmental management plans;
iv. undertaking meaningful public consultation and ensuring that disclosure requirements are met;
v. supporting the implementation of the Environmental Codes of Practice (Appendix 2)
vi. supervision of, monitoring of, and reporting on the implementation of environmental management plans;
vii. development corrective action plans and ensure that corrective actions are undertaken;
viii. undertaking necessary actions (including updating of EMPs) to address unanticipated impacts and design changes, and
ix. establishment and operation of grievance redress mechanism.

B. Environmental Safeguard Monitoring

1. Department of Rural Development

72. The extent of monitoring activities, including their scope and periodicity, will be commensurate with the project's risks and impacts. It is recommended that Category C subprojects be checked after one month and then quarterly thereafter. Category B subprojects should be checked through monthly site visits. More frequent monitoring will be needed for higher risk Category B subprojects and when there are problems with EMP implementation

73. The DRD is required to ensure the implementation of safeguard measures and relevant safeguard plans, as provided in the legal agreements, and to submit periodic monitoring reports on their implementation performance. DRD will:

i. monitor the use of Environmental Codes of Practice (Appendix 2);
ii. monitor the progress of implementation of EMPs verify the compliance with environmental measures and standards and progress toward intended outcomes;
iii. document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports;
iv. follow up on these actions to ensure progress toward the desired outcomes;
v. disclose semi-annual monitoring reports locally; and
vi. submit semi-annual monitoring reports on safeguard measures as agreed with ADB.

2. ADB

74. ADB will monitor and supervision overall project implementation including screening and categorization, IEE preparation, and overseeing compliance with all SPS/EARF requirements

75. ADB will monitor and supervise subproject implementation. ADB will:

i. review and approve environmental categorization and IEEs (including EMPs);
ii. conduct spot check on category C projects to confirm categorization;
iii. conduct site visits for projects with unanticipated adverse environmental or social impacts;
iv. conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for subprojects for category B projects;
v. review the periodic monitoring reports submitted by the DRD to ensure that adverse impacts and risks are mitigated as planned and that necessary corrective actions have been identified are being implemented and being monitored;
vi. work with the DRD to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to reestablish compliance as appropriate; and
vii. prepare project completion reports that assess whether the objective and desired outcomes of the EMPs have been achieved, taking into account the baseline conditions and the results of monitoring.

C. Environmental Safeguards Staffing Requirements and Budget

76. A full time national environmental impact assessment and monitoring specialist will be recruited to the GMU to conduct environmental screening, prepare IEEs (including EMPs), monitor, and report on environmental compliance during subproject implementation. Terms of Reference are provided in Appendix 4. The environmental impact assessment and monitoring specialist will be located in the GIU in Hakha.

77. **Training.** It is understood that there is limited capacity in DRD with respect to environmental safeguards. In addition, the environmental impact assessment and monitoring specialist will likely need training on ADB environmental safeguard requirements. An indicative budget for environmental safeguards training has been included.

78. The estimated cost is $96,000 (see table below)

Item	Unit	Estimated Cost[1] ($)
Environmental Impact Assessment and Monitoring Specialist	24 months	$96,000
Training	Lump Sum	$30,000
Total		$126,,000

Note 1: Assumes $4000 per month for remuneration and per diem

VI. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS

A. Public consultation for IEE preparation and disclosure

79. Meaningful stakeholder consultation and participation is part of the project preparation and implementation strategy. Public consultation will be undertaken during the IEE preparation to invite comment from the villagers, community groups, local government, and interested NGOs.

80. During IEE preparation, where an initial draft of the IEE has been prepared, meetings[4] with groups from the target villages for the subproject will take place to inform them of the proposed subproject and the possible environmental and social impacts, and to collect opinions from people who may be affected by the project. At this stage, the following agenda should be used to ensure that there is adequate exchange of information and opinion:

i. a summary of the proposed works under the subproject;
ii. a summary of subproject objectives and likely positive and negative environmental impacts, covering the construction phase and operational impacts;
iii. invitation for feedback in respect of any areas of concern that the public may have, and suggested means of implementation;
iv. disclosure of and feedback on the Grievance Redress Mechanism; and
v. acceptability of the proposed works to the public.

81. For the consultations, the dates, attendees, topics covered, and the project's response to issues concerns raised should be recorded and included with the IEE. These are to take the form of meetings, at which the findings of the will be presented in addition to key background information. Comments are recorded and the IEE updated accordingly.

82. DRD will send written endorsements to ADB for disclosing these documents on ADB's website. Documents should be disclosed prior to obtaining ADB approval to start construction. The DRD will also provide relevant safeguards information in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders.

B. Public consultation during construction

83. Prior to construction, subproject design and the IEE document are disclosed and feedback sought. During construction and operation, the project proponent is obliged to

[4] Pre-arranged village meetings will scheduled at appropriate times of day to all men and women and vulnerable persons to attend.

inform project affected people and other stakeholders of project activities which are likely to create environmental and social impacts, and to allow them to access general information about the subproject (e.g., through provision of signage and noticeboards and communication through village representatives). In addition, should people affected by the project have any grievances, they have the right of lodging complaints through a grievance redress process established for the subproject.

C. Grievance Redress Mechanism

84. A grievance redress mechanism (GRM) will be established to receive, evaluate and facilitate the resolution of affected persons concerns, complaints and grievances about the environmental performance of the subprojects. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve environmental concerns at the local level. If that is not possible, it is to provide clear and transparent procedures for appeal. All affected persons will be made fully aware of their rights, and the detailed grievance redress procedures will be publicized through an effective public information campaign.

85. The DRD in conjunction with local government with establish a Public Complaints Centre (PCC). The PCC will be established, within the GIU of the DRD prior to any construction to deal with complaints from affected people throughout implementation.

86. PCC officers will be established in sub-GIU at the township level. The PCC officers will put in place mechanisms to ensure that it will be easy villagers and other affected persons to make complaints. The officers should have experience and/or training in dealing with complaints and mediation of disputes. The PCC officers will have facilities to maintain a complaints database and communicate with the GIU and contractors and other groups undertaking subprojects.

87. The GMU, GIU and sub-GIUs will ensure that the GRM is fully disclosed prior to construction through public consultations. Posters will be displayed in the offices of the GMU, GIU, sub- GIUs at the township level, as well as, at strategic places within the main subproject areas. Posters are to include names and contact details for grievance officers.

88. The following procedure for grievance redress is proposed:

i. Stage 1: In the first instance, affected persons will address complaints to the PCC officers at sub-GIUs. The PCC officer will register and investigate the complaint. The PCC will meet with the affected persons to try to resolve the issue using its traditional methods of conciliation and negotiation. If a formal meeting with contractors or other groups responsible for subproject implementation is necessary, the meeting will be held in a public place and will be open to other members of the public to ensure transparency.

ii. Stage 2: If within 5 days of lodging the complaint, no understanding or amicable solution can be reached or no response is received from the sub-GIU, the affected persons can bring the complaint to the GIU. The GIU will meet with the affected persons to discuss the complaint, and provide a decision within 10 days of receiving the appeal.

iii. Stage 3: If the affected person is not satisfied with the decision of the GIU or in the absence of any response, the affected persons can appeal to the GMU. The GMU will provide a decision on the appeal within 10 days.

iv. Stage 4: If the affected person is still not satisfied with the decision of the GMU, or in the absence of any response within the stipulated time, the

affected persons can submit his/her grievance to DRD within 10 days of receiving the appeal: and

v. Stage 5: As a last resort, the affected persons may submit his/her case to the Court of Law. The complaint will be lodged with the Court of Law; the decision of the Court will be final.

89. The PCC will keep a record of all complaints and steps taken to resolve grievances. Safeguard monitoring reports will report on: (a) number of cases registered with the PCC, level of jurisdiction, number of hearings held, decisions made, and the status of pending cases; and (b) lists of cases in process and already decided upon may be prepared with details such as name, date of notice, date of application, date of hearing, decisions, remarks, actions taken to resolve issues, and status of grievance (i.e., open, closed, pending).

Table 2MYA: Emergency Support for Chin State Livelihood Restoration Subproject Environmental Screening Form

INSTRUCTIONS: This checklist is to be completed to support the environmental categorization of subprojects.

Subproject Name:	
Location:	
Date:	
Person Preparing the Checklist:	
Signature	

Complete Part 1 and Part 2 below to support the assignment of screening category

Environmental Category Check (√) the appropriate type.

- ❑ **IEE Type Project (ADB Category B)**
  - ❑ Terms of Reference for IEE attached
- ❑ **No Further Assessment Needed, however**
  - ❑ Environmental Management Plan Required
  - ❑ Environmental Codes of Practice to be Followed

PART 1: SCREENING BASED MYANMAR ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE Annex 1. Categorization of Economic Activities for Assessment Purposes

Refer to Table 1: Subproject Activity Screening Criteria below. Check (√) the appropriate type.

	EIA Type Project
	IEE Type Project
	No further environmental assessment. However, Environmental Codes of Practice must be followed. (see Appendix 2. Environmental Codes of Practice Environmental Assessment and Review Framework for Emergency Support for China State Livelihood Restoration.

Table 1. Subproject Activity Screening Criteria:

Source: Myanmar Environmental Impact Assessment Procedure, Annex 1. Categorization of Economic Activities for Assessment Purposes

No.	Type of Economic Activity	Criteria for IEE Type Economic Activities	Criteria for EIA Type Economic Activities
2.	Hydro Power Plants	Installed capacity ≥ 1 MW but < 15 MW and Reservoir volume (full supply level) < 20,000,000 m^3 and Reservoir area (full supply level) <	Installed capacity ≥ 15 MW or Reservoir volume (full supply level) ≥ 20,000,000 m^3 or
11,	Solar Power Plants	Installed capacity ≥ 50 MW	All activities where the Ministry requires that the Project shall undergo EIA
127.	Bridges, River Bridges and Viaducts (upgrading)	Length ≥ 300 m	All activities where the Ministry requires that the Project shall undergo EIA
131.	Road Improvement (upgrading from seasonal to all weather surface,	Length ≥ 50 km	All activities where the Ministry requires that the Project shall undergo EIA

PART 2: SCREENING BASED ON ENVIRONMENTAL FACTORS – Rapid Environmental Checklists

Complete the appropriate Rapid Environmental Assessment Checklist from below. Provide a summary of the results of screening. Include any relevant issues and concerns.

Rapid Environmental Assessment Checklist - Roads

Subproject Title :	
Location:	

Screening Questions	Ye	No	Remarks
A. PROJECT SITING IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS?			
• CULTURAL HERITAGE SITE			
• PROTECTED AREA			
• WETLAND			
• MANGROVE			
• ESTUARINE			
• BUFFER ZONE OF PROTECTED AREA			
• SPECIAL AREA FOR PROTECTING BIODIVERSITY			
B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			
• encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?			
• encroachment on precious ecology (e.g. sensitive or protected areas)?			
• alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?			
• deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
• increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?			
• risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation during project construction and operation?			
• noise and vibration due to blasting and other civil works?			

REA Checklist – Roads

Screening Questions	Ye	No	Remarks
• dislocation or involuntary resettlement of people?			
• dislocation and compulsory resettlement of people living in right-of-way?			
• disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
• other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?			
• hazardous driving conditions where construction interferes with pre-existing roads?			
• poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?			
• creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?			
• accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?			
• increased noise and air pollution resulting from traffic volume?			
• increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?			
• social conflicts if workers from other regions or countries are hired?			
• large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
• risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
• community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.			

Rapid Environmental Assessment – Irrigation

Subproject Title :	
Location:	

Screening Questions	Ye	No	Remarks
A. PROJECT SITING IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS?			
• PROTECTED AREA			
• WETLAND			
• MANGROVE			
• ESTUARINE			
• BUFFER ZONE OF PROTECTED AREA			
• SPECIAL AREA FOR PROTECTING BIODIVERSITY			
B. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			
• loss of precious ecological values (e.g. result of encroachment into forests/swamplands or historical/cultural buildings/areas, disruption of hydrology of natural waterways, regional flooding, and drainage hazards)?			
• conflicts in water supply rights and related social conflicts?			
• impediments to movements of people and animals?			
• potential ecological problems due to increased soil erosion and siltation, leading to decreased stream capacity?			
• Insufficient drainage leading to salinity intrusion?			
• over pumping of groundwater, leading to salinization and ground subsidence?			
• impairment of downstream water quality and therefore, impairment of downstream beneficial uses of water?			
• dislocation or involuntary resettlement of people?			
• disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
• potential social conflicts arising from land tenure and land use issues?			

REA Checklist - Irrigation

Screening Questions	Ye	No	Remarks
• soil erosion before compaction and lining of canals?			
• noise from construction equipment?			
• dust during construction?			
• waterlogging and soil salinization due to inadequate drainage and farm management?			
• leaching of soil nutrients and changes in soil characteristics due to excessive application of irrigation water?			
• reduction of downstream water supply during peak seasons?			
• soil pollution, polluted farm runoff and groundwater, and public health risks due to excessive application of fertilizers and pesticides?			
• soil erosion (furrow, surface)?			
• scouring of canals?			
• clogging of canals by sediments?			
• clogging of canals by weeds?			
• seawater intrusion into downstream freshwater systems?			
• introduction of increase in incidence of waterborne or water related diseases?			
• dangers to a safe and healthy working environment due to physical, chemical and biological hazards during project construction and operation?			
• large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
• social conflicts if workers from other regions or countries are hired?			
• risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
• community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g., irrigation dams) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

Rapid Environmental Assessment Checklist – Solar Energy

Subproject Title :	
Location:	

Screening Questions	Ye	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
Physical cultural heritage site			
Located in or near to legally protected area			
Located in or near to special habitats for biodiversity (modified or natural habitats)			
Wetland			
Mangrove			
Estuarine			
Offshore (marine)			
B. Potential Environmental Impacts Will the Project cause…			
large scale land disturbance and land use impacts especially due to diversion of productive lands?			
involuntary resettlement of people? (physical displacement and/or economic displacement)			
disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
noise, vibration and dust from construction activities?			
an increase in local traffic during construction?			
environmental disturbances such as soil erosion, land contamination, water quality deterioration, air pollution, noise and vibrations during construction phase?			
aesthetic degradation and property value loss due to establishment of plant and ancillary facilities?			
changes in flow regimes of the water intake from surface water or underground wells due to abstraction for cooling purposes?			
pollution of water bodies and aquatic ecosystem from wastewater treatment plant, from cooling towers, and wash- water during operation?			

REA Checklist – Solar Energy

Screening Questions	Ye	No	Remarks
a threat to bird or bat life from colliding with the project facilities and/or being burned by concentrated solar rays?			
industrial liquid (dielectric fluids, cleaning agents, and solvents) and solid wastes (lubricating oils, compressor oils, and hydraulic fluids) generated during construction and operations likely to pollute land and water resources?			
Soil/water contamination due to use of hazardous materials or disposal of broken or damaged solar cells (photovoltaic technologies contain small amounts of cadmium, selenium and arsenic) during installation, operation and decommissioning?			
noise disturbance during operation due to the proximity of settlements or other features?			
visual impacts due to reflection from solar collector arrays resulting in glint or glare?			
large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
social conflicts between local laborers and those from outside the area?			
risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction, installation, operation, and decommission?			
risks to community health and safety due to the transport, storage, and use and/or disposal of materials and wastes such as explosives, fuel and other chemicals during construction, and operation?			
community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

Rapid Environmental Assessment Checklist – Water Supply

Subproject Title :	
Location:	

Screening Questions	Yes	No	Remarks
A. PROJECT SITING IS THE PROJECT AREA			
▪ Densely populated?			
▪ Heavy with development activities?			
▪ Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site			
• Protected area			
• Wetland			
• Mangrove			
• Estuarine			
• Buffer zone of protected area			
• Special area for protecting biodiversity			
• Bay			
B. POTENTIAL ENVIRONMENTAL IMPACTS Will the project cause…			
▪ pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?			
▪ impairment of historical/cultural monuments/areas, and loss/damage to these sites?			
▪ hazard of land subsidence caused by excessive ground water pumping?			
▪ social conflicts arising from displacement of communities?			

REA Checklist Water Supply

Screening Questions	Yes	No	Remarks
▪ conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?			
▪ unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?			
▪ delivery of unsafe water to distribution system?			
▪ inadequate protection of intake works or wells, leading to pollution of water supply?			
▪ over-pumping of ground water, leading to salinization and ground subsidence?			
▪ excessive algal growth in storage reservoir?			
▪ increase in production of sewage beyond capabilities of community facilities?			
▪ inadequate disposal of sludge from water treatment plants?			
▪ inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?			
▪ impairments associated with transmission lines and access roads?			
▪ health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals?			
▪ health and safety hazards to workers from the management of chlorine used for disinfection and other contaminants?			

REA Checklist Water Supply

Screening Questions	Yes	No	Remarks
▪ dislocation or involuntary resettlement of people?			
▪ social conflicts between construction workers from other areas and community workers?			
▪ noise and dust from construction activities?			
▪ increased road traffic due to interference of construction activities?			
▪ continuing soil erosion/silt runoff from construction operations?			
▪ delivery of unsafe water due to poor O&M treatment			
▪ delivery of water to distribution system, which is corrosive due			
▪ accidental leakage of chlorine gas?			
▪ excessive abstraction of water affecting downstream water users?			
▪ competing uses of water?			
▪ increased sewage flow due to increased water supply?			
▪ increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ social conflicts if workers from other regions or countries are hired?			

REA Checklist Water Supply

Screening Questions	Yes	No	Remarks
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel, and other chemicals during operation and construction?			
▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation, and decommissioning?			

Rapid Environmental Assessment Checklist – Hydro

Subproject Title :	
Location:	

A. Basic Project Design

1. Data Dam height, m _____

2. Surface area of reservoir, (ha) _____

3. Rated power output, (MW) _____

SCREENING QUESTIONS	Ye	No	REMARKS
B. Subproject Location Is the dam and/or subproject facilities adjacent to or within any of the following areas?			
Unregulated river			
Undammed river tributaries below the proposed dam			
Unique or aesthetically valuable land or water form			
Special area for protecting biodiversity			
Protected Area			
Buffer zone of protected area			
Primary forest			
Range of endangered or threatened animals			
Area used by indigenous peoples			
Cultural heritage site			
Wetland			
Mangrove			
Estuary			
C. Potential Environmental Impacts Will the Subproject			
short-term construction impacts such as soil erosion, deterioration of water and air quality, noise and vibration from construction equipment?			
disturbance of large areas due to material quarrying?			
disposal of large quantities of construction spoils?			

SCREENING QUESTIONS	Ye	No	REMARKS
clearing of large forested area for ancillary facilities and access road?			
impounding of a long river stretch?			
dryness (less than 50% of dry season mean flow) over a long downstream river stretch?			
construction of permanent access road near or through forests?			
creation of barriers for migratory land animals			
loss of precious ecological values due to flooding of agricultural/forest areas, and wild lands and wildlife habitat; destruction of fish spawning/breeding and nursery grounds?			
deterioration of downstream water quality due to anoxic water from the reservoir and sediments due to soil erosion?			
significant diversion of water from one basin to another?			
alternating dry and wet downstream conditions due to peaking operation of powerhouse?			
significant modification of annual flood cycle affecting downstream ecosystem, people's sustenance and livelihoods?			
loss or destruction of unique or aesthetically valuable land or water forms?			
proliferation of aquatic weeds in reservoir and downstream impairing dam discharge, irrigation systems, navigation and fisheries, and increasing water loss through transpiration?			
scouring of riverbed below dam?			
downstream erosion of recipient river in trans-basin diversion?			
increased flooding risk of recipient river in trans-basin diversion?			
decreased groundwater recharge of downstream areas?			
draining of downstream wetlands and riparian areas?			
decline or change in fisheries below the dam due to reduced peak flows and floods, submersion of river stretches and resultant destruction of fish breeding and nursery grounds, and water quality changes?			
loss of migratory fish species due to barrier imposed by the dam?			
formation of sediment deposits at reservoir entrance, creating backwater effect and flooding and waterlogging upstream?			

SCREENING QUESTIONS	Ye	No	REMARKS
significant disruption of river sediment transport downstream due to trapping in reservoir?			
environmental risk due to potential toxicity of sediments trapped behind the dams?			
increased saltwater intrusion in estuary and low lands due to reduced river flows?			
significant induced seismicity due to large reservoir size and potential environmental hazard from catastrophic failure of the dam?			
cumulative effects due to its role as part of a cascade of dams/ reservoirs?			
depletion of dissolved oxygen by large quantities of decaying plant material, fish mortality due to reduced dissolved oxygen content in water, algal blooms causing successive and temporary eutrophication, growth and proliferation of aquatic weeds?			
risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during subproject construction and operation?			
large population influx during subproject construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
creation of community slums following construction of the hydropower plant and its facilities?			
social conflicts if workers from other regions or countries are hired?			
uncontrolled human migration into the area, made possible by access roads and transmission lines?			
disproportionate impacts on the poor, women, children or other vulnerable groups?			
community health and safety risks due to the transport, storage, and use and/or disposal of materials likely to create physical, chemical and biological hazards?			
risks to community safety due to both accidental and natural hazards, especially where the structural elements or components of the subproject (e.g., dams) are accessible to members of the affected community or where their failure could result in injury to the community throughout subproject construction, operation and decommissioning?			

MYA: Emergency Support for Chin State Livelihood Restoration

Environmental Codes of Practice

A. Introduction

1. To manage and mitigate potential negative environmental impacts, the project is to apply Environmental Codes of Practice (ECoPs) outlined in this document. The ECoPs contains specific, detailed and tangible measures that would mitigate the potential impacts of each type of eligible sub-project activity under the project. They are designed appropriately for the local conditions in Myanmar, simple, and readily useable by the local communities who are the main beneficiaries of the project.

2. The Environmental Codes of Practice[5] have been adopted from the ongoing National Community Development Driven Development Project: Environmental and Social Management Framework. Subprojects under the National Community Development Driven Development Project are similar in terms of type and scale. As DRD is the executing agency for the National Community Development Driven Development Project, implementation experience and lessons learned with the Environmental Codes of Practices may be shared with relevant staff of the proposed emergency assistance project.

3. The ECoPs are to be implemented by villages and/or contractors, with the support of GIU and sub-GIUs of the Department of Rural Development (DRD) at township level. The adoption of these codes will be closely supervised and supported by the DRD GMU at the union level.

4. The adoption of ECoPs will be monitored though the environmental safeguard monitoring reports submitted by the DRD at the Union level. One section of the report should be made available for assessing the application of this environmental management tool; this may include issue(s) or problem(s) in the field and measures or actions undertook in solving the problem(s).

[5] The Environmental Codes of Practices have been adopted from Appendix 8 Environmental Codes of Practice. National Community Development Driven Development Project: Environmental and Social Management Framework. Government of Myanmar, 19 March 2015.

B. General Environmental Code of Practice

Issue	Environmental Prevention/Mitigation Measures
1. Noise during construction	• Plan activities in consultation with communities so that noisiest activities are undertaken during periods that will result in least disturbance. • Use noise-control methods such as fences, barriers or deflectors (such as muffling devices for combustion engines or planting of fast-growing trees) • Minimize project transportation through community areas • Maintain a buffer zone (such as open spaces, row of trees or vegetated areas) between the project site and residential areas to lessen the impact of noise to the living quarters
2. Soil Erosion	• Schedule construction during dry season • Contour and minimize length and steepness of slopes • Use mulch, grasses or compacted soil to stabilize exposed areas • Cover with topsoil and re-vegetate (plant grass, fast-growing plants/bushes/trees) construction areas quickly once work is completed • Design channels and ditches for post-construction flows and line steep channels/slopes (e.g., with palm frowns, jute mats, etc.)
3. Air Quality	▪ Minimize dust from exposed work sites by applying water on the ground regularly • Do not bum site clearance debris (trees, undergrowth) or construction waste materials • Keep stockpile of aggregate materials covered to avoid suspension or dispersal of fine soil particles during windy days or disturbance from stray animals
4. Water Quality and Availability	• Activities should not affect the availability of water for drinking and hygienic purposes • No soiled materials , solid wastes, toxic or hazardous materials should be poured or thrown into water bodies for dilution or disposal • The flow of natural waters should not be obstructed or diverted to another direction , which may lead to drying up of river beds or flooding of settlements • Separate as best as possible concrete works in waterways and keep concrete mixing separate from drainage leading to waterways
5. Solid and hazardous waste	• Collect and transport construction waste to appropriately designated/ controlled dump sites • Maintain waste (including earth dug for foundations) at least 300 meters from rivers, streams, lakes and wetlands • Use secured area for refueling and transfer of other toxic fluids distant from settlement area (and at least 50 meters from drainage structures and 100 meters from important water bodies); ideally on a hard/non-porous surface • Train workers on correct transfer and handling of fuels and other substances and require the use of gloves , boots, aprons, eyewear and other protective equipment for protection in handling highly hazardous materials • Collect and properly dispose of small maintenance materials such as oily rags, oil filters, used oil, etc.

6, Health and safety	• Provide personal protective gear for workers as necessary (gloves, dust masks, hard hats, boots, goggles) • Keep worksite clean and free of debris on daily basis • Keep corrosive fluids and other toxic materials in properly sealed containers for collection and disposal in properly secured areas • Ensure adequate toilet facilities for workers from outside of the community • Rope off construction area and secure materials stockpiles/ storage areas from the public and display warning signs. Do not allow children to play in construction areas. • Fill in all earth borrow-pits once construction is completed to avoid standing water, water-borne diseases and possible drowning • Each construction sub-project to have a basic first-aid kit with bandages, antibiotic cream, etc.
7. Other	• No cutting of trees or destruction of vegetation other than on construction site • No hunting, fishing, capture of wildlife or collection of plants • No use of unapproved toxic materials including lead-based paints, un-bonded asbestos, etc. • No disturbance of cultural or historic sites

C. Environment Codes of Practices - Roads and Bridges

Issue	Environmental Prevention/Mitigation Measures
Roads connecting villages, between villages and township	• Control placement of all construction waste (including earth cuts) to approved disposal sites (at >300 m from rivers, streams, lakes, or wetlands) . Dispose in authorized areas all of garbage, metals, and excess materials (fuels, oil, and grease) generated during construction. Never dispose spent oils on the ground and in water courses as it can contaminate soil and groundwater • Erosion control measures should be applied before the rainy season begins, preferably immediately following construction. Maintain, and reapply the measures until vegetation is successfully established. • Sediment control structures should be applied where needed to slow or redirect runoff and trap sediment until vegetation is established. • Spray water on dirt roads, cuts, fill materials and stockpiled soil to reduce wind-induced erosion, as needed. • Avoid road construction through primary forests as it gives access to illegal logging. • Avoid road construction in unstable soils, steep slopes and nearby river banks. Additional measures (see the section below) need to be applied should there be no alternatives for road alignments. • <u>Protect slopes from erosion and landslides by the following measures</u> i. Plant locally available, fast-growing grass on slopes prone to erosion. These grasses help stabilize the slope and protect soil from erosion by rain and runoff. Locally available species possessing the properties of

	good growth, dense ground cover and deep root shall be used for stabilization ii. Provide interceptor ditch, particularly effective in the areas of high intensity rainfall and where slopes are exposed. This type of ditch intercepts and carries surface runoff away from erodible areas and slopes before reaching the steeper slopes, thus reducing the potential surface erosion. iii. For steep slopes, a stepped embankment (terracing) is needed for greater stability. iv. Place a retaining wall at the lower part of the unstable slope. The wall needs to have weeping holes for drainage of the road sub-base, thus reducing pressure on the wall. v. Rocks (riprap) can be used in addition to protect the slope. vi. prevent uncontrolled water discharge from the road surface by sufficiently large drainage ditches and to drain water away from the down slope.
Small bridges (less than10 meters)	Erosion protection : • The main method of slope and erosion protection is the construction of gabions (gravity walls that support embankments or slopes which have a potential to slip) and ordinary stone pitching i. The slope of gabions should be in the ratio of at least 1 vertical: 2 horizontal. Flatter slopes may be adopted depending on the site terrain. ii. The filling of the gabions should be from strong and competent rock which is laid very closely packed to maximize the weight. iii. Bracing wire should be used to prevent the gabion bulging out. The bracing wire should be placed at each third of the gabion height. iv. The gabions should be firmly anchored into the ground by founding the gabions below the expected scour depth level v. In cases where stone pitching is not provided, the top layer should be covered by soil to encourage the growth of grass and the stabilization of the slopes. • Stone pitching may be provided as the only erosion protection measure in those cases where the erosion potential is deemed minimal. Stone pitching is not very resistant to strong water current and is mainly used as the top finish on gabion walls. Water Quality and Fauna: • Restrict duration and timing of in-stream activities to lower flow periods (dry season) and avoid periods critical to biological cycles of valued flora and fauna (e.g., spawning) • Water flow diversion is not advisable; if it is impossible to avoid, impacts should be assessed and mitigation proposed. • Establish clear separation of concrete mixing and works from

	drainage areas and waterways
Culverts	• Remove all formwork from inside the culve1t (after concrete has reached full strength). Formwork that is not removed will rot eventually, drop down and obstruct the free flow of water. • Place large stones at the outlet of the culvert to prevent erosion. • Keep the culvert inlets free from sand and gravel – the water must flow through the culvert. • Build a sand trap upstream of the culvert to prevent accumulation at culvert inlets (sand traps will have to be cleaned periodically). • Ensure that the water of the adjacent road sections can flow freely into the roadside ditch.

D. Environment Codes of Practices - Rural Water Supply

Issue	Environmental Prevention/Mitigation Measures
Wells (deep/shallow)	• Should be equipped with slab around the well for easier drainage, a crossbeam and a pulley to support the use of only one rope and bucket for collecting water. One rope and bucket is more hygienic for the well and water • Steel rungs (placed inside wall of a deep well) are essential for maintenance of a well or in case of an emergency • A groundwater well usually has a wide open water area. It is necessary to provide a cover/roof/wire mesh on top to protect this area from falling leaves or debris • Wells should always be located upstream of the septic tank soak-away. Build the soak-away as far away as possible from the well (minimum 15 m/50 feet) as it can influence the quality of the drinking water when it is too close (health risk). • Before using a new water source, take samples for testing; minimum key parameters for water testing: total coliform, pH, Arsenic, Nitrate, color, turbidity, and temperature. Water quality should also be monitored in the case of all wells rehabilitations as part of the project
Spring	• Every spring capture should be equipped with a filter and a sand trap. Add a wall between the inflow and the outlet pipe to create chamber for settling out sand; build the wall with a notch (lowered section) for controlled flow. Sand must be cleaned out periodically (O&M). • Collection basin for spring capture needs to have a perforated PVC pipe (holes diameter 2mm) to be used as a screen for the water intake. Alternatively, a short pipe with wire mesh (screen) around the open end should be provided • Collection basin needs to have a fence to protect the spring from public access and risk of contamination; and a roof/cover over the spring to prevent leaves or other debris from entering the basin.
Installation/ Rehabilitation of pipelines from natural springs	<u>Preventing contamination at water sources:</u> • Build a structure with roof over the water source to prevent leaves or other debris from entering into the basin. • A fence is needed to protect the water sources (springs particularly) from public access and risk of contamination. • The sand/gravel filter traps sediment before the spring flow enters

	the collection chamber and has to be changed during periodical maintenance Pipe Laying: • PVC water transmission and distribution piping need to be buried underground (coverage 50cm minimum) to prevent pipe against external damage (e.g. passing vehicles, solar UV radiation, etc.). Exposing PVC pipe to UV radiation causes the plasticizer in the PVC pipe to evaporate causing loss of integrity and brittleness. • Pipe shall be laid in a straight line, over a constantly falling slope. • When conditions do not allow piping to be buried (i.e. pipe is used above ground), then metal pipe must be used, and supported/braced as excessive movement may lead to leaks and breaks. • Outlet pipes and fittings from water storage/basin shall not be PVC pipe due to exposure to solar UV/sunlight. Metal piping and fittings are preferred

E. Environment Codes of Practices - Rural Electrification

Issue	Environmental Prevention/Mitigation Measures
Solar Panels and Charge Station	• provide a shed for genet (distributed electrical generator charge station system) or pumps that are accessible for easy maintenance. • Regular maintenance is important to avoid spillage/contamination of (diesel/petrol/oil).
Micro Hydro	• Requires preparation of and Environmental Management Plan (see Myanmar and ADB requirements for preparation of environmental plans

F. Environment Codes of Practices - Small-scale Irrigation

Issue	Environmental Prevention/Mitigation Measures
Small-scale irrigation	• Masonry walls (along the road) or stone riprap should be built to prevent erosion on a sloped bank. • May use bamboo as bank protection along the rice fields as the loads are low. • A bar screen (vertical bars; about 20mm diameter with an approximate 10 cm clear distance for easy maintenance) is essential in front of any inlet structure (upstream) to prevent large objects and debris blocking the irrigation canal. The angle between the bottom of the canal and the screen shall be between 45 to 80 degrees

ADB Safeguard Policy Statement (2009)
Safeguard Requirements 1: Environment

A. Introduction

1. Safeguard Requirements 1 outlines the requirements that borrowers/clients are required to meet when delivering environmental safeguards for projects supported by the Asian Development Bank (ADB). It discusses the objectives and scope of application, and underscores the requirements for undertaking the environmental assessment process. These requirements include assessing impacts, planning and managing impact mitigations, preparing environmental assessment reports, disclosing information and undertaking consultation, establishing a grievance mechanism, and monitoring and reporting. The document also includes particular environmental safeguard requirements pertaining to biodiversity conservation and sustainable management of natural resources, pollution prevention and abatement, occupational and community health and safety, and conservation of physical cultural resources. The applicability of particular requirements is established through the environmental assessment process and compliance with the requirements is achieved through implementation of environmental management plans agreed to by ADB and the borrower/client.

B. Objectives

2. The objectives are to ensure the environmental soundness and sustainability of projects, and to support the integration of environmental considerations into the project decision-making process.

C. Scope of Application

3. The requirements apply to all ADB-financed and/or ADB-administered sovereign and non-sovereign projects, and their components regardless of the source of financing, including investment projects funded by a loan; and/or a grant; and/or other means, such as equity and/or guarantees (hereafter broadly referred to as projects).

D. Requirements

1. Environmental Assessment

4. Environmental assessment is a generic term used to describe a process of environmental analysis and planning to address the environmental impacts and risks associated with a project. At an early stage of project preparation, the borrower/client will identify potential direct, indirect, cumulative and induced environmental impacts on and risks to physical, biological, socioeconomic, and physical cultural resources and determine their significance and scope, in consultation with stakeholders, including affected people and concerned NGOs. If potentially adverse environmental impacts and risks are identified, the borrower/client will undertake an environmental assessment as early as possible in the project cycle. For projects with potentially significant adverse impacts that are diverse, irreversible, or unprecedented, the borrower/client will examine alternatives to the project's location, design, technology, and components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks. The rationale for selecting the particular project location, design, technology, and components will be properly documented, including, cost-benefit analysis, taking environmental costs and benefits of the various alternatives considered into account. The "no project" alternative will be also considered.

5. The assessment process will be based on current information, including an accurate project description, and appropriate environmental and social baseline data. The environmental assessment will consider all potential impacts and risks of the project on physical, biological, socioeconomic (occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media [Appendix 2, para. 6]) and physical cultural resources in an integrated way. The project's potential environmental impacts and risks will be reviewed against the requirements presented in this document and applicable laws and regulations of the jurisdictions in which the project operates that pertain to environmental matters, including host country obligations under international law.

6. Impacts and risks will be analyzed in the context of the project's area of influence. This area of influence encompasses (i) the primary project site(s) and related facilities that the borrower/client (including its contractors) develops or controls, such as power transmission corridors, pipelines, canals, tunnels, access roads, borrow pits and disposal areas, and construction camps; (ii) associated facilities that are not funded as part of the project (funding may be provided separately by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project; (iii) areas and communities potentially affected by cumulative impacts from further planned development of the project, other sources of similar impacts in the geographical area, any existing project or condition, and other project-related developments that are realistically defined at the time the assessment is undertaken; and (iv) areas and communities potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location. The area of influence does not include potential impacts that might occur without the project or independently of the project. Environmental impacts and risks will also be analyzed for all relevant stages of the project cycle, including preconstruction, construction, operations, decommissioning, and post closure activities such as rehabilitation or restoration.

7. The assessment will identify potential transboundary effects, such as air pollution, increased use or contamination of international waterways, as well as global impacts, such as emission of greenhouse gases and impacts on endangered species and habitats.

8. The environmental assessment will examine whether particular individuals and groups may be differentially or disproportionately affected by the project's potential adverse environmental impacts because of their disadvantaged or vulnerable status, in particular, the poor, women and children, and Indigenous Peoples. Where such individuals or groups are identified, the environmental assessment will recommend targeted and differentiated measures so that adverse environmental impacts do not fall disproportionately on them.

9. Depending on the significance of project impacts and risks, the assessment may comprise a full-scale environmental impact assessment (EIA) for category A projects, an initial environmental examination (IEE) or equivalent process for category B projects, or a desk review. An EIA report includes the following major elements: (i) executive summary, (ii) description of the project, (iii) description of the environment (with comprehensive baseline data), (iv) anticipated environmental impacts and mitigation measures, (v) analysis of alternatives, (vi) environmental management plan(s), (vii) consultation and information disclosure, and (viii) conclusion and recommendations. The annex to this appendix provides further details. An IEE, with its narrower scope, may be conducted for projects with limited impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.

10. When the project involves existing activities or facilities, relevant external experts will perform environmental audits to determine the existence of any areas where the project may

cause or is causing environmental risks or impacts. If the project does not foresee any new major expansion, the audit constitutes the environmental assessment for the project. A typical environmental audit report includes the following major elements: (i) executive summary; (ii) facilities description, including both past and current activities; (iii) summary of national, local, and any other applicable environmental laws, regulations, and standards; (iv) audit and site investigation procedure; (v) findings and areas of concern; and (vi) corrective action plan that provides the appropriate corrective actions for each area of concern, including costs and schedule.

11. When the project involves the development of or changes to policies, plans, or programs that are likely to have significant environmental impacts that are regional or sectoral, strategic environmental assessment will be required. A strategic environmental assessment report will include (i) an analysis of the scenario, (ii) an assessment of long-term and indirect impacts, (iii) a description of the consultation process, and (iv) an explanation of option selection.

2. Environmental Planning and Management

12. The borrower/client will prepare an environmental management plan (EMP) that addresses the potential impacts and risks identified by the environmental assessment. The EMP will include the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the project is designed, constructed, and operated in compliance with applicable laws and regulations and meets the requirements specified in this document. The level of detail and complexity of the environmental planning documents and the priority of the identified measures and actions will be commensurate with the project's impacts and risks. Key considerations include mitigation of potential adverse impacts to the level of "no significant harm to third parties", the polluter pays principle, the precautionary approach, and adaptive management.

13. If some residual impacts are likely to remain significant after mitigation, the EMP will also include appropriate compensatory measures (offset) that aim to ensure that the project does not cause significant net degradation to the environment. Such measures may relate, for instance, to conservation of habitat and biodiversity, preservation of ambient conditions, and greenhouse gas emissions. Monetary compensation in lieu of offset is acceptable in exceptional circumstances, provided that the compensation is used to provide environmental benefits of the same nature and is commensurate with the project's residual impact.

14. The EMP will define expected outcomes as measurable events to the extent possible and will include performance indicators or targets that can be tracked over defined periods. It will be responsive to changes in project design, such as a major change in project location or route, or in technology, unforeseen events, and monitoring results.

15. At times, a third party's involvement will influence implementation of the EMP. A third party may be, inter alia, a government agency, a contractor, or an operator of an associated facility. When the third-party risk is high and the borrower/client has control or influence over the actions and behavior of the third party, the borrower/client will collaborate with the third party to achieve the outcome consistent with the requirements for the borrower/client. Specific actions will be determined on a case-by-case basis.

16. The borrower/client will use qualified and experienced experts to prepare the environmental assessment and the EMP. For highly complex and sensitive projects,

independent advisory panels of experts not affiliated with the project will be used during project preparation and implementation.

3. Information Disclosure

17. The borrower/client will submit to ADB the following documents for disclosure on ADB's website:

(i) a draft full EIA (including the draft EMP) at least 120 days prior to ADB Board consideration, and/or environmental assessment and review frameworks before project appraisal, where applicable;
(ii) the final EIA/IEE;
(iii) a new or updated EIA/IEE and corrective action plan prepared during project implementation, if any; and
(iv) the environmental monitoring reports.

18. The borrower/client will provide relevant environmental information, including information from the documents in para. 17 in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.

4. Consultation and Participation

19. The borrower/client will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. Meaningful consultation is a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle[1] (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues. Consultation will be carried out in a manner commensurate with the impacts on affected communities. The consultation process and its results are to be documented and reflected in the environmental assessment report.

5. Grievance Redress Mechanism

20. The borrower/client will establish a mechanism to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance. The grievance mechanism should be scaled to the risks and adverse impacts of the project. It should address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people at no costs and without retribution. The mechanism should not impede access to the country's judicial or administrative remedies. The affected people will be appropriately informed about the mechanism.

6. Monitoring and Reporting

21. The borrower/client will monitor and measure the progress of implementation of the EMP. The extent of monitoring activities will be commensurate with the project's risks and impacts. In addition to recording information to track performance, the borrower/client will

[1] For environment category A projects, such consultations will necessarily include consultations at the early stage of EIA field work and when the draft EIA report is available during project preparation, and before project appraisal by ADB

undertake inspections to verify compliance with the EMP and progress toward the expected outcomes. For projects likely to have significant adverse environmental impacts, the borrower/client will retain qualified and experienced external experts or qualified NGOs to verify its monitoring information. The borrower/client will document monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. The borrower/client will implement these corrective actions and follow up on these actions to ensure their effectiveness.

22. The borrower/client will prepare periodic monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. The borrower/client will submit at least semiannual monitoring reports during construction for projects likely to have significant adverse environmental impacts, and quarterly monitoring reports for highly complex and sensitive projects. For projects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis. Such periodic reports will be posted in a location accessible to the public. Project budgets will reflect the costs of monitoring and reporting requirements.

7. Unanticipated Environmental Impacts

23. Where unanticipated environmental impacts become apparent during project implementation, the borrower/client will update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

8. Biodiversity Conservation and Sustainable Natural Resource Management

24. The borrower/client will assess the significance of project impacts and risks on biodiversity[2] and natural resources as an integral part of the environmental assessment process specified in paras. 4–10. The assessment will focus on the major threats to biodiversity, which include destruction of habitat and introduction of invasive alien species, and on the use of natural resources in an unsustainable manner. The borrower/client will need to identify measures to avoid, minimize, or mitigate potentially adverse impacts and risks and, as a last resort, propose compensatory measures, such as biodiversity offsets, to achieve no net loss or a net gain of the affected biodiversity.

a. Modified Habitats

25. In areas of modified habitat, where the natural habitat has apparently been altered, often through the introduction of alien species of plants and animals, such as in agricultural areas, the borrower/client will exercise care to minimize any further conversion or degradation of such habitat, and will, depending on the nature and scale of the project, identify opportunities to enhance habitat and protect and conserve biodiversity as part of project operations.

b. Natural Habitats

26. In areas of natural habitat,[3] the project will not significantly convert or degrade[4] such habitat, unless the following conditions are met:

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[2]. The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

[3] Land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions.

[4] Significant conversion or degradation is (i) the elimination or severe diminution of the integrity of a habitat caused by a major, long-term change in land or water use; or (ii) the modification of a habitat that substantially

(i) No alternatives are available.
(ii) A comprehensive analysis demonstrates that the overall benefits from the project will substantially outweigh the project costs, including environmental costs.
(iii) Any conversion or degradation is appropriately mitigated.

27. Mitigation measures will be designed to achieve at least no net loss of biodiversity. They may include a combination of actions, such as post project restoration of habitats, offset of losses through the creation or effective conservation of ecologically comparable areas that are managed for biodiversity while respecting the ongoing use of such biodiversity by Indigenous Peoples or traditional communities, and compensation to direct users of biodiversity.

c. Critical Habitats

28. No project activity will be implemented in areas of critical habitat[5] unless the following requirements are met:

(i) There are no measurable adverse impacts, or likelihood of such, on the critical habitat which could impair its high biodiversity value or the ability to function.
(ii) The project is not anticipated to lead to a reduction in the population of any recognized endangered or critically endangered species[6] or a loss in area of the habitat concerned such that the persistence of a viable and representative host ecosystem be compromised.
(iii) Any lesser impacts are mitigated in accordance with para. 27.

29. When the project involves activities in a critical habitat, the borrower/client will retain qualified and experienced external experts to assist in conducting the assessment.

d. Legally Protected Areas

30. In circumstances where some project activities are located within a legally protected area, in addition to the requirement specified in para. 28, the borrower/client will meet the following requirements:

(i) Act in a manner consistent with defined protected area management plans.
(ii) Consult protected area sponsors and managers, local communities, and other key stakeholders on the proposed project.

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reduces the habitat's ability to maintain viable populations of its native species. Significant conversion may include, for example, land clearing; replacement of natural vegetation (for example, by crops or tree plantations); permanent flooding (by a reservoir for instance); drainage, dredging, filling, or canalization of wetlands; or surface mining.

[5] Critical habitat is a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value, including habitat required for the survival of critically endangered or endangered species; areas having special significance for endemic or restricted-range species; sites that are critical for the survival of migratory species; areas supporting globally significant concentrations or numbers of individuals of congregatory species; areas with unique assemblages of species or that are associated with key evolutionary processes or provide key ecosystem services; and areas having biodiversity of significant social, economic, or cultural importance to local communities. Critical habitats include those areas either legally protected or officially proposed for protection, such as areas that meet the criteria of the World Conservation Union classification, the Ramsar List of Wetlands of International Importance, and the United Nations Educational, Scientific, and Cultural Organization's world natural heritage sites.

[6] As defined by the Word Conservation Union's Red List of Threatened Species or as defined in any national legislation

(iii) Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area.

e. Invasive Alien Species

31. The borrower/client will not intentionally introduce any new alien species (that is, species not currently established in the country or region of the project) unless carried out in accordance with the existing regulatory framework for such introduction, if such a framework is present, or unless the introduction is subject to a risk assessment (as part of the environmental assessment) to determine the potential for invasive behavior. Under no circumstances must species known to be invasive be introduced into new environments. The borrower/client will undertake assessment of the possibility of accidental or unintended introduction of such invasive alien species and identify measures to minimize the potential for release.

f. Management and Use of Renewable Natural Resources

32. Renewable natural resources will be managed in a sustainable manner. Sustainable resource management is management of the use, development, and protection of resources in a way, or at a rate, that enables people and communities, including Indigenous Peoples, to provide for their current social, economic, and cultural well-being while also sustaining the potential of those resources to meet the reasonably foreseeable needs of future generations. This includes safeguarding the life-supporting capacity of air, water, and soil ecosystems. Where possible, the borrower/client will demonstrate the sustainable management of resources through an appropriate system of independent certification.

9. Pollution Prevention and Abatement

33. During the design, construction, and operation of the project the borrower/client will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's *Environment, Health and Safety Guidelines*[7]*.* These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures, the borrower/client will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in this document.

a. Pollution Prevention, Resource Conservation, and Energy Efficiency

34. The borrower/client will avoid, or where avoidance is impossible, will minimize or control the intensity or load of pollutant emission and discharge. In addition the borrower/client will examine and incorporate in its operations resource conservation and energy efficiency measures consistent with the principles of cleaner production. When the project has the potential to constitute a significant source of emissions in an already degraded area, strategies that help improve ambient conditions, such as evaluating alternative project locations and considering emissions offsets, will be introduced.

b. Wastes

35. The borrower/client will avoid, or where avoidance is not possible, will minimize or control the generation of hazardous and nonhazardous wastes and the release of hazardous materials resulting from project activities. Where waste cannot be recovered or reused, it will

[7] World Bank Group, 2007. *Environmental, Health, and Safety General Guidelines.* Washington, DC

be treated, destroyed, and disposed of in an environmentally sound manner. If the generated waste is considered hazardous, the client will explore reasonable alternatives for its environmentally sound disposal considering the limitations applicable to its transboundary movement.[8] When waste disposal is conducted by third parties, the borrower/client will use contractors that are reputable and legitimate enterprises licensed by the relevant regulatory agencies.

c. Hazardous Materials

36. The borrower/client will avoid the manufacture, trade, and use of hazardous substances and materials subject to international bans or phase outs because of their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer[9] and will consider the use of less hazardous substitutes for such chemicals and materials.

d. Pesticide Use and Management

37. The environmental assessment will ascertain that any pest and/or vector management activities related to the project are based on integrated pest management approaches and aim to reduce reliance on synthetic chemical pesticides in agricultural and public health projects. The borrower/client's integrated pest/vector management program will entail coordinated use of pest and environmental information along with available pest/vector control methods, including cultural practices, biological, genetic and, as a last resort, chemical means to prevent unacceptable levels of pest damage. The health and environmental risks associated with pest management should be minimized with support, as needed, to institutional capacity development, to help regulate and monitor the distribution and use of pesticides and enhance the application of integrated pest management.

38. The borrower/client will not use products that fall in World Health Organization Recommended Classification of Pesticides by Hazard Classes Ia (extremely hazardous) and Ib (highly hazardous) or Class II (moderately hazardous), if the project host country lacks restrictions on distribution and use of these chemicals, or if they are likely to be accessible to personnel without proper training, equipment, and facilities to handle, store, apply and dispose of these products properly. The borrower/client will handle, store, apply and dispose of pesticides in accordance with international good practice such as the Food and Agricultural Organization's International Code of Conduct on the Distribution and Use of Pesticides.

e. Greenhouse Gas Emissions

39. The borrower/client will promote the reduction of project-related anthropogenic greenhouse gas emissions in a manner appropriate to the nature and scale of project operations and impacts. During the development or operation of projects that are expected to or currently produce significant quantities of greenhouse gases[10],the borrower/client will quantify direct emissions from the facilities within the physical project boundary and indirect emissions associated with the off-site production of power used by the project. The borrower/client will conduct quantification and monitoring of greenhouse gas emissions

[8] Consistent with the objectives of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes.

[9] Consistent with the objectives of the Stockholm Convention on Persistent Organic Pollutants and the Montreal Protocol on Substances that Deplete the Ozone Layer.

[10] Even though the significance of a project's contribution to greenhouse gas emissions varies between industry sectors, the significance threshold to be considered for these requirements is generally 100,000 tons of carbon dioxide equivalent per year for the aggregate emissions of direct sources and indirect sources associated with electricity purchased for own consumption

annually in accordance with internationally recognized methodologies.[11] In addition, the borrower/client will evaluate technically and financially feasible and cost-effective options to reduce or offset project-related greenhouse gas emissions during project design and operation, and pursue appropriate options.

10. HEALTH AND SAFETY

a. Occupational Health and Safety

40. The borrower/client will provide workers[1212] with a safe and healthy working environment, taking into account risks inherent to the particular sector and specific classes of hazards in the borrower's/client's work areas, including physical, chemical, biological, and radiological hazards. The borrower/client will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work by (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

41. The borrower/client will apply preventive and protective measures consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's *Environment, Health and Safety Guidelines* (footnote 7).

b. Community Health and Safety

42. The borrower/client will identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the project, and will establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts. These measures will favor the prevention or avoidance of risks and impacts over their minimization and reduction. Consideration will be given to potential exposure to both accidental and natural hazards, especially where the structural elements of the project are accessible to members of the affected community or where their failure could result in injury to the community. The borrower/client will avoid or minimize the exacerbation of impacts caused by natural hazards, such as landslides or floods that could result from land use changes due to project activities.

43. The borrower/client will inform affected communities of significant potential hazards in a culturally appropriate manner. The borrower/client will be prepared to respond to accidental and emergency situations. This preparation will include response planning document(s) that addresses the training, resources, responsibilities, communications, procedures, and other aspects required to respond effectively to emergencies associated with project hazards. Appropriate information about emergency preparedness and response activities, resources, and responsibilities will be disclosed to affected communities.

44. When structural elements or components, such as dams, tailings dams, or ash ponds, are situated in high-risk locations and their failure or malfunction may threaten the safety of

[11] Estimation methodologies are provided by the Intergovernmental Panel on Climate Change (IPCC), various international organizations, and relevant host country agencies.

[12] Including nonemployee workers engaged by the borrower/client through contractors or other intermediaries to work on project sites or perform work directly related to the project's core functions.

communities, the borrower/client will engage qualified and experienced experts, separate from those responsible for project design and construction, to conduct a review as early as possible in project development and throughout project design, construction, and commissioning.

11. Physical Cultural Resources

45. The borrower/client is responsible for siting and designing the project to avoid significant damage to physical cultural resources[13].[13] Such resources likely to be affected by the project will be identified, and qualified and experienced experts will assess the project's potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process specified in paras. 4–10.

46. When a project may affect physical cultural resources, the borrower/client will consult with affected communities who use, or have used them within living memory, for long-standing cultural purposes to identify physical cultural resources of importance and to incorporate the views of the affected communities on such resources into the borrower's/client's decision-making process. Consultation will also involve relevant national or local regulatory agencies that are entrusted with protecting physical cultural resources. The findings are disclosed as part of, and in the same manner as, the environmental assessment report, except when such disclosure would compromise or jeopardize the safety or integrity of the physical cultural resources.

47. When the project is likely to have adverse impacts on physical cultural resources, the borrower/client will identify appropriate measures for avoiding or mitigating these impacts as part of the environmental planning process specified in paras. 12–16. These measures may range from avoidance to full site protection to selective mitigation, including salvage and documentation, in cases where a portion or all of the physical cultural resources may be lost.

48. When the proposed location of a project is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures will be included in the EMP. Chance finds shall not be disturbed until an assessment by a competent specialist is made and actions consistent with these requirements are identified.

49. The project will not remove any physical cultural resources unless the following conditions are met:

(i) No alternatives to removal are available.
(ii) The overall benefits of the project substantially outweigh the anticipated cultural heritage loss from removal.
(iii) Any removal is conducted in accordance with relevant provisions of national and/or local laws, regulations, and protected area management plans and national obligations under international laws, and employs the best available techniques.

[13] Defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings and may be above or below ground or under water. Their cultural interest may be at the local, provincial, national, or international level

OUTLINE OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT

This outline is part of the Safeguard Requirements 1. An environmental assessment report is required for all environment category A and B projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. A typical EIA report contains the following major elements, and an IEE may have a narrower scope depending on the nature of the project. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown.

A. EXECUTIVE SUMMARY

This section describes concisely the critical facts, significant findings, and recommended actions.

B. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

This section discusses the national and local legal and institutional framework within which the environmental assessment is carried out. It also identifies project-relevant international environmental agreements to which the country is a party.

C. DESCRIPTION OF THE PROJECT

This section describes the proposed project; its major components; and its geographic, ecological, social, and temporal context, including any associated facility required by and for the project (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal). It normally includes drawings and maps showing the project’s layout and components, the project site, and the project's area of influence.

D. DESCRIPTION OF THE ENVIRONMENT (BASELINE DATA)

This section describes relevant physical, biological, and socioeconomic conditions within the study area. It also looks at current and proposed development activities within the project's area of influence, including those not directly connected to the project. It indicates the accuracy, reliability, and sources of the data.

E. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media [Appendix 2, para. 6]), and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; identifies mitigation measures and any residual negative impacts that cannot be mitigated; explores opportunities for enhancement; identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies

topics that do not require further attention; and examines global, transboundary, and cumulative impacts as appropriate.

F. ANALYSIS OF ALTERNATIVES

This section examines alternatives to the proposed project site, technology, design, and operation—including the no project alternative—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. It also states the basis for selecting the particular project design proposed and, justifies recommended emission levels and approaches to pollution prevention and abatement.

G. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

This section:

(i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;

(ii) summarizes comments and concerns received from affected people and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and Indigenous Peoples; and

(iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

H. GRIEVANCE REDRESS MECHANISM

This section describes the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance.

I. ENVIRONMENTAL MANAGEMENT PLAN

This section deals with the set of mitigation and management measures to be taken during project implementation to avoid, reduce, mitigate, or compensate for adverse environmental impacts (in that order of priority). It may include multiple management plans and actions. It includes the following key components (with the level of detail commensurate with the project's impacts and risks):

(i) Mitigation:

(a) identifies and summarizes anticipated significant adverse environmental impacts and risks;

(b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and

(c) provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

(ii) Monitoring:

(a) describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and

(b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

(iii) Implementation arrangements:

(a) specifies the implementation schedule showing phasing and coordination with overall project implementation;

(b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and

(c) estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.

(iv) Performance indicators: describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

J. CONCLUSION AND RECOMMENDATION

This section provides the conclusions drawn from the assessment and provides recommendations.

MYA: Emergency Support for Chin State Livelihood Restoration
National Environmental Impact Assessment and Monitoring Specialist
Terms of Reference

A. The Environmental Assessment Review Framework

1. The Environmental Assessment Review Framework (EARF) for the MYA: Emergency Support for Chin State Livelihood Restoration: (i) describes the proposed activities to be financed under the Grant; (ii) specify the requirements that will be followed for project screening and categorization, environmental assessment including provisions for meaningful consultation with stakeholders and information disclosure requirements and, where applicable, safeguard and environmental criteria that are to be used in selecting subprojects and/or components; (iii) specify implementation procedures; (iv) specify monitoring and reporting requirements; and (v) describe the institutional responsibilities for the preparation, implementation, and progress review of safeguard documents for subprojects.

2. To support implementation of the EARF, an Environmental Impact Assessment and Monitoring Specialist is required.

B. Terms of Reference

3. The Environmental Impact Assessment and Monitoring Specialist will be responsible for environmental safeguards, including environmental safeguard monitoring and reporting.

1. Environmental Safeguard Responsibilities

4. The Environmental Impact Assessment and Monitoring Specialist will be responsible for environmental safeguards, including:

i. environmental screening of subprojects;
ii. preparation of the initial environmental examinations;
iii. preparation of environmental management plans;
iv. ensuring all publication consultation and disclosure requirements are met;
v. providing training on the implementation of environmental codes of practice (as specified in the EARF);
vi. supervision of, monitoring of, and reporting on the implementation of environmental management plans and environmental codes of practice; and
vii. operation of the environmental grievance redress mechanism.

2. Environmental Safeguard Monitoring and Reporting

5. The Environmental Impact Assessment and Monitoring Specialist will support Department Rural Development in implementation safeguard monitoring activities. The DRD is required to ensure the implementation of environmental safeguard measures and relevant safeguard plans, and to submit periodic monitoring reports on their implementation performance. ADB will require DRD to;

i. monitor the progress of implementation of EMPs verify the compliance with

environmental measures and their progress toward intended outcomes;

ii. document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports;

iii. follow up on these actions to ensure progress toward the desired outcomes,

iv. submit semi-annual monitoring reports on safeguard measures as agreed with ADB.

C. Implementation Arrangements

6. The Department of Rural Development (DRD) with the Ministry of Livestock Fisheries and Rural Development (MLFRD) will be the executing agency (EA) and implementing agency for the Project. DRD will establish a grant management unit (GMU at the DRD head office. The GMU will be responsible for the project's overall management and coordination. A grant implementing unit (GIU) will be established in Hakha in Chin State. Seven sub-GIUs will be established at the respective DRD township offices to coordinate and supervise the subproject activities at the township level.

7. The environmental impact assessment specialist monitoring specialist will located in GIU in Hakha.

D. Estimate Level of Effort.

8. A full time national environmental impact assessment and monitoring specialist will be needed. The estimated cost is $96,000 (see table below)

Position	Level of Effort (months)	Estimated Cost[1] ($)
Environmental Impact Assessment and Monitoring Specialist	24 months	$96,000

Note 1: Assumes $4000 per month for remuneration and per diem

B. Qualifications

9. The consultant should have:

i. master's or higher degree in environmental science, environmental engineering, or a related field

ii. at least 5 years' practical experience in environmental impact assessment in Myanmar; and

iii. familiarity with Myanmar's Environmental Impact Assessment Procedure (2015).

10. It is desirable to for the consultant to have:

i. experience working with international financing organizations;

ii. field-based experience with environmental safeguard management of infrastructure projects: and

iii. experience with the preparation of Initial Environmental Examinations or Environmental Impact Assessments.