Technical Assistance Consultant's Report

Project Number: 44140
Date: November 2014

TA 7566-REG: Strengthening and Use of Country Safeguard Systems

Subproject: Institutional Strengthening and Capacity Development for the Ministry of Construction (Myanmar)

MANUAL FOR ENVIRONMENTAL SAFEGUARDS

Prepared by ADB Consultant Team

Asian Development Bank

Manual for Environmental Safeguards

Draft (version 02)
13 November 2014

This manual has been prepared under Asian Development Bank TA 7566-REG: Strengthening and Use of Country Safeguards Systems.

This manual does not necessarily reflect the views of ADB or the Government concerned, and ADB and the Government cannot be held liable for its contents. All the views expressed herein may not be incorporated into design of on-going or proposed projects.

GLOSSARY

Anthropogenic greenhouse gases (GHGs): Greenhouse gases emitted into the atmosphere as a result of human activities and listed in the Kyoto Protocol to the United Nations Framework Convention on Climate Change: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydro fluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF_6).

Associated facilities: Facilities that are not funded as part of a project but whose viability and existence depend exclusively on the project, and whose goods or services are essential for successful operation of the project.

Biodiversity (biological diversity):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.

Carbon dioxide equivalent (CO_2e): A universal standard of measurement against which the impacts of releasing (or avoiding the release of) different greenhouse gases can be evaluated over a time horizon. It is often measured in metric tonnes.

Chance find procedure: Chance find procedure is a project-specific procedure that outlines what will happen if previously unknown physical resources are encountered during project construction or operation. The procedure includes record-keeping and expert verification procedures, chain of custody instructions for movable finds, and clear criteria for potential temporary work stoppages that could be required for rapid disposition of issues related to the finds.

Cleaner production: The concept of integrating pollution reduction into the production process and the design of a product. This involves continuous application of an integrated preventive environmental strategy to processes, products, and services in order to increase overall efficiency and reduce risks to humans and the environment through the conservation of raw materials, water and energy, and through the reduction or elimination of the use of toxic and hazardous raw materials. It also includes taking advantage of renewable energy sources such as solar energy and geothermal resources.

Critical habitat.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.

Cumulative impacts: The.combination of multiple impacts from existing projects, the proposed project, and anticipated future projects that may result in significant adverse and/or beneficial impacts that would not be expected in case of a stand-alone project.

Emergency response plans: Plan to address contingencies associated with process upset and accidental circumstances. They include clearly assigned responsibilities for the assessment of the degree of risk to life and property with procedures on whom to communicate different types of emergencies with and how.

Environmental audit: An instrument to determine the nature and extent of all environmental areas of concern at an existing facility. The audit identifies and justifies appropriate measures to mitigate the areas of concern, estimates the cost of the measures, and recommends a schedule for implementation. For certain projects, the environmental assessment report may consist of an environmental audit alone; in other cases, the audit is part of the environmental assessment documentation.

Environmental management plan (EMP): A planning instrument that contains the following key elements: mitigation measures, monitoring program, cost estimates, budget and institutional arrangements for implementation.

Environmental monitoring plan: A planning instrument specifying environmental monitoring and reporting requirements, 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.Typically consists as part of an EMP.

Global impacts: Environmental impacts that may not be significant specific to the project, but when taken together with impacts created by other human activities, can become globally significant.

Hazardous waste: Substances classified as hazardous wastes possess at least one of four characteristics- ignitability, corrosivity, reactivity, or toxicity - or appear on special lists.

Indirect impacts: Adverse and/or beneficial environmental impacts which cannot be immediately traced to a project activity but can be causally linked. For example, a project's pollution may directly impact water quality in the river. This direct impact may lead to an indirect impact on fish in the river. In turn, the impact on the fish population may lead to reduced harvests of fish with corresponding reductions in fishing incomes.

Induced impacts: Adverse and/or beneficial impacts on areas and communities from unintended but predictable developments caused by a project which may occur later or at a different location.

Integrated pest management: Refers to a mix of farmer-driven, ecologically based pest control practices that seeks to reduce reliance on synthetic pesticides. It involves (a) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them; (b) relying, to the extent possible, on nonchemical measures to keep pest populations low; and (c) selecting and applying pesticides, when they have to be used, in a way that minimizes adverse effects on beneficial organisms, humans, and the environment.

Invasive alien species: Non-native species of flora and fauna that are a significant threat to biodiversity due to their ability to spread rapidly and out-compete native species.

Legally protected areas: Areas legally designated to protect or conserve biodiversity, including areas proposed by governments for such designation.

Modified habitat: Natural habitat which has been altered as a result of human activities such as agricultural, forestry or urban development, or through the introduction of alien species.

Natural habitat: 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.

Persistent organic pollutants (POPs): A group of compounds that possess toxic properties, resist degradation, bioaccumulate and are transported through air, water and migratory species, across international boundaries and deposited far from their place of release, where they accumulate in terrestrial and aquatic ecosystems. The 12 compounds covered under the Stockholm Convention on Persistent Organic Pollutants are Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Mirex, Toxaphene, Polychlorinated Biphenyls, DDT, PCDD (Dioxin) and PCDF (Furans).

Pesticides: A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests can be insects, mice and other animals, unwanted plants (weeds), fungi, or microorganisms like bacteria and viruses. Though often misunderstood to refer only to *insecticides*, the term pesticide also applies to herbicides, fungicides, and various other substances used to control pests.

Physical cultural resources: 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.

Polluter pay principle: An environmental policy principle which requires that the costs of pollution or other environmental damage be borne by those who cause it.

Pollution: The term is used to refer to both hazardous and nonhazardous pollutants in the solid, liquid, or gaseous forms, and is intended to include other forms such as nuisance odors, noise, vibration, radiation, electromagnetic energy, and the creation of potential visual impacts including light.

Precautionary approach: Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

Residual impacts: Adverse impacts on the environment which remain after all mitigations have been applied.

Significant conversion or degradation: (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 reduces the habitat's ability to maintain viable populations of its native species.

Strategic environmental assessment (SEA): An assessment of environmental impacts and risks associated with policies, plans, or programs. An SEA may assess multiple policies, plans or programs within one study area, such as a river basin.

Transboundary impacts:Impacts that extend to multiple countries, beyond the MOECAF of the project, but are not global in nature.

Contents

APPENDIXES

I. INTRODUCTION

1. This Manual on Environmental Safeguards has been developed thru Asian Development Bank (ADB) technical assistance[1] and based on two workshops: (i) 1st workshop was organized in Nay Pyi Taw, Myanmar on 10 October 2014; and (ii) 2nd workshop was organized in Mandalay City, Myanmar on 13-14 October 2014. The content of this manual is largely derived from the workshop proceedings as well as contributions and recommendations provided by the participants[2] based on their experiences and day-to-day work.

Translation: ဤ လက်စွဲစာအုပ်သည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးကာကွယ်မှုများအပေါ် အာရှ ဖွံ့ဖြိုးမှုဘဏ်၏ နည်းပညာအကူအညီဖြင့် တိုးတက်ခဲ့ပြီး အလုပ်ရုံဆွေးနွေးပွဲ နှစ်ခုအပေါ်တွင် အခြေပြုခဲ့သည်။(၁) ပထမအကြိမ်အလုပ်ရုံဆွေးနွေးပွဲကို ၂၀၁၄ခုနှစ်၊ အောက်တိုဘာလ ၁၀ရက်နေ့တွင် နေပြည်တော်မြို့၌ ပြုလုပ်ခဲ့သည်။ (၂)ဒုတိယအကြိမ် အလုပ်ရုံဆွေးနွေးပွဲကို ၂၀၁၄ခုနှစ်၊ နိုဝင်ဘာလ ၁၃ရက်နေ့မှ၁၄ရက်နေ့ထိ မန္တလေးမြို့၌ ပြုလုပ်ခဲ့သည်။**ဤလက်စွဲစာအုပ်တွင် ပါဝင်သည့် အဓိက အကြောင်းအရာသည် ပါဝင်သူများ၏ အတွေ့အကြုံနှင့် တစ်နေ့ချင်းအလုပ်အပေါ်တွင် အခြေပြုကာအလုပ်ရုံဆွေးနွေးပွဲ လုပ်ငန်းစဉ်များမှ အထောက်အပံ့များနှင့် ထောက်ခံချက်များကို ကောင်းစွာကောက်နုတ်ထားခြင်းဖြစ်သည်။**

2. This manual on environmental safeguards aims to avoid, minimize or mitigate harmful environmental impacts, and to help the Ministry of Construction strengthen their capacity to meet the requirement of the Government of Myanmar environmental legal framework and multilateral development banks safeguard systems.

Translation: ဤ လက်စွဲစာအုပ်သည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးကာကွယ်မှုများအပေါ် ရှောင်ကြဉ်ရန်၊ နည်းနိုင်သမျှနည်းစေရန် သို့မဟုတ် ထိခိုက်နစ်နာစေသော ပတ်ဝန်းကျင်ဆိုင်ရာ အကျိုးသက်ရောက်မှုများကို လျော့ပါးစေရန်နှင့် ဆောက်လုပ်ရေးဝန်ကြီးဌာန၏ စွမ်းဆောင်ရည်ကို အားဖြည့်ကူညီရန်၊မြန်မာအစိုးရ၏ ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုနှင့်ဆိုင်သော ဥပဒေပြုဆိုင်ရာ ဖွဲ့စည်းမှု လိုအပ်ချက်ကို ဖြည့်ဆည်းပေးရန်နှင့် ဘဏ်များထိန်းသိမ်း ကာကွယ်မှု စနစ်ဘက်ပေါင်းစုံမှ ဖွံ့ဖြိုးတိုးတက်စေရန် ရည်ရွယ်သည်။

3. The content covered in this manual has been developed to provide reference material and guide for MOC/PWD staff on how to fulfill ADB's environmental assessment requirements as per ADB Safeguard Policy Statement, 2009. The manual provides additional explanation as to the requirements that MOC/PWD should meet in delivering safeguards to projects supported by ADB. The manual adds clarity, provide further technical guidance, offer templates and other useful tools, and point to additional sources of information. However, they are in no way intended to establish policy, and in case of any conflict between the manual and the corresponding SPS safeguards requirements, the SPS text will takes precedence.

Translation: ဤလက်စွဲစာအုပ်တွင် ပါဝင်သည့်အကြောင်းအရာသည် ADB

1 Technical Assistance (TA) 7566-REG: Strengthening and Use of Country Safeguards Systems

2 During the 2 workshops, there are 62 participants from MOC PWD headquarters and state/regional/district offices.

၏သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်း ကာကွယ်မှု ဆိုင်ရာ မူဝါဒထုတ်ပြန်ချက် ၂၀၀၉အရ MOC/PWD ဝန်ထမ်းများအတွက် ကိုးကားချက်နှင့် လမ်းညွှန်ချက် စီစဉ်ပေးရန်နှင့် ADB၏ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လိုအပ်ချက်များတွင် မည်ကဲ့သို့ ဖြည့်ဆည်းပေးမည်ဟူသော အပေါ်တွင် တိုးတက်ခဲ့ပြီးဖြစ်သည်။ ဤလက်စွဲစာအုပ်သည် လိုအပ်ချက်များကို အပိုရှင်းလင်းချက်များဖြင့် စီစဉ်ပေးခဲ့ပြီး ADB၏ အထောက်အပံ့ဖြင့် MOC/ PWD သည် စီမံကိန်းများသို့ သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်မှုနှင့်ဆိုင်သော ဖြန့်ဝေခြင်းတို့တွင် ဖြည့်ဆည်းပေးစေချင်သည်။ ၄င်းအပြင် ဤလက်စွဲစာအုပ်တွင် နည်းပညာလမ်းညွှန်မှုများ စီစဉ်ပေးခြင်း၊ အခြားအသုံးဝင်သော ကိရိယာများနှင့် အပို သတင်းအချက်အလက် အရင်းအမြစ်များ ညွှန်ပြခြင်းတို့ကို ရှင်းလင်းစွာ ထည့်သွင်းဖော်ပြထားသည်။ မည်သို့ပင်ဆိုစေကာမူ ၄င်းတို့အတွင်း၌ မူဝါဒအခြေခံစေရန် ရည်ရွယ်သည့် မည်သည့်နည်းလမ်းနှင့်ကိုမဆို လက်စွဲစာအုပ်နှင့် SPS ထိန်းသိမ်းကာကွယ်မှုဆိုင်ရာ လိုအပ်ချက်များနှင့် လိုက်လျောညီထွေရှိမှုအကြား သဘောထားကွဲလွဲမှုတွင် SPS သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းကာကွယ်မှု ဆိုင်ရာ မူဝါဒထုတ်ပြန်ချက် ကို ဦးစားပေးရလိမ့်မည်ဖြစ်သည်။

4. This manual focuses on providing guidance to achieve ADB's environmental safeguards requirements (SR1 – **Appendix 1**). It is primarily intended to be used by MOC/PWD, but may also be useful to contractors, consultants and ADB staff. It is considered a living document which will be updated periodically in light of lessons learned in the application of environmental safeguard requirements.

Translation: ဤလက်စွဲစာအုပ်သည် ADB၏ ပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်မှုဆိုင်ရာ လိုအပ်ချက်များ (SR 1 –Appendix1) ရယူရန် လမ်းညွှန်ချက် စီစဉ်ပေးနေမှုအပေါ်တွင် ဗဟိုပြုသည်။ ၄င်းသည် အများအားဖြင့် MOC/PWD ၌ အသုံးပြုရန်ရည်ရွယ်သည်။ သို့သော် ကန်ထရိုက်တာများ၊ အတိုင်ပင်ခံပုဂ္ဂိုလ်များနှင့် ADB ဝန်ထမ်းများ တို့တွင်လည်း အသုံးဝင်နိုင်သည်။

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

A. National Environmental Assessment and Review Procedures

5. The Pyidaungsu Hluttaw Law No. 9/2012 also known as the Environmental Conservation Law (ECL) became effective on 30 March 2012 but regulations and standards have not yet been issued. There are also other laws with environmental policy implications such as the 1992 Forest Law and a number of international laws and conventions that Myanmar has ratified. In follow up to promulgation of the ECL in March 2012, a new Ministry of Environmental Conservationand Forestry (MOECAF) was formed in mid-2012. Since October 2012, a new EnvironmentalConservation Department within MOECAF has been the focal point for environmentalmanagement matters including environmental safeguards. Implementation arrangements for the ECL are elaborated in the Environmental ConservationRules, approved in May 2014. Subsequently Environmental Impact Assessment(EIA) Procedures have been prepared, detailing out the procedural aspects and implementationresponsibilities. These procedures are approaching finalization.[3] Work has also commenced onpreparation of corresponding Environmental Quality Standards, as required under the ECL, and EIA technical guidelines.

6. **Applicability to ADB-funded projects.** Annex 1 of the draft EIA Procedures "Categorization of Economic Activities for Assessment Purposes" indicates that all road construction and rehabilitation projects will be required to undergo environmental assessment regardless of project size. As advised by MOECAF/ECD, although the EIA Procedures are yet to be approved, MOC will need to prepare an EIA orinitial environmental examination (IEE) for MOECAF's approval prior to commencement of civil works.

B. ADB Policy

7. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, loans involving financial intermediaries, and private sector loans.

Translation: ADB သည် ADB SPS ၂၀၀၉တွင် ဖော်ပြထားသော ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းဆိုင်ရာ အတွက် လိုအပ်ချက်များနှင့် ADB ၏ ဆောင်ရွက်မှု ကဏ္ဍအားလုံးတွင် ပတ်ဝန်းကျင်ဆိုင်ရာ ထုတ်ပြန်ချက်များကို ထည့်သွင်းစဉ်းစားရန် လိုအပ်သည်။

8. **Screening and categorization.** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project; the sensitivity, scale, nature, and magnitude of its potential impacts; and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts, and are assigned to one of the following four categories:

(i) **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.

(ii) **Category B.** Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

---

[3] Draft as of October 2014 is attached as **Appendix 2**.

(iii) **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.

(iv) **Category FI.** Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all projects will result in insignificant impacts.

9. **Environmental management plan.** An EMP, which addresses the potential impacts and risks identified by the environmental assessment, shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the project's impact and risks.

10. **Public disclosure.** ADB will post the below safeguard documents on its website as well as disclose relevant information in accessible manner in local communities:

(i) for environmental category A projects, draft EIA report at least 120 days before Board consideration;
(ii) final or updated EIA and/or IEE upon receipt; and
(iii) environmental monitoring reports submitted by the project management unit (PMO) during project implementation upon receipt.

11. Considering the lack of completed applicable country safeguard requirements, the ADB's safeguard requirements prevail.

III. THE ENVIRONMENTAL ASSESSMENT PROCESS

C. Environmental Assessment and the Project Cycle

12. Environmental assessment is a generic term describing a process of ongoing environmental analysis and planning to address the environmental impacts and risks associated with a project. The process (Figure 1)is most effective when initiated early in project preparationas it allows the MOC/PWD to:

Translation: ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်းဆိုသည်မှာ ယေဘုယျဖော်ပြထားသော ဝေါဟာရ တစ်ခုဖြစ်ပြီး ပတ်ဝန်းကျင်ဆိုင်ရာ စဉ်ဆက်မပြတ် စီစစ်တွေ့ရှိလျက်ဖြစ်သော ဖြစ်စဉ်ကို ဆိုလိုခြင်းဖြစ်ပြီး ပတ်ဝန်းကျင် ဆိုင်ရာ အကျိုးသက်ရောက်မှုများနှင့် စွန့်စားမှုများနှင့် ပတ်သက်၍ စီမံကိန်းရေးဆွဲခြင်း ဖြစ်သည်။ MOC/ PWD သည် စီမံကိန်းပြင်ဆင်မှုများကို စောလျင်စွာ ပြင်ဆင်မည်ဆိုလျှင်အလွန် အကျိုးသက်ရောက်သည်။

i) assess relevant potential impacts and risks associated with a proposed project;
Translation: အဆိုပြုထားသော စီမံကိန်းနှင့် ပတ်သက်၍ သက်ဆိုင်သော အလားအလာရှိသည့် အကျိုးသက်ရောက်မှုများနှင့် စွန့်စားမှုများ အကဲဖြတ်ခြင်း။

ii) assess the compliance of the proposed project with the applicable donor requirements as well as applicable environmental laws and regulations of the jurisdictions in which the project operates; and
Translation: စီမံကိန်းဆောင်ရွက်မှုတွင် တရားစီရင်ပိုင်ခွင့် စည်းမျဉ်းစည်းကမ်းများနှင့် သက်ဆိုင်သော ပတ်ဝန်းကျင်ဆိုင်ရာ ဥပဒေများ၊ သက်ဆိုင်သော လှူဒါန်းသူ လိုအပ်ချက်များနှင့်အတူ အဆိုပြုထားသော စီမံကိန်းကို ခွင့်ပြုအကဲဖြတ်ခြင်း။

iii) incorporate necessary mitigation measures early so that they can be easily

accommodated in project design.
Translation: စီမံကိန်းပုံစံတွင် လွယ်ကူညီညွတ်စွာ လုပ်ဆောင်နိုင်စေနိုင်ရန်အတွက် လိုအပ်သောပတ်ဝန်းကျင်ထိခိုက်မှုလျော့နည်းစေရေးလုပ်ငန်းအား စောလျင်စွာပူးပေါင်းဆောင်ရွက်ရန် လိုအပ်သည်။

13. The environmental assessment should assess and document potential impacts and risks for every key stage of the project cycle, including design and planning, construction, operation, and decommissioning or closure. However, environmental assessment is not a one-time report prepared at the feasibility stage; international good practice dictates that the process of analysis and management take place throughout the project cycle. A rigorous environmental assessment is one that can address problems as they arise, regardless of the project phase.
Translation: ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်းသည် အလားအလာရှိသော အကျိုးသက်ရောက်မှုများနှင့် စီမံကိန်း၏အဆင့်တိုင်းအတွက် စွန့်စားမှုများ၊ ပုံစံနှင့်စီမံကိန်း ရေးဆွဲခြင်း အပါအဝင် ၊တည်ဆောက်ခြင်း၊ ဆောင်ရွက်ခြင်း နှင့် ပယ်ဖျက်ခြင်း သို့မဟုတ် ပိတ်ခြင်းတို့တွင် အကဲဖြတ်သင့်သည်။ သို့ပေမဲ့လည်း ပတ်ဝန်းကျင်ဆိုင်ရာဆန်းစစ်ခြင်းသည် ဆောင်ရွက်၍ရနိုင်ဖွယ်ရှိသော အဆင့်၌ ကြိုတင်ပြင်ဆင်ထားသော တစ်ချိန်ကအစီရင်ခံစာတစ်ခုမဟုတ်ဘဲအပြည်ပြည်ဆိုင်ရာလက်တွေ့ပြဌာန်းချက်များတွင်စီမံကိန်း ဖြစ်စဉ် အနှံ့အပြားနေရာယူထားသောစိစစ်ခြင်းနှင့်စီမံခန့်ခွဲခြင်းဖြစ်စဉ်ဖြစ်သည်။တင်းကျပ်သောပတ်ဝန်းကျင် ဆိုင်ရာ ဆန်းစစ်ခြင်းသည် စီမံကိန်းပြောင်းလဲမှုအဆင့်တွင် ဂရုမထားဘဲ ပြဿနာများဖြစ်ပေါ်နိုင်သည်။

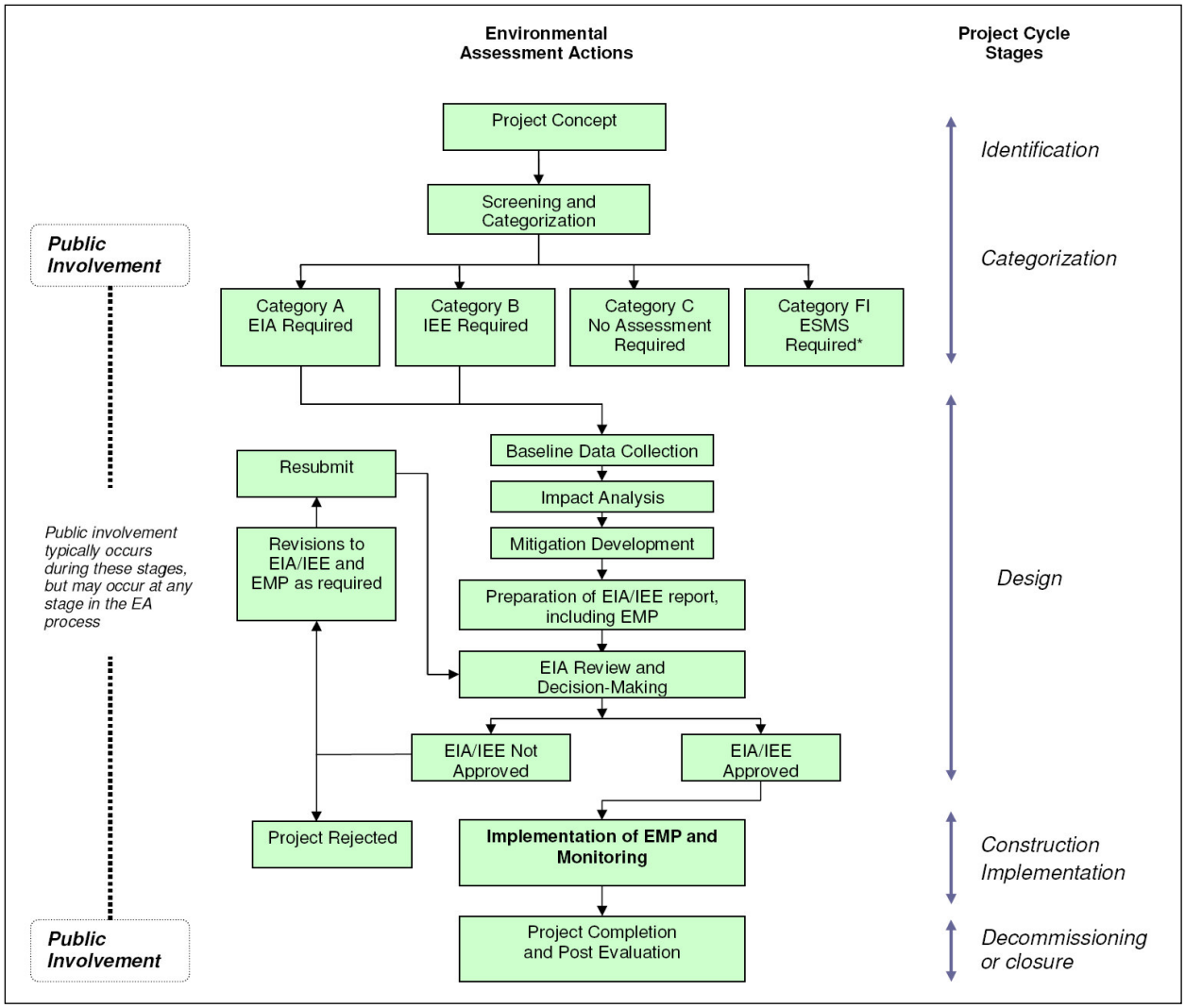
	*Delays in the implementation of a project because environmental issues were not considered during the design phase can be significantly more costly than conducting an effective assessment at the outset. In some cases the environmental assessment may identify environmental problems that are so serious that the project does not proceed.*
	Translation: အချို့ကိစ္စများတွင် ပတ်ဝန်းကျင်ဆိုင်ရာဆန်းစစ်ခြင်းသည် ပတ်ဝန်းကျင်ဆိုင်ရာပြဿနာများကို ဖော်ထုတ်နိုင်ပြီး ထိုစီမံကိန်းတွင် အလေးအနက်ဆွေးနွေးစရာအကြောင်းမပါဝင်ပေ။

D. Key Steps in the Environmental Assessment Process

14. The activities and outputs of the environmental assessment process will vary with the nature of each project and Government of Myanmar's legal and institutional context. However, environmental assessments of ADB supported projects will typically include the following steps:

i) Screening and Categorization
ii) Project and Baseline Data Collection
iii) Impact Analysis
iv) Impact Mitigation and Environmental Management Plan Development
v) Information Disclosure
vi) Consultation and Participation
vii) Grievance Redress Mechanism Development
viii) EMP Implementation
ix) Reporting

Figure 1: Generalized environmental assessment project cycle process flowchart



Abbreviations:
EIA-Environmental Impact Assessment; IEE-Initial Environmental Examination; EMP-Environmental Management Plan; ESMS-Environmental and Social Management System.

Figure 2: Key Steps in Environmental Assessment Process

- **Screening and Categorization:** determines the extent and type of environmental assessment to be undertaken.

- **Project and Baseline Data Collection:** the environmental assessment needs to be based on current information, including an accurate project description, and appropriate environmental and social baseline data.

- **Impact Analysis:** the environmental assessment needs to analyze all potential impacts and risks of the project on physical, biological, socioeconomic and physical cultural resources in an integrated way.

- **Impact Mitigation and Environmental Management Plan Development:** theenvironmental management plan (EMP) addresses the project's potential impacts and risks; it includes 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.

- **Information Disclosure:** delivers information about the project to the general public and to affected communities and other stakeholders, beginning early in the project cycle and continuing throughout the life of the project.

- **Consultation and Participation:** involvescarrying out meaningful consultation with affected people and other concerned stakeholders, including civil society, andfacilitating their informed participation.

- **Grievance Redress Mechanism Development:** a systematic process for receiving, evaluating and addressing affected people's project-related concerns, complaints, and grievances.

- **EMP Implementation:** involves the implementation of the EMP requirements, including mitigations, capacity building, and environmental monitoring.

- **Reporting:** requirements include the preparation, circulation and review of periodic monitoring reports prepared under the EMP.

E. Screening and Categorization

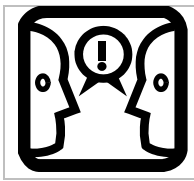
15. At an early stage in the project cycle (typically the project identification stage) ADB will screen and categorize the proposed project based on the significance of potential project impacts and risks. A project's environment category is determined by the category of its most environmentally sensitive component, including direct, indirect, induced, and cumulative impacts. Project screening and categorization are undertaken to:

i) reflect the significance of the project's potential environmental impacts;and
ii) identify the type and level of environmental assessment[4] and institutional resources required for the safeguard measures proportionate to the nature, scale, magnitude and sensitivity of the proposed project's potential impacts..

4 "Type" refers to strategic environmental assessment (SEA), project environmental assessment, or compliance audit; "Level"refers to a full environmental impact assessment for Category A projects, and an initial environmental examination for Category B projects.

16. Rapid environmental assessment (REA) checklists are a used to assist in the screening and categorization.For MOC/PWD projects, ADB REA Checklist for Roads and Highways is applicable (**Appendix 3**).

Translation: မြန်ဆန်သော ပတ်ဝန်းကျင်ဆိုင်ရာ အကဲဖြတ်ခြင်း (REA)စစ်ဆေးစာရင်းများသည် စီစစ်ခြင်းနှင့် အမျိုးအစားခွဲခြားခြင်း၌ ကူညီရန် အသုံးပြုကြသည်။ MOC/ PWD စီမံကိန်းများအတွက် ADB REAစစ်ဆေးစာရင်းသည်လမ်းများနှင့်အဝေးပြေးလမ်းမကြီးများအတွက် သင့်လျော်သည်။(နောက်ဆက်တွဲ-၃)



To help facilitate the process, MOC/PWD is encouraged to share any relevant reports or data with the ADB project team (including the results of screening and categorization undertaken to satisfy MOECAF requirements), participate in categorization field missions, and otherwise contribute to the identification of impacts and risks.

17. ADB assigns a proposed project to one of the following categories:

i) **Category A.** The proposed project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented; impacts may affect an area larger than the sites or facilities subject to physical works. A full-scale EIA including an EMP, is required (sample outline is provided in **Appendix 4**).

ii) **Category B**. The proposed project's potential environmental impacts are less adverse and fewer in number than those of category A projects; impacts are site-specific, few if any of them are irreversible, and impacts can be readily addressed through mitigation measures. An IEE, including an EMP, is required (sample outline is provided in **Appendix 5**).

iii) **Category C**. The proposed project is likely to have minimal or no adverse environmental impacts. No EIA or IEE is required although environmental implications need to be reviewed.

iv) **Category FI**. The proposed project involves the investment of ADB funds to, or through, a financial intermediary.

18. As part of the screening process, ADB also determines whether the project is considered highly complex and sensitive, which refers to projects that involve high levels of risk, are highly contentious, or which involve significant and multidimensional and generally interrelated potential social and/or environmental impacts. In such projects ADB requires the MOC/PWD to engage an independent advisory panel.

Translation: စီစစ်ခြင်းဖြစ်စဉ်အပိုင်းတွင် စီမံကိန်းသည် လွန်ကဲစွာရှုပ်ထွေးခြင်းနှင့် အထိအခိုက်မခံခြင်းနှင့် အဆင့်မြင့်စွန့်စားခြင်းတွင်ပါဝင်သော စီမံကိန်းတို့တွင်လည်း ADB သည် အဆုံးအဖြတ်ပေးနိုင်ပြီး သို့မဟုတ် မည်သည့်အရေးပါမှု ဆက်စပ်ပါဝင်မည်နည်း နှင့် ဘက်စုံတိုင်းထွာ၍ရသော ၊ယေဘုယျအားဖြင့် အလားအလာရှိသောလူမှုပတ်ဝန်းကျင်ဆိုင်ရာအကျိုးသက်ရောက်မှုများနှင့်ဆက်စပ်သည်။လွန်ကဲစွာရှုပ်ထွေးခြင်းနှင့်အထိအခိုက်မခံခြင်းစီမံကိန်းတစ်ခုချင်းစီတွင်MOC/PWDသည်လွတ်လပ်စွာအကြံပေးခွင့်ရှိသောနယ်ပယ်(ပုဂ္ဂိုလ်၊အဖွဲ့အစည်းများ)တွင်ချိတ်ဆက်ပေးရန် လိုအပ်သည်။

	highly complex and sensitive project	=	MOC/PWD to engage an independent advisory panel

F. Project and Baseline Data Collection

19. An environmental assessment needs to be based on current relevant information, including an accurate project description, and appropriate environmental and social baseline data.

Translation: ပတ်ဝန်းကျင်ဆိုင်ရာဆန်းစစ်ခြင်းတွင် လက်ရှိဆက်စပ်နေသော သတင်းအချက်အပေါ်တွင် အခြေခံရန်၊တိကျသော စီမံကိန်းဖော်ပြချက်အပါအဝင် သင့်လျော်သော လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံမျဉ်း အချက်အလက် လိုအပ်သည်။

20. Project-related information for the environmental assessment, much of which can frequently be obtained from the project prefeasibility study or equivalent, may include:

i) the type of project, including whether it is a new project or a project involving existing facilities;
ii) the need for project;
iii) the location and site layout, including associated facilities (if relevant);
iv) the size of operation; and,
v) the proposed implementation schedule.

21. Baseline data presented in the assessment usually covers a range of physical, biological, socioeconomic and physical cultural resources in the project's area of influence. Trend data that shows changes in a parameter over time, such as air quality or river flows, is often more useful than single point data.

22. Baseline data may be drawn from secondary or primary data sources.[5] Secondary data sources include: statistical records, government reports, NGO publications or academic studies. Secondary data tends to be readily available and inexpensive to obtain however, may be incomplete or out of date. It is recommended that available secondary data sources be carefully evaluated and gaps identified where primary collection of baseline data may be required. This may include ambient monitoring of air and water quality, biological surveys of potentially critical habitats, and archeological surveys of physical cultural resources.

23. Regardless of source, baseline data that is both accurate and relevant is essential when assessing potential impacts of the project.

Translation: အရင်းအမြစ်ကိုဂရုမထားဘဲ၊ ထို အခြေခံမျဉ်း အချက်အလက် ၂ခုလုံး သည် တိကျဆက်စပ်သည်။

i) Data accuracy can often be evaluated against relevant quality assurance and control (QA/QC) standards. For example, baseline data for a potential drinking water source can be assessed by evaluation against international and/or national QA/QC standards for field sampling, lab analysis, and data reporting.
ii) Data relevance is often a simple matter of ensuring that what is being reported adds value to understanding the project's potential impacts. Irrelevant data can lead to confusion and should be avoided whenever possible.

---

5 Secondary data are existing data obtained from existing internal or external sources; primary data are collected directly by the expert(s) conducting the assessment and/or or by researcher/consultants recruited by the MOC/PWD for the purpose of conducting surveys, sampling and analysis, or other primary data collection techniques.

24. Limitations of data used in the environmental analysis, such as the extent and quality of available data, assumptions and key data gaps, and uncertainties associated with predictions, should be clearly identified and documented in the environmental assessment report. Some types of baseline information may have more limitations than others.

G. Assessment of Impacts and Risks

25. Assessing the type, nature and significance of impacts and risks posed by the project is the "technical heart" of the EIA process. This includes identifying all potential direct, indirect, cumulative and induced environmental impacts 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 non-government organizations (NGOs).

Translation: အမျိုးအစားအကဲဖြတ်ခြင်း၊ စီမံကိန်း၏ အကျိုးသက်ရောက်မှုများနှင့် စွန့်စားမှုများတွင် သဘာဝနှင့် ရည်ရွယ်ချက် သည် EIA ဖြစ်စဉ်၏ နည်းပညာဆိုင်ရာ အချက်အချာဖြစ်သည်။ ၄င်းတွင် အလားအလာရှိသော တိုက်ရိုက် ဖော်ထုတ်မှုအားလုံး၊ သွယ်ဝိုက်သော၊ ထပ်မံဖြည့်စွက်၍ များလာခြင်းနှင့် သဘာဝတရားသို့ပတ်ဝန်းကျင်ဆိုင်ရာ အကျိုးသက်ရောက်မှုများ နှင့် စွန့်စားမှုများ တိုက်တွန်းခဲ့ခြင်း၊ ဇီဝဗေဒနှင့်ဆိုင်သော၊ လူမှုစီးပွားရေးနှင့်ဆိုင်သော၊ သဘာဝယဉ်ကျေးမှုအရင်းအမြစ်များနှင့် ၄င်းတို့၏ အကျိုးသက်ရောက်မှုများသတ်မှတ်ပိုင်းခြားခြင်းနှင့် stakeholders များနှင့် အကြံဉာဏ်ရယူခြင်း အခွင့်အလမ်း၊ အများပြည်သူအတွက် အကျိုးသက်ရောက်မှုရှိခြင်းအပါအဝင် အစိုးရမဟုတ်သော အဖွဲ့အစည်းများပါဝင်သည်။

26. Impacts and risks are to be evaluated against the requirements presented in SR1[6] and the applicable laws and regulations of theMOECAF.

Translation: ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့် သစ်တောရေးရာဝန်ကြီးဌာန၏ သင့်လျော်သောဥပဒေများ၊ စည်းမျဉ်းစည်းကမ်းများ နှင့် SR1 တွင် ဖော်ပြထားသော လိုအပ်ချက်များကို ဆန့်ကျင်သော အကျိုးသက်ရောက်မှုများနှင့် စွန့်စားမှုများအား တန်ဖိုးဖြတ်ရန်ဖြစ်သည်။

1. Project Area of Influence

27. Project impacts and risks are analyzed in the context of the project's area of influence.This encompasses:

i) the primary project site and related facilities developed or controlled by the MOC/PWD and its contractors, such as road/highway corridors, canals/drainages, tunnels, access roads, borrow pits and disposal areas, and construction camps;
ii) associated facilities, which are facilities that are not funded by the project but whose viability and existence are entirely dependent upon the project, and whose goods or services are essential for the project's successful operation;
iii) areas and communities potentially affected by cumulative impacts; and
iv) areas and communities potentially affected induced impacts.

6 Specific 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 are discussed in Chapter III.

28. Associated facilities that are not funded by the project are sometimes beyond the control and influence of the MOC/PWD. Therefore, they are not evaluated as part of the project environmental assessment. However, associated facilities require due diligence on the part of both the MOC/PWD and ADB to determine the level of risk to the environment and affected people, and assess if the facility's environmental management is generally consistent with ADB's safeguard objectives and requirements. Due diligence may be undertaken through a review of documentation or a site visit. ADB may choose not to fund a project if due diligence shows that the environmental practices of associated facilities not under the influence of the MOC/PWDare not consistent with ADB's safeguard objectives and requirements. However, it is international good practice to first explore with the facility operator/owner whether the facility (be it existing or proposed) can be brought into compliance, and if so to agree on required actions and a time-line for their implementation.

29. The area of influence does not include potential impacts that (i) occur eitherindependently of the project,or (ii) impacts that would have occurred had the project not taken place.

2. Type, Nature and Significance of Environmental Impacts

30. Environmental impacts vary in their type, nature and significance.
Translation: ပတ်ဝန်းကျင်ဆိုင်ရာ အကျိုးသက်ရောက်မှုများသည် ၎င်းတို့၏ အမျိုးအစား၊ သဘာဝနှင့် ရည်ရွယ်ချက်တို့သည် ခြားနားသည်။

a. Type of Environmental Impacts

31. An environmental assessment is usually able to identify whether or not a project may have the following impacts:

i) Physical,including impacts on surface and ground water; soils; minerals; land forms and topography; and air and climate.
ii) Biological, including impacts on aquatic and terrestrial flora and fauna; habitat and ecosystems; and endangered or critically endangered species and protected areas.
iii) Socioeconomic, including impacts on occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media (e.g. dams may disrupt downstream fisheries, drinking water supplies, and irrigation networks, etc.; project-related pollution may cause demonstrated decreases in agricultural, forest, fishing yields, etc.).[7]
iv) Impacts on physical cultural resources.

b. Nature of Environmental Impacts

32. Impacts can typically be classified as direct, indirect, cumulative and induced.

i) **Direct Impacts** are adverse and/or beneficial environmental impacts which can be immediately traced to a project activity. For example, clearing part of a forest to build a road will have a direct impact of reduced forest cover.
ii) **Indirect Impacts**are adverse and/or beneficial environmental impacts which

7 See ADB's Safeguard Policy Statement paragraph 6 of Safeguard Requirement 2 for more information on safeguard requirements for livelihoods impacts caused by project activities other than land acquisition.

cannot be immediately traced to a project activity but can be causally linked.[8] Indirect impacts are more common in large scale projects that have complex physical, biological or socioeconomic cause-effect pathways.

iii) **Induced impacts** are adverse and/or beneficial impacts on areas and communities from unplanned but predictable developments caused by a project which may occur later or at a different location. For example, a new road may be established crossing a forest or biologically sensitive area to provide access to a mining site. If the road remains open to the public after project construction it could facilitate population growth and economic activity, which could induce deforestation or loss of important biodiversity. The actual impacts of induced development over a long time horizon may be difficult to predict.

iv) **Cumulative impacts** are the combination of adverse and/or beneficial impacts on areas and communities from existing projects, the proposed project, and anticipated future projects that can be realistically defined at the time the assessment is undertaken. It may also include assessing whether the incremental pollution contribution from the project is expected to result in exceedances of relevant MOECAF ambient air quality standards.

c. Significance of Environmental Impacts

33. Significant adverse environmental impacts are negative impacts to physical, biological, socioeconomic, and physical cultural resources that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works.

3. Depth of Environmental Assessment Analysis

34. The level of detail and comprehensiveness of an environmental assessment should be commensurate with the significance of the potential impacts and risks. Projects with limited potential risk and impacts often focus assessment effort on direct impacts with site-specific cause-effect linkages. Projects with a broad range of potential significant risks and impacts should conduct a more balanced assessment of direct, indirect, cumulative and induced impacts as appropriate.

4. Impacts Assessment Methodologies

35. There is a variety impact assessment methodologies, including but not limited to the ad hoc method; checklists; impact assessment matrices; predictive modeling;[9] and the use of industry or activity specific guidelines.[10] The type of impact prediction methodologies

---

8Indirect impacts are sometimes referred to as secondary impacts; the term is also at times used interchangeably with "induced impacts". For example, a project's pollution may directly impact water quality in the river. This direct impact may lead to an indirect impact on fish in the river. In turn, the impact on the fish population may lead to an indirect impact of reduced harvests of fish with corresponding reductions in fishing incomes.

9 If predictive modeling is used, the suitability of the model should be justified, including underlying principles and assumptions; objective of the study; the situation being modeled, and expected outputs; justification on the choice of the model including citing earlier applications to similar circumstances; data, variables, constants and assumptions used; development of the model and its conversion into a software package and limitations, if any; details of the experience and training of the consultants using the model; calibration of the model; validation of the model; summary of numerical output; margin of errors, and their implications for the objectives of the study and the conclusions.

10 The MOC/PWD is encouraged to make use international recognized guidance on environmental assessment, such as the World Bank Group's Environmental, Health and Safety Guidelines (the EHS Guidelines) which provides guidance on over 60 industry and project activities in 8 sectors.
See: http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines.

adopted and the breadth and depth of analysis are to be commensurate with the impacts and risks posed by the project. In addition to adverse impacts and risks, the assessment can also assess potential positive or beneficial impacts of a project and propose measures to enhance them.

Table 1: Main advantages and disadvantages of selected impact identification methods

Method	Advantages	Disadvantages
Ad Hoc *e.g. expert opinions of an assembled group of relevant experts*	• Easy to use, quick and can be inexpensive. • Results may be communicated to lay people easily, depending on communication abilities of experts.	• May not encompass all the relevant impacts. • The relative weights of various impacts cannot be compared because the criteria used to evaluate impacts are not comparable. • Inherently inefficient as it requires sizeable effort to identify and assemble an appropriate panel of experts for each assessment; and it provides minimal guidance for impact analysis while suggesting broad areas of possible impacts.
Checklists	• Easy to understand and use. • Good for site selection and priority setting. • Simple ranking and weighting.	• Do not distinguish between direct and indirect impacts. • Do not link action and impact. • The process of incorporating values can be controversial.
Matrices	• Link action to impact. • Good method for displaying results.	• Difficult to distinguish direct and indirect impacts. • Have potential for double-counting of impacts.
Predictive modeling	• Excellent for impact identification and spatial analysis. • Good for “experimenting”.	• Heavy reliance on knowledge and data. • Often complex and expensive.

5. Existing Activities or Facilities

a. Environmental Audits of Existing Facilities

36. Existing activities or facilities are those that already existed or were under construction prior to ADB's involvement. When a project involves existing activities or facilities, environmental audits are required to determine the existence of any areas where the project may cause or is causing environmental risks or impacts.

Translation: တည်ရှိနေသောလုပ်ရှားမှုများ (သို့မဟုတ်) ဆောင်ရွက်မှုများသည် တည်ရှိပြီးဖြစ်ပြီး (သို့မဟုတ်) တည်ဆောက်ခြင်းအောက်တွင် ADB နှင့်ပတ်သက်မှု ရှိရမည်။

37. An environmental audit is an independent assessment conducted by external expert(s) focusing on an existing facility's environmental compliance policies, practices, and controls, and the nature and extent of any significant adverse environmental issues within the facility's site and adjacent area as a result of historical or current activities, including contamination of soils, surface and ground water, and structures. The audit identifies and justifies appropriate measures to mitigate the areas of concern, estimates the cost of the measures, and recommends a schedule for implementation. International good practice dictates that the audit takes into account facility operations at full load under routine circumstances including intermittent exceedances during startups, shutdowns, and warm-up periods. It is also good practice for auditors to examine health impacts in nearby communities and interview affected stakeholders.If the project does not foresee any new major expansion, the audit constitutes the environmental assessment for the project.

38. A typical environmental audit report includes the following major elements (sample outline is provided in **Appendix 6**):

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.

39. The environmental audit should be undertaken by external experts who are not involved in day-to-day project implementation or supervision and who have the appropriate expertise and experience for the activities or facilities under construction.
Translation: ပတ်ဝန်းကျင်ဆိုင်ရာစစ်ဆေးသူသည် ပြင်ပကျွမ်းကျင်သူများကိုမည်သူသည် နေ့စဉ် စီမံကိန်းအကောင်အထည်ဖော်ခြင်း (သို့မဟုတ်) ကြီးကြပ်ခြင်းတို့တွင်မပါဝင်သည်ကို တာဝန်ယူသင့်သည်။

b. Corrective Action Plan

40. If the environmental audit identifies issues that are not consistent with ADB requirements, a corrective action plan should be prepared.A corrective action plan typically:
Translation: အကယ်၍ ပတ်ဝန်းကျင်ဆိုင်ရာစစ်ဆေးသူသည် ADB လိုအပ်ချက်များနှင့် အပြောင်းအလဲ မရှိသော ထုတ်ပြန်ချက်များကို ဖော်ထုတ်လျှင် အများမှ အမှန်သို့ရောက်ရှိစေသော ဆောင်ရွက်မှု အစီအစဉ်ကို ပြင်ဆင်သင့်သည်။

i) describes corrective actions necessary to address each area of concern;
ii) prioritizes these actions;
iii) identifies costs and responsibilities for implementation of each corrective action;
iv) identifies a time-line for their implementation; and,
v) presents a schedule for communicating the results of plan implementation to affected communities (if relevant) and ADB.

6. Assessment of Transboundary and Global Impacts

41. Project environmental assessment includes identifying potential transboundary effects and global impacts.

42. Transboundary impacts are impacts that extend beyond Myanmar to multiple countries, but are not global in nature. Examples include air pollution extending to multiple countries, the use or pollution of international waterways, and transboundary epidemic disease transmission. When evaluating transboundary impacts it may be useful to consider an ecosystem or ecoregion approach.

43. Typical transboundary issues to study in the assessment include:

i) adverse regional effects from air pollution or extraction of water from or pollution of international waterways;
ii) whether the affected countries and Myanmar have entered into any agreements or arrangements or have established any institutional framework regarding the potentially affected airshed, waterway, subsurface water, or other resources; and
iii) any unresolved differences between the affected and Myanmar regarding the potentially affected resource.

44. Global impacts are impacts that may not necessarily be the result of a specific project, but when taken together with impacts created by other human activities can become globally significant. Examples include climate change as a result of the emission of greenhouse gases and impacts on globally-endangered species and habitats.

7. Impacts on Disadvantaged or Vulnerable Groups.

45. Environmental assessment includes examining whether vulnerable or disadvantaged individuals and groups may be differentially or disproportionately affected by the project's potential adverse environmental impacts, in particular the poor, women and children, and Indigenous Peoples.There may be individuals or groups within the project area of influence who are particularly vulnerable or disadvantaged and who could experience adverse impacts from the proposed project more severely than others. For example, the poor living adjacent to or within a road right-of-way may be disproportionately affected by automotive pollution resulting from a road expansion project, and women who harvest mangroves for firewood may be affected if those mangrove areas will be cleared to build a port.
Translation: ပတ်ဝန်းကျင်ဆိုင်ရာ ဆန်းစစ်ခြင်းတွင် အားနည်းချက်တစ်ခုမဟုတ်တစ်ခုစစ်ဆေးခြင်း (သို့မဟုတ်) သီးခြားအားနည်းချက်နှင့် အဖွဲ့များခွဲခြားနိုင်သည်။ (သို့မဟုတ်) ဆင်းရဲသားများ၊ အမျိုးသမီးများ၊ ကလေးများနှင့်တိုင်းရင်းသားလူမျိုးများ တစ်ဦးချင်းအလိုက် အချိုးအစားမကျသော အကျိုးသက်ရောက်မှုများ ၊ စီမံကိန်း၏အလားအလာရှိသော ကောင်းကျိုး မပြုသည့် ပတ်ဝန်းကျင် အကျိုးသက်ရောက်မှုများ

46. Where it is anticipated that the project may impact one or more communities, accepted sociological methods such as stakeholder analysis, rapid rural appraisal, focus group interviews, social surveys, etc, can be used to:

i) identify and locate vulnerable individuals or groups within the affected community population;
ii) assess potential impacts, including differentiated impacts, on these individuals and groups; and
iii) propose measures to ensure that potential impacts and risks to them are appropriately avoided, minimized, mitigated or compensated. Following from the examples above, physical barriers could be established along the road to protect the poor living adjacent to it from noise and air pollution; and women could be provided access to alternative fuel sources.

47. It is international good practice for project monitoring to track these individuals or groups on a disaggregated basis. Specific considerations and measures for Indigenous Peoples are also described in SR3.[11]

H. Mitigation Measures and Environmental Management Plan

1. EMP Contents

48. An EMP is an action and management plan agreed to by the MOC/PWD and ADB. The EMP should follow the IFC's Environment, Health and Safety Guidelines including the following, with the level of detail commensurate with the project's impacts and risks:
Translation:ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ဆိုသည်မှာ MOC/PWD နှင့် ADB သဘောတူထားသော

11 Appendix 3 to the SPS.

လုပ်ဆောင်မှုနှင့် စီမံခန့်ခွဲမှုအစီအစဉ် ဖြစ်သည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်သည် အောက်ပါတို့အပါအဝင် စီမံကိန်း၏အကျိုးသက်ရောက်မှုများနှင့်စွန့်စားမှုများနှင့်အတူ ညီမျှသော အသေးစိတ်အချက် အလက်အဆင့်နှင့် IFC'ဒ၏ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် လုံခြုံမှုဆိုင်ရာ ညွှန်ကြားချက်များ လိုက်နာသင့်သည်။

- **Mitigation measures**, including a summary of anticipated significant adverse environmental impacts and risks; a description of 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, links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

- **Environmental monitoring and reporting requirements**, 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.

- **Emergency response procedures** (as relevant), with technical details such as assigned responsibilities; specific emergency response procedures; procedures for training for emergency response teams; emergency contacts and communication systems/protocols; procedures for interaction with local and regional emergency and health authorities; permanently stationed emergency equipment and facilities (e.g. first aid stations, fire extinguishers/hoses, sprinkler systems); protocols for fire truck, ambulance and other emergency vehicle services; evacuation routes and meeting points; drills; etc.

- **Institutional or organizational arrangements**, describing responsibilities for carrying out the mitigation and monitoring measures, plus sanctions for not adequately implementing those responsibilities.

- **Grievance Redress Mechanism** to receive, evaluate, and address affected peoples' projected-related concerns, complaints, and grievances.

- **Capacity development and training measures**, including technical assistance programs, training programs, procurement of equipment and supplies.

- **Implementation schedule** showing phasing and coordination with overall project implementation.

- **Cost estimates** including capital and recurrent costs, and describing sources of funds for implementing the EMP.[12]

12 Developing costs estimates for EMP mitigation measures may be challenging, particularly at early stages in the project cycle and/or where mitigation measures such as cleaner production technologies are integrated into overall project costs.

- **Performance indicators** which describe the desired outcomes as measurable events to the extent possible. (See section F of this chapter for additional information).

49. The EMP should cover all project stages including design, construction, operation and, if relevant, decommissioning/closure. It forms part of the environmental assessment report, although in some cases the MOC/PWD may choose to prepare a stand-alone EMP, and should also be incorporated into the project financing plans and relevant contractual documents. The level of detail and complexity of the EMP should be commensurate with the project's impacts and risks.

Translation: ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်သည် ပုံစံအပါအဝင် စီမံကိန်းအဆင့်များအားလုံး၊ တည်ဆောက်ရေး၊ပြုလုပ်ခြင်း သည် ပယ်ဖျက်ခြင်း/ပိတ်ခြင်း နှင့် ဆက်စပ်ခဲ့လျှင်၊ ကာကွယ်သင့်သည်။ ၎င်းသည် ပတ်ဝန်းကျင်ဆိုင်ရာအကဲဖြတ်ခြင်းအစီရင်ခံစာအပိုင်း၏ပုံစံဖြစ်သည်။ သို့သော်လည်း အချို့ ကိစ္စများတွင် MOC/PWD သည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် သီးခြားရပ်တည်ပြင်ဆင်နိုင်ရန် ရွေးချယ်နိုင်ပြီး စာချုပ်စာတမ်းဆိုင်ရာအထောက်အထားများနှင့်ဆက်စပ်သော စီမံကိန်းငွေကြေး ထောက်ပံ့ ပေးခြင်း အစီအစဉ်နှင့် ပေါင်းစပ်ထားသင့်သည်။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၏ ခက်ခဲရှုပ်ထွေးမှုနှင့် အသေးစိတ်အချက်အလက်အဆင့်တို့သည် စီမံကိန်း၏အကျိုးသက်ရောက်မှုများနှင့် စွန့်စားမှုများနှင့် အတူတကွ အချိုးမျှသင့်သည်။

50. **Appendix 7**provides an annotated outline for an EMP. **Appendix 8** provides several sample impact assessment and mitigation matrices which may be useful in preparing EMP.Well-planned and implemented EMPs are essential for environmental safeguards compliance. EMPs that address these issues (by allocating budget, technical support, etc.) are more likely to achieve their compliance objectives.

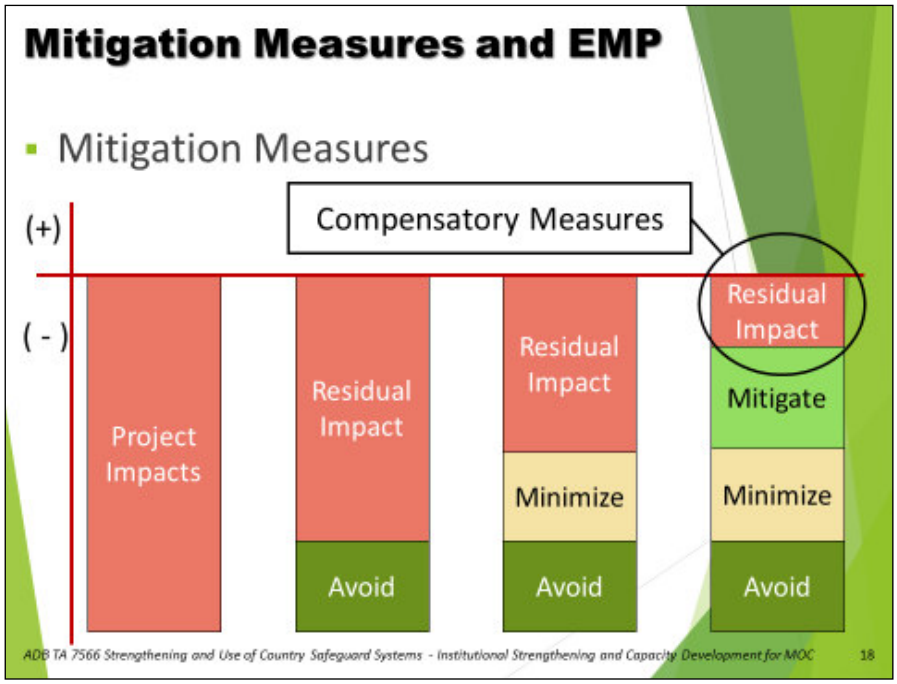
Translation:နောက်ဆက်တွဲ-ဂ တွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်အတွက် မှတ်ချက်ရေးခဲ့ရန် အကြမ်းဖော်ပြချက် စီစဉ်ထားသည်။ နောက်ဆက်တွဲ-ဓ တွင် အချို့ နမူနာ အကျိုးသက်ရောက်မှု အကဲဖြတ်ခြင်းနှင့်လျော့ပါးစေခြင်းအခြေအနေများစီစဉ်ပေးထားပြီး မည်သည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် ပြင်ဆင်ခြင်း၌ အသုံးဝင်နိုင်သည်။

2. Mitigation Measures

51. The most common approaches to mitigate impacts are, in order of priority, avoid, minimize, mitigate or compensate. [13]

Translation:အကျိုးသက်ရောက်မှုများလျော့ပါးရန် အများနှင့်အဆိုင်ဆုံး ချဉ်းကပ်နည်းများမှာ ဦးစားပေးအရ ရှောင်ရှားရန်၊ နည်းနိုင်သမျှနည်းစေရန် (သို့မဟုတ်) လျော်ကြေးပေးရန်ဖြစ်သည်။

13 Avoidance, minimization and mitigation measures are commonly collectively referred to as mitigation measures. The order of priority in which they are applied is referred to as the mitigation hierarchy. The hierarchy is based on the widely acknowledged principle that it is preferable to prevent the generation of an impact rather than counteract its effects.



52. Implementing measures to **avoid** negative impacts from occurring at all is first priority, and can be the most effective and least cost approach. Options for impact avoidance will depend on the nature of the project and its area of influence, and may include alternative engineering processes and construction practices; regulating the timing of construction and other activities; variations in the layout of the project site; selection of different sites or routing of linear facilities; and screening of suppliers to select those with appropriate environmental risk management.

53. If complete avoidance of impacts is not achievable, the next level of priority is to **minimize** impacts, typically through changes in project design, technologies, or operating rules. For example, adopting cleaner production and energy efficiency technologies and practices can minimize the amount of pollutants generated. The assessment of alternatives can help determine the best method of achieving project objectives while avoiding or minimizing environmental impacts.

54. The third level of priority is to **mitigate** the negative impacts caused by the project when avoidance or minimization are not sufficient.

55. In some cases despite the application of avoidance, minimization and mitigation measures the project may still have significant predicted residual impacts. For example, the clearing of trees in order build a highwaywill be a residual impact(replanting in the same location is not possible since the location will be permanently flooded). When residual impacts are expected, **compensatory measures** such as biodiversity or emission offsets that aim to ensure that the project does not cause significant net degradation to the environment may be implemented. In exceptional circumstances financial compensation may be used to provide a similar benefit for affected peoples who have lost environmental benefits as a result of a project's residual impacts, such as the inability to harvest plants or animals from a projected affected forest. In such cases the compensation may be used, frequently by another party such as the government (MOECAF), to provide environmental benefits of the same nature (e.g., to provide access to another forested area), and compensation should be commensurate with the loss caused by the project.

56. The selection of specific measures and the determination of their effectiveness should be based on applicable Myanmar laws, regulations and standards, and the requirements specified in SR1 such as international good practice.[14] Other considerations include the polluter pays principle, which requires that the costs of mitigation are borne by the polluter.

3. Monitoring and Reporting

a. Environmental Monitoring

57. Monitoring involves measuring, tracking, evaluating and reporting compliance with action items and outcomes specified in the EMP. An effective monitoring system includes performance indicators or targets that can be monitored over defined periods.
Translation: ထိန်းချုပ်စောင့်ကြည့်အကဲဖြတ်ခြင်းတွင်တိုင်းတာခြင်း၊ခြေရာကောက်ခြင်း၊ တန်ဖိုးဖြတ်ခြင်းနှင့် အစီရင်ခံခြင်း တို့သည် လှုပ်ရှားမှုအချက်များနှင့်ခွင့်ပြုပြီး ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် တွင် သတ်မှတ်ခဲ့သော ရလဒ်များပါဝင်သည်။ အကျိုးသက်ရောက်မှုရှိသော ထိန်းချုပ်စောင့်ကြည့်အကဲဖြတ်ခြင်း အစီအစဉ်တွင် ညွှန်ပြချက်ဆောင်ရွက်မှုများ (သို့မဟုတ်) ပစ်မှတ်များသည် သတ်မှတ်ထားသော ကာလအပေါ်တွင် စောင့်ကြည့်အကဲခတ်နိုင်သည်။

58. The extent of monitoring activities is commensurate with the project's risks and impacts.

- For projects with modest impacts that can be readily mitigated monitoring may be limited to inspections to verify compliance with EMP avoidance, minimization, mitigation and/or compensation requirements and with relevant laws and regulations.
- For projects generating waste streams, in addition to compliance inspections, monitoring may also involve the sampling and analysis of air, liquid or solid wastes (e.g. source monitoring) in order to assess their quantity and/or quality against requirements specified in the EMP.
- For projects generating waste streams with the potential for significant impacts or in already polluted areas, ambient monitoring to assess the quality of the receiving environment (e.g., air quality, water quality, or noise levels in the project area of influence) in addition to compliance inspections may be required. Ambient monitoring may provide useful feedback on the extent and severity of actual environmental impacts against predicted impacts and relevant ambient standards specified in the EMP.[15]
- For projects with potential biodiversity impacts, monitoring could include terrestrial or aquatic biodiversity surveys or tracking of habitat extent and/or quality.

---

14 International good practice for mitigation selection is reflected in various internationally recognized sources, including the World Bank Groups' Environmental, Health and Safety Guidelines (the EHS Guidelines), technical reference documents which contain the performance levels and measures that are normally acceptable to ADB and are generally considered to be achievable at reasonable costs by existing technology.

15 For source or ambient monitoring, good practice suggests that the following be clearly identified: monitoring objectives, including performance indicators; parameters to be monitored; baseline conditions as presented in the environmental assessment (if relevant), or additional baseline sampling needs (if required); sampling and analysis methods; frequency of measurements; sampling locations; detection limits (where appropriate); standards against which results are to be evaluated and (if different) the definition of thresholds that signal the need for corrective actions; and quality assurance/quality control procedures. Good practice also indicates that appropriate processes are put in place to ensure the reliability of data, such as calibration of sampling and field and laboratory testing equipment.

59. Monitoring also covers significant events or issues encountered during construction and operation; changes in project design and EMP, including corrective actions, if applicable; and compliance with the relevant provisions in the project legal agreement.
Translation: ထိန်းချုပ်စောင့်ကြည့်အကဲဖြတ်ခြင်းသည် အရေးပါသောအဖြစ်အပျက်များ (သို့မဟုတ်) တည်ဆောက်ခြင်းနှင့် ဆောင်ရွက်နေစဉ်အတွင်း ဆုံးဖြတ်ရန်အချက်များ တွေ့ဆုံခဲ့ပြီးဖြစ်ကာ သက်ဆိုင်လျှင် စီမံကိန်းပုံစံတွင် အပြောင်းအလဲများနှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်၊ အများမှအမှန်သို့ ရောက်ရှိစေသော ဆောင်ရွက်မှုများအပါအဝင် စီမံကိန်းတရားဝင်သဘောတူညီမှုဥ ဆက်စပ်နေသော ပြဋ္ဌာန်းချက်များနှင့်အတူ အကာအကွယ်ပေးထားသည်။

b. Monitoring of Projects with Significant Adverse Environmental Impacts

60. When monitoring projects likely to have significant adverse environmental impacts, the MOC/PWDshould retain qualified and experienced externalexperts or qualified NGOs to verify its monitoring findings.External experts or NGOs are expected to have extensive experience in the design, delivery and quality assurance/quality control aspects of monitoring relevant to the specific design of the project monitoring program. The external experts or NGOs may need to conduct site inspections so as to be able to review and verify with confidence project monitoring reports produced by the MOC/PWD.
Translation:
စီမံကိန်းများတွင် အရေးပါသော ကောင်းကျိုးမပြုသည့် ပတ်ဝန်းကျင်ဆိုင်ရာ အကျိုးသက်ရောက်မှုများ ဖြစ်နိုင်ဖွယ်ရှိပြီး MOC/ PWD သည် အရည်အချင်းနှင့် အတွေ့အကြုံရှိသော ပြင်ပမှကျွမ်းကျင်သူများ(သို့မဟုတ်) ၎င်းတို့၏ စောင့်ကြည့်အကဲဖြတ်ခြင်း တွေ့ရှိချက်များတွင် အတည်ပြုရန် အရည်အချင်းပြည့်မီသော NGOs များ ငှားရမ်းသင့်သည်။ ပြင်ပမှကျွမ်းကျင်သူများ (သို့မဟုတ်) NGOs များသည် တည်နေရာစစ်ဆေးခြင်းစီမံခန့်ခွဲရန် လိုအပ်နိုင်ပြီး MOC/PWD မှထုတ်ဝေထားသော စီမံကိန်း စောင့်ကြည့်အကဲဖြတ်ခြင်းအစီရင် ခံစာအားပြန်လည် သုံးသပ်ပြီး အတည်ပြုနိုင်သည်။

	significant adverse impacts	=	MOC/PWD to retain qualified and experienced external experts or qualified NGOs

c. Corrective Action Plan

61. If monitoring identifies weakness or deficiencies in the implementation of the EMP, the MOC/PWD may need to develop a corrective action plan. Corrective actions could range from improving technical aspects of mitigation implementation to enhancing the environmental management capacity of implementing agencies. A corrective action plan generally:
Translation:အကယ်၍ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် အကောင်အထည်ဖော်မည်ဆိုလျှင်အားနည်းချက် သို့မဟုတ်လိုသည်ထက်လျော့နည်းခြင်းကိုစောင့်ကြည့်အကဲဖြတ်လျှင်MOC/PWDသည်အများမှအမှန်သို့ ရောက် ရှိစေသော ဆောင်ရွက်မှုများ ဖွံ့ဖြိုးရန် လိုအပ်သည်။

i) describes corrective actions necessary to address each area of concern;
ii) prioritizes these actions;
iii) identifies responsibilities for implementation of each corrective action;

iv) identifies a time-line for their implementation; and,
v) presents a schedule for communicating the results of plan implementation to affected communities and ADB.

62. The MOC/PWD is encouraged to follow-up systematically until the required actions are implemented effectively.

d. Reporting

63. The MOC/PWDshould prepare periodic monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. Project budgets should reflect the costs of monitoring and reporting requirements, and should be posted in a location accessible to the public. Sample outlines for environmental monitoring reports are provided in **Appendixes 9 and 10**. The World Bank Group's *Environment, Health and Safety Guidelines* (the "EHS Guidelines") provide further technical guidance on source and air, water and noise ambient monitoring.[16]
Translation: အကယ်၍ MOC/PWD သည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အကောင်အထည်ဖော်ခြင်း ဖြစ်စဉ်တွင် ဖော်ပြထားသောစောင့်ကြည့်အကဲဖြတ်ခြင်းအစီရင်ခံစာများ ၊ ထုတ်ပြန်ချက်များနှင့် အမှားမှအမှန်သို့ရောက်ရှိစေသောဆောင်ရွက်မှုများကိုလိုက်နာရန်ကြိုးတင်ပြင်ဆင်သင့်ပြီးသို့မှသာစီမံကိန်း ဘတ်ဂျတ်တစ်စုံတစ်ရာသည်စောင့်ကြည့်အကဲဖြတ်ခြင်းနှင့်အစီရင်ခံခြင်းလိုအပ်ချက်များ၏ကုန်ကျစရိတ် အား ကာမိစေနိုင်မည်ဖြစ်သည်။

The reporting requirements are commensurate with the project's potential risks and impacts:

i) Construction Phase:
   - for projects likely to have significant adverse environmental impacts during the construction period, at minimum semi-annual reporting to ADB is required.
   - for projects designated as highly complex and sensitive, at minimum quarterly reporting to ADB is required.
ii) Operation Phase:
   - for projects likely to have significant adverse environmental impacts during operation, reporting to ADB will continue at minimum on an annual basis.

4. Performance Indicators

64. The EMP should define expected outcomes as measurable, reportable and verifiable performance indicators to the extent possible.Performance indicators provide a linkage between impacts and mitigation measures identified in the environmental assessment report, and are used to track and assess the overall effectiveness of EMP implementation. Effective performance indicators are tailored to the nature of the proposed project, the severity of its predicted impacts and risks, and the sensitivity of the project area of influence. They are typically based upon data collected as part of the environmental monitoring program specified in the EMP.
Translation: ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုအစီအစဉ်တွင် ဖြစ်နိုင်သော ပမာဏကို တိုင်းတာနိုင်သော၊ အစီရင်ခံနိုင်သော နှင့် တိကျသော ဆောင်ရွက်မှု ညွှန်ပြချက်များကဲ့သို့ မျော်လင့်ထားသောရလဒ်များ သတ်မှတ်သင့်သည်။

16 Available at: http://www.ifc.org/ifcext/sustainability.nsf/Content/EHSGuidelines.

5. Third Party Risks

65. At times the involvement of a third party[17]may influence implementation of the EMP, particularly in non-sovereign projects. A third party may include a government agency, a contractor, or an operator of an associated facility.The larger the project area of influence, the more likely that third party action or nonperformance could pose risks to a project. The environmental assessments should identify potential third party risks to the extent practical. Engagement and collaboration with the third party may help manage these risks, particularly in cases where the MOC/PWD has a degree of control or influence over the third party. Specific actions are to be determined on a case-by-case basis.

66. It is particularly important that contractors understand and acknowledge their responsibilities under the EMP. The MOC/PWD should incorporated relevant requirements from the EMP into their bidding and contract documents. It may be appropriate to include a payment procedure that encourages the contractor to fulfill its environmental obligations.There are several approaches on how to do this, including:
Translation:ထိုအရာသည် ကန်ထရိုက်တာများသည် ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုအစီအစဉ်အောက်တွင် ၎င်းတို့၏တာဝန်များကို နားလည်လက်ခံနိုင်ရန် တစ်ဦးချင်းစီအတွက် အရေးကြီးသည်။ MOC/PWD သည် ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုအစီအစဉ်မှ ၎င်းတို့၏ တင်ဒါနှင့် စာချုပ်အချက်အလက်များနှင့် ဆက်စပ်သော လိုအပ်ချက်များကို တရားဝင်ပေါင်းစပ်သင့်သည်။

i) mitigation measures to be implemented by the contractor could be incorporated into the Bill of Quantities (BoQ) - under this approach the contractor will have a direct financial interest in complying with their environmental obligations. Non-certification of the mitigations will prevent payment being made. The drawback to this system is that if the contractor decides not to carry out the work, then they will simply not be paid. As no expenses were incurred the contractor does not lose money and is not effectively penalized.
ii) a performance bond to guarantee the contractor will complete the construction works according to the contract terms, including quality, price and time
iii) a penalty for environmental non-compliance by with holding payment (from a general with holding amount, which is usually 5-10% of a contract). The challenge with this option is that the Engineer usually decides on what will be withheld (not the environment specialist); and the Engineer will balance an environmental penalty, with other projects issues. This means that 'environment' has to compete for limited penalty resources, often being dropped in the process.

67. Training for contractors on EMP measures may also be required.In the case of operators of associated facilities, if the project has a close relationship with the associated facility the MOC/PWD may be able exert influence to address identified risks.
Translation:

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အပေါ်တွင်တိုင်းတာခြင်းများအားကန်ထရိုက်တာများအတွက် လေ့ကျင့်မှုရာတွင်တိုင်းတာခြင်းနှင့်ပက်သက်သောအသုံးအဆောင်များလိုအပ်နိုင်သည်။အကယ်၍စီမံကိန်းသည် MOC/PWD အသုံးအဆောင်များနှင့် ပတ်သက်၍ အနီးကပ်အဆက်အသွယ်ရှိလျှင် ဖော်ထုတ်ခဲ့သောစွန့်စားမှုများကို ဖော်ပြရန် အသုံးပြုနိုင်သည်။

17 The other parties are the ADB and the MOECAF.

I. Assessment of Alternatives

68. Environmental assessment includes an examination of 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. Examining alternatives for projects with potentially significant impacts helps to determine the best method of achieving project objectives while minimizing environmental impacts. This process is most useful when the environmental assessment is undertaken early in the project cycle; a retroactive analysis of alternatives is not normally considered to be international good practice unless circumstances warrant.

Translation: ပတ်ဝန်းကျင်ဆိုင်ရာအကဲဖြတ်ခြင်းတွင် စီမံကိန်းတည်နေရာ အပြောင်းအလဲစစ်ဆေးခြင်း၊ ပုံစံ၊ နည်းပညာနှင့် အစိတ်အပိုင်းများပါဝင်ခြင်း မဖြစ်ရန်ရှောင်ကြည်ရလိမ့်မည်။ အကယ်၍ ရှောင်ကြည်ခြင်း သည်မဖြစ်နိုင်ခဲ့လျှင်ကောင်းကျိုးမပြုသောပတ်ဝန်းကျင်ဆိုင်ရာအကျိုးသက်ရောက်မှုများနှင့်စွန့်စားမှုများ ကို နည်းနိုင်သမျှနည်းစေရမည်။

69. The type and range of alternatives open to consideration includes:

i) **Location:** this may include the entire project (e.g. the location of a thermal power plant) or only some of its components (e.g. the location of a bridge as part of a road project).
ii) **Design:** this may include alternative approaches to any aspect of project design, usually analyzed at the planning or detailed that design phase of the project cycle (e.g. sealed versus unsealed road, width of road right-of-way).
iii) **Technology:** this may include technologies that have large differences in environmental impact (e.g. subcritical versus supercritical boilers for thermal power plants).
iv) **Components:** this may include alternatives to achieve similar objectives (e.g. an urban waste management project could include waste incineration or alternatively a landfill).

70. Alternatives should be assessed 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. The rationale for the selected option should be documented.

71. Consideration of alternatives should include a "no project" alternative; in some cases, this may be the only alternative to the project that can be realistically analyzed to understand the project's outcome and net contribution to development.

J. Information Disclosure, Consultation and Participation and Grievance Redress

1. Information Disclosure

72. Information disclosure involves delivering information about a proposed project to the general public and to affected communities and other stakeholders beginning early in the project cycle and continuing throughout the life of the project. Information disclosure is intended to facilitate constructive engagement with affected communities and stakeholders over the life of the project.

Translation:

သတင်းအချက်အလက် ထုတ်ဖော်ချက်သည် စီမံကိန်းသက်တမ်းအပေါ်၌ အထောက်အကူဖြစ်စေသော သီးသန့်လူစုများနှင့် stakeholders များ အကျိုးသက်ရောက်မှု ရှိခြင်းနှင့်ပတ်သက်မှုလွယ်ကူစေရန် ရည်ရွယ်သည်။

In order to make key documents widely available to the general public, SR1 requires the submission of the draft and finalized EIA (for Category A projects) and the final IEE (for Category B projects) to ADB for posting on the ADB website.[18, 19]

73. The disclosure information should be made available in appropriate form and language(s) utilized by the affected people and stakeholders and be written in plain (and vernacular) language accessible and understandable to the various segments of the affected communities.

Translation: သတင်းအချက်အလက် ထုတ်ပြန်ချက်သည် သင့်လျော်သောပုံစံနှင့် အများပြည်သူနှင့် stakeholderအတွက် အကျိုးသက်ရောက် မှုရှိသော သီးသန့်အဖွဲ့အစည်း၏ အမျိုးမျိုးသော အပိုင်းများကို နားလည်နိုင်ရန်နှင့်အကျိုးသက်ရောက်မှုရှိသောဘာသာစကားအသုံးချမှုဖြင့်ပေါ်လွင်အောင်ရေးသားနိုင်ရန် (တိုင်းရင်းသားဘာသာစကား) ပြုလုပ်သင့်သည်။

74. Information may be made available:

i) in project offices, village common areas, or at key project sites through booklets, pamphlets, maps, signs, etc;
ii) via newspapers, radio, TV, etc; and,
iii) in presentations, workshops, meetings, etc.

75. In areas where affected persons and stakeholders may be illiterate, communication methods can utilize non-written methods such as verbal presentations in community meetings, radio spots, and pamphlets and signs emphasizing pictorial communication methods. It is important to carefully document disclosure activities in terms of timing, materials distributed, and targeted audiences.

Translation: ထိုအရာသည် အချိန်ဇယား၊ ပစ္စည်းဖြန့်ဖြူးခြင်းနှင့် ရည်ရွယ်ထားသောပရိတ်သတ်အရ အချက်အလက်ထုတ်ပြန်ချက်လှုပ်ရှားမှုများသည် ဂရုစိုက်ရန် လိုအပ်သည်။

76. The timing and method of disclosure may vary depending on Myanmar law requirements, the project's risks and impacts, and the stage of the project's development or operation. For projects with potential adverse impacts to communities, international good practice is for the disclosure of information relevant to the environmental issues of the project to begin soon after the screening and categorization so as to solicit views and concerns of the potentially affected peoples. Such views and concerns can influence site selection and other aspects of the project design before excessive expenditure of project preparation funds locks the MOC/PWD into a less flexible position.

---

18 Specifically, SR1 requires that the MOC/PWD 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.

19 The reference in SR1 paragraph 17 subparagraph (i) to "environmental assessment and review frameworks" applies to sector lending and Multi Tranche Financing Facilities. See section L of this chapter for additional information.

Translation: စီမံကိန်း၏ ပတ်ဝန်းကျင်ဆိုင်ရာ ထုတ်ပြန်ချက်များနှင့် ပတ်သက်၍ တောင်းခံမှုမြင်ကွင်းအရ အလားအလာရှိသောအကျိုးသက်ရောက်မှုရှိသောလူများနှင့်ပတ်သက်၍စောင့်ကြည့်လေ့လာအကဲ ဖြတ်ခြင်းနှင့် အမျိုးအစားခွဲခြားခြင်းပြီးနောက်မကြာမီစတင်ရန် ဖြစ်သည်။

77. Information disclosure should continue throughout the project cycle so as to maintain a constructive relationship with affected communities over the life of the project, and to ensure that communities understand the risks, impacts and opportunities of the project. If information is not made available in a timely manner, affected communities and peoples may request MOC/PWD and/or project representatives to provide information updates, and if necessary may choose to engage the grievance redress mechanism.

Translation:သတင်းအချက်အလက်ထုတ်ပြန်မှုသည်စီမံကိန်းဖြစ်စဉ်အနှံ့အပြားဆက်လက်ထုတ်ပြန်သင့်သည်။

2. Consultation and Participation

a. Meaningful Consultation

78. Meaningful consultation goes beyond information disclosure. It involves two-way *communication* between the MOC/PWD and the affected communities and stakeholders, and active *participation* of affected communities and stakeholders in project design and implementation. Meaningful consultation provides opportunities for the MOC/PWD to learn from the experience, knowledge, and concerns of the affected communities, as well as to manage community expectations by clarifying the extent of its responsibilities and resources so that misunderstandings and unrealistic demands from either the MOC/PWD or affected communities can be avoided. Meaningful consultation also allows affected communities and stakeholders to engage in a genuinely deliberative process regarding choices they can make concerning their future.

Translation: လေးနက်သော ညှိနှိုင်းတိုင်ပင်မှုသည် သတင်းထုတ်ပြန်ချက် ဖြစ်ပါသည်။ ၎င်း တွင် MOC/PWD နှင့် အကျိုးသက်ရောက်မှုရှိသော သီးသန့်အဖွဲ့အစည်းများနှင့် stakeholders များ၊ အကျိုးသက်ရောက်မှုရှိသော သီးသန့်အဖွဲ့အစည်းများနှင့် stakeholders များမှ တက်ကြွသော ပါဝင်သူများ အကြား ဆက်သွယ်မှုနည်းလမ်း နှစ်ခုပါဝင်သည်။

79. Meaningful consultation:

i) begins early and is carried out on an ongoing basis throughout the project cycle. Initially the consultation may be implemented as part of the environmental assessment process.
ii) provides timely disclosure of relevant information;
iii) is free of intimidation or coercion;
iv) Is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and
v) requires the incorporation of relevant views of affected people and other stakeholders into project design and decision making, including the development of mitigation and compensation measures.

80. For environment Category A projects, consultation should take place at the early stage of EIA field work, when the draft EIA report is available during project preparation, and before project appraisal by ADB.

81. Modalities for consultation and participation during project implementation should be incorporated into the environmental assessment report and EMP, and throughout the life of the project the MOC/PWD is encouraged to build upon established channels of communication and engagement with affected communities to disclose information and receive feedback on the effectiveness of mitigation measures as well as affected communities' ongoing interests and concerns about the project.

82. Affected peoples and stakeholders will have access to relevant project information prior to any decision-making that will affect them. Relevant information includes: (i) key aspects of the assessment such as project activities and locations, (ii) identified impacts, mitigations measures, compensatory methods and amounts, and (iii) consultation and grievance mechanisms. Information should be provided in a form which is understandable and readily accessible to affected people.

For example, the MOC/PWD could meet with affected communities and stakeholders, presenting information on the project and answering questions and listening to comments and suggestions.[20] *In addition to community meetings open to members of the affected communities, the MOC/PWD could identify community leaders so that their input can be sought.*

83. Consultation occurs freely and voluntarily, without any external manipulation, interference, or threat of retribution, and is conducted in an atmosphere of transparency.
Translation: အကြံဉာဏ်ရယူခြင်းသည် ပြင်ပ ဝင်ရောက်စွက်ဖက်ခြယ်လှယ်မှု (သို့မဟုတ်) ချိန်းခြောက်မှု တစ်စုံတစ်ရာမရှိဘဲ ပွင့်လင်းမြင်သာမှုဖြင့် လွတ်လပ်စွာ မိမိသဘောဆန္ဒအလျောက် ဦးစီးဦးရွက်ပြုခြင်း ဖြစ်သည် ။

84. Consultation should be inclusive of various segments of the affected community, including both women and men, and accessible to the disadvantaged and vulnerable groups within the community. In highly stratified communities or societies, lower ranking socioeconomic groups, ethnic groups, or castes may normally have little voice in public forums, community consultations, and formal meetings with project and/or MOC/PWD officials. Similarly, women in some communities are censored or shamed into silence in such forums and may be spoken for by their husbands or other male relatives. These barriers to participation need to be positively addressed in a culturally sensitive manner.
Translation: အကြံဉာဏ်ရယူခြင်းသည် အားနည်းချက်ရှိသော အဖွဲ့များ၊အမျိုးသား၊ အမျိုးသမီးများ ပါဝင်သင့်သည်။

Ensuring consultation with and participation of women may require hiring female professionals and technical staff to engage female stakeholders. For other excluded low ranking groups, separate consultations without the presence of higher ranked groups are usually needed to obtain a full picture of the needs of the poor and vulnerable, and specialists in the participation of the poor and vulnerable may be required.

85. Meaningful consultation also involves communicating to affected people and other stakeholders the measures taken to address their concerns. It facilitates the sharing of development benefits and opportunities.

---

20 It is important that members of the MOC/PWD are actively engaged in consultation, participation in meetings with local communities, have direct dialogue with local community and government leaders, etc. Consultation that is highly dependent upon third party representation (such as consultants who prepared the environmental assessment) does not generally yield effective results.

b. Approaches to Consultation

86. There are a number ofapproaches that involve public consultation and information dissemination. A critical element ofpreparing for public consultation is associated with the selection of appropriate approaches. Available approaches maybe categorized into 3 types: i) disseminating information,ii) soliciting input, and iii) getting consensus on issues. Table 2 presents some good practices for carrying out public consultation.

Table 2: International good practice approaches to consultation

	Disseminating Information	Soliciting Input	Getting Consensus
Approaches	– Printed materials – Displays and exhibits – Advertising – Open houses	– Community liaison officer – Surveys and questionnaires – Interviews – Small public meetings – Public hearings	– Advisory panels – Problem solving techniques – Consensus-building techniques – Arbitration
Benefits	– Reaches large audience – Minimum demand on thepublic – Can provide detailedinformation	– Allows immediateresponse and feedback – Allows detailed andfocused discussion – Show sociological dataand quantify opinions,priority and concerns – Allows direct communication and exchange of informationand debate	– Can address highlytechnical problems – Helps prioritize and reach consensus – Impartiality from anuninvolved party
Challenges	– Ability to handle specificinterest is low – Excludes illiterates – Costs of preparation andstaffing	– Potential conflictsbetween officer andemployers – Requires specialists todeliver and analyze toavoid bias – Can be diverted byspecial interest groups	– Difficult to include fullrange of views – Requires highly skilledmediators – Difficult to identify anacceptable neutral party – Can be time consuming and costly

87. Consultation needs to be commensurate with the impacts on affected communities. The MOC/PWD can seek ADB's input to assist in developing an appropriatelyscaled consultation process. The MOC/PWD may also wish to consult ADB's *Staff Guide to Consultation and Participation* for further guidance on consultation and participation.[21]

c. Reporting on Consultation

88. The consultation process and its results should be documented and reflected in the environmental assessment report.
Translation:
အကြံဉာဏ်ရယူခြင်း လုပ်ငန်းစဉ်နှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အကဲဖြတ်ခြင်း အစီရင်ခံစာတွင် ၎င်းတို့၏ရလဒ်များကို မှတ်တမ်းအထောက်အထား ပြုသင့်သည်။

89. Key reporting aspects include:

i) relevant Myanmarlaws and regulations;
ii) methodologies used to inform and involve the public in the environmental assessment process;

21 Available at: http://www.adb.org/participation/toolkit-staff-guide.asp.

iii) analysis of the data and information gathered;
iv) discussion of strategic issues raised by various stakeholders;
v) recommendations on how the project might address concerns raised during public consultation;
vi) recommended measures for continuous public consultation during the environmental management program; and,
vii) documentation of public meetings and interviews, including dates, names, topics of discussion, and important outcomes.

3. Grievance Redress Mechanism

90. A grievance mechanism, is a systematic process for receiving, evaluating and addressing affected peoples project-related concerns, complaints, and grievances.
Translation: နစ်နာစေသည့်အကြောင်းပြချက်အစိတ်အပိုင်းဆိုသည်မှာ စီမံကိန်းနှင့်ပတ်သက်သော အယူအဆများ၊ တိုင်တန်းချက်များ၊ နစ်နာစေသည့်အကြောင်းများနှင့် အကျိုးသက်ရောက်မှုရှိသော လူများအတွက် တန်ဖိုးဖြတ်ခြင်းနှင့် လက်ခံခြင်းအတွက် စနစ်ကျသော လုပ်ငန်းစဉ်ဖြစ်သည်။

Benefits of Establishing a Grievance Redress Mechanism
91. A well-functioning grievance mechanism:

i) provides a predictable, transparent, and credible process to all parties, resulting in outcomes that are seen as fair, effective, and lasting;
builds trust as an integral component of broader community relations activities; and,
ii) enables more systematic identification of emerging issues and trends, facilitating corrective action and pre-emptive engagement.

a. Grievance Redress International Good Practice

92. International experience indicates that there is a core set of good practices that mark effective and credible grievance redress mechanisms.

i) **Start early in the project cycle.** The most successful grievance mechanisms are put in place as early as possible—ideally, during the project feasibility phase—and are modified for later project phases. Problems are often resolved more easily, cheaply, and efficiently when they are dealt with early and locally.
ii) **Involve the community in the design.** Involve stakeholders from the affected community in identify key factors such as the kinds of disputes that could arise during the project life, how people in the community actually want to raise concerns, the effectiveness of current procedures for resolving complaints (if relevant), and the availability of local resources to resolve conflicts.
iii) **Ensure accessibility.** An effective grievance mechanism should be understandable, transparent and accessible to diverse members of the community, including more vulnerable groups such as women and youth, at no costs and without risk of retribution. Multiple points of entry, including face-to-face meetings, written complaints, telephone conversations, or e-mail, may be required. Opportunities for confidentiality and privacy for complainants should be honored where this is seen as important.
iv) **Maintain a wide scope of issues.** The grievance mechanism should be open to a wide range of concerns, including those based in factual data and those arising from perceptions or misperceptions (perceived concerns can be as critical to address as actual impacts). In addition, the mechanism need not be limited to environmental performance issues; it should also be able to deal

with community concerns covered by ADB's safeguard requirements on involuntary resettlement and Indigenous Peoples.

v) **Develop culturally appropriate procedures.** The grievance mechanism should be responsive, respectful, and predictable—clearly laying out an expected timetable for key process milestonesin order to address affected people's concerns and complaints promptly. The mechanism should be capable of bridging deep divides, including cultural divides. The design and operation of the grievance mechanism should consider cultural differences, such as communities' preferences for direct or indirect negotiation; attitudes toward competition, cooperation, and conflict; the desire to preserve relationships among complainants; authority, social rank, and status; ways of understanding and interpreting the world; concepts of time management; attitudes toward third parties; and the broader social and institutional environment.

vi) **Incorporate a variety of grievance resolution approaches.** To accommodate differences in personal and cultural preferences, the grievance mechanism may need to offer a variety of grievance resolution approaches, not just a single grievance procedure. The complainant should have influence over which approach to select. Some complaints may be managed in an informal way solely by those directly involved, such as a project representative and the complainant. Others may rely on more formal independent redress, such as arbitration or using a neutral third party. Where possible, local, customary ways of grievance resolution may be evaluated and incorporated into the system.

vii) **Utilize a graduated grievance response process**. Solutions to many grievances are best sought at the local project level. If a complaint cannot be resolved at the project level there should be a procedure for elevating the response to higher level of authority and/or to more formal process such as such as arbitration or using a neutral third party. Depending on the judicial and administrative mechanisms available in Myanmar for resolution of disputes, the MOC/PWD may choose to facilitate access to these mechanisms if project level or other responses are unsuccessful.[22]

viii) **Identify a central point for coordination.** A well-publicized and consistently staffed position, held by an individual or team, should be maintained. This central coordinator facilitates the development and implementation of the grievance mechanism, administers some of its resources, monitors internal and external good practice, ensures coordination among access points, and makes certain that the system is responsive to the information it manages.

ix) **Maintain and publicize multiple access points**. Expanding access beyond those individuals who have the primary responsibility to receive grievances can significantly reduce barriers to entering the system and encourage community members to address problems early and constructively. Individuals serving as access points are most effective if they are trustworthy, trained, knowledgeable, and approachable regardless of the ethnicity, gender, or religion of the complainant.

x) **Report back to the community.** Regular feedback should be provided to relevant stakeholders to clarify expectations about what the mechanism does and does not do; to encourage people to use the mechanism; to present results; and to gather feedback to improve the grievance system. Information reported back might include types of cases and how they were resolved and

22 The grievance mechanism should not impede access of complainants to these host country judicial and administrative processes.

the way the grievance has influenced company policies, procedures, operations, and the grievance mechanism itself.

xi) **Use a grievance log to monitor cases.** A grievance log (or register) can be used to analyze information about grievance and conflict trends, community issues, and project operations to anticipate the kinds of conflicts they might expect in the future, both to ensure that the grievance mechanism is set up to handle such issues and to propose organizational or operational changes. Sometimes, enacting policies or other types of structural change can resolve grievances around a common issue, rather than continuing to settle individual complaints on a case-by-case basis. Confidentiality should be maintained where this is seen as important.

xii) **Evaluate and improve the system.** The grievance redress mechanism should be assessed periodically to evaluate and improve its effectiveness. Important elements of evaluation include general awareness of the mechanism; whether it is used and by whom; the types of issues addressed; the ability of the mechanism to resolve conflicts early and constructively; the actual outcomes (impacts on project operations, management systems, and benefits for communities); its efficiency; and, most fundamentally, the ability to accomplish its stated purpose and goals. The assessment should solicit and include the views of stakeholder representatives to see if the mechanism is proving effective in practice.

b. Establishing a Grievance Redress Mechanism

93. The scope, timing, form and level of complexity of the grievance mechanism should be proportionate to the potential adverse impacts on, and interactions with, the local communities. To assist in scaling the grievance mechanism, the results of the project social and environmental assessments can be used to understand who will be affected and what the scope and nature of impacts on them are likely to be.

94. The process of developing and implementing a grievance mechanism can generally be broken down into four phases, each with its own set of activities:

i) **Define scope and determine goals**. Develop the overarching purpose and goals for the grievance mechanism and ensure design decisions flow from its purpose.

ii) **Design**. Assemble a preliminary plan that outlines the purpose, goals, scope, resolution approaches, structure, and specifics about how the grievance mechanism will function. This preliminary plan is tested and refined through consultation with affected community members and ADB. Except in the simplest cases, a grievance mechanism includes a procedure for receiving grievances, recording/documenting [23] them and responding to the complainants in a reasonable period of time. This procedure clearly defines who can raise complaints, and ensures that the confidentiality of the persons raising the complaint is protected.The procedure needs to be easily accessible and understandable and appropriately communicated to the affected

23 A grievance record may include the name of the individual or organization; the date and nature of the complaint; any follow up actions taken; the final decision on the complaint; how and when relevant project decision was communicated to the complainant; and whether management action has been taken to avoid recurrence of community concerns in the future.

community.[24]The grievance redress mechanism design should be acceptable to both the MOC/PWD and the ADB.

iii) **Implement**. The MOC/PWD and the community work together to introduce, refine, and institutionalize the grievance mechanism.

iv) **Monitor, report, and learn**. Information is gathered on the effectiveness of the mechanism in particular and, more generally, on the project's ability to prevent and address grievances. This information is used to refine the system.

95. Figure 3 provides an example of a basic grievance mechanism structure, and a sample grievance intake form is provided in **Appendix 11**.Good practice dictates that the responsibility for receiving and responding to grievances is handled by experienced and qualified personnel within the MOC/PWD organization.

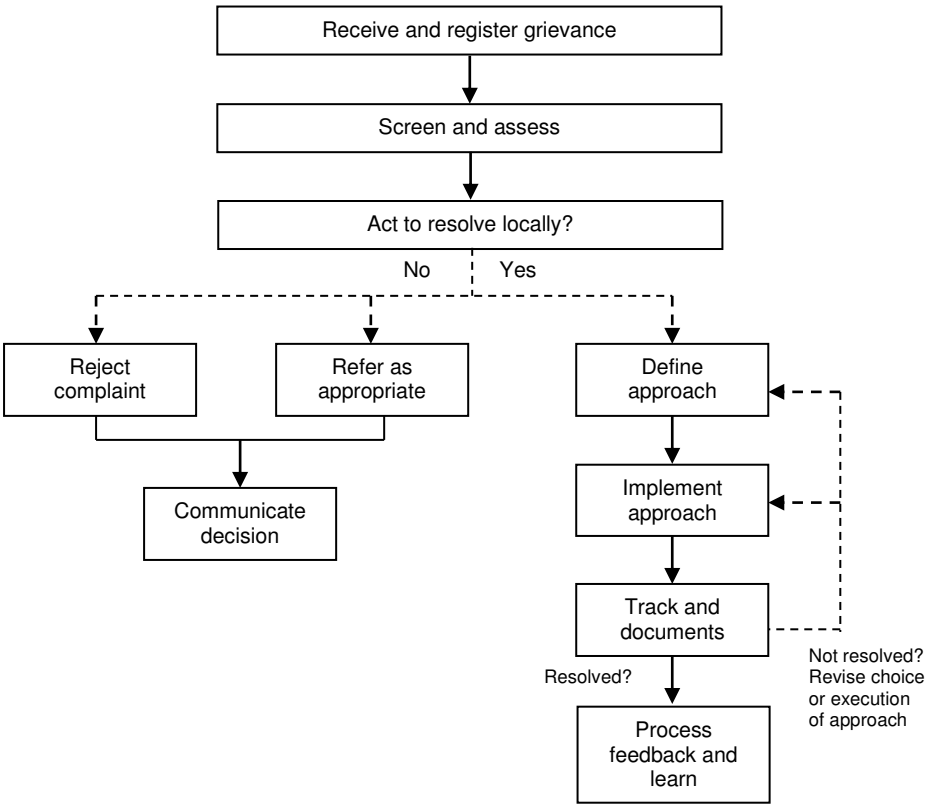


Figure 3: Basic grievance redress mechanism structure and steps[25]

K. Preparing the Environmental Assessment Report and EMP

96. **EIA Report Structure.** An EIA report typically includes the following major elements:

i) executive summary;
ii) description of the project;
iii) description of the environment (with comprehensive baseline data);

24 When designing the mechanism, accessibility to communities is normally assessed based on physical locations of surrounding communication and access to transportation and roads; literacy and education levels; and access to conventional communication infrastructure (phone, mail, internet).

25 Source: A Guide to Designing and Implementing Grievance Mechanisms for Development Projects. The Office of the Compliance Advisor/Ombudsman for IFC and MIGA, World Bank Group, June 2008. p 4.

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.

97. A detailed sample outline for an EIA report is presented in**Appendix 4**.

98. **IEE Report Outline.**An IEE report typically contains many of the same major elements as an EIA, but may have a narrower scope and depth of analysis. A detailed sample outline for an IEE report is presented in **Appendix 5**.

1. Use of Experts

a. Preparation of the Environmental Assessment

99. Whether in-house or independent, experts should have qualifications and field experience in the Myanmar or similar developing country relevant to the nature of the project. The expertise required varies greatly and depends on the project nature, the magnitude of potential impacts, and the location in which it is to be implemented. In some projectsthe environmental assessment will require a team with expertise drawn from a range of disciplines, such as natural sciences, engineering, modeling, or social sciences. Within those disciplines specialized expertise in areas such as biodiversity and natural resource management; pollution prevention, resource conservation and energy efficiency; health and safety; and/or physical cultural resources, may need to be recruited.

b. Highly Complex and Sensitive Projects and Independent Advisory Panels

100. An Independent Advisory Panel(IAP) is an important tool to objectively verify and report on compliance with ADB's and the MOECAF's safeguard requirements during project preparation and implementation. It increases the MOC/PWD's ability to document, manage, and reduce risk exposure to environmental and social issues, and provides additional technical expertise to assist the MOC/PWD to take timely actions to address complex and controversial issues to ensure compliance with social and environmental commitments.
Translation:
လွတ်လပ်စွာအကြံပေးခွင့်ရှိသောအဖွဲ့အစည်းသည် ADB နှင့် MOECAF တို့၏ ထိန်းသိမ်းကာကွယ်မှုဆိုင်ရာ လိုအပ်ချက်များအပေါ်တွင်မှန်မှန်ကြည့်ရှုစစ်ဆေးရန်နှင့်အစီရင်ခံရန်အရေးကြီးသောအစိတ်အပိုင်း ဖြစ်သည်။

	highly complex and sensitive project	=	MOC/PWD to engage an independent advisory panel (IAP)

101. The overall role of an IAP is to provide (i) an objective, balanced, and impartial view of the overall project preparation, design, and implementation, including identification of potential issues, as they arise, concerning social and environmental impacts; and (ii) independent advice to facilitate decision making on often complex and controversial issues to ensure compliance with ADB's and the MOECAF's safeguard requirements. The panel's terms of reference (TOR) is project-specific, but normally covers the following generic elements, among others:

i) to establish a thorough and transparent site visit and monitoring process;
ii) to create a well-defined reporting process for which the IAP has ultimate responsibility for final content; and
iii) to establish and abide by clear operational protocols which define the relationship of the IAP to other project stakeholders and allow the IAP supervisor/monitor to avoid conflicts of interest.

102. The IAP is expected to hold periodic meeting throughout the project preparation and implementation process. IAP reports are be submitted to the MOC/PWD and ADB.
Translation:MOC/PWD နှင့် ADB သို့ IAP အစီရင်ခံစာများ တင်ပြခဲ့သည်။

103. The IAP should consist of a sufficient number of experts in environmental and social safeguard fields to be able address all identified high risk issues; for many projects a multi-disciplinary panel will be required. The IAP members should:

i) Be professionals with demonstrated qualifications and relevant working experience in a discipline directly related to the main environmental issues of the project. This could include natural sciences (e.g., terrestrial biodiversity or aquatic ecology), civil engineering or specialized areas within civil engineering such as hazardous waste management, social sciences (e.g., anthropology, sociology, gender and development), occupational health and safety, etc.
ii) Have significant demonstrated experience in conducting or reviewing environmental impact assessments.

104. The panel members are appointed and contracted by the MOC/PWD in consultation with ADB. ADB may recommend individuals as panel members. One IAP member will need to formally serve as the chairperson. The panel members should be independent of government agencies and project owner and have had no involvement in studies, design or implementation of the project. It is recommended that a balance be sought in panel composition between international and national knowledge and experience.

105. Panels should not be used as a substitute for the normal consultation process or work of government agencies.

106. In addition to the IAP, the project may be subject to other oversight conducted directly by the ADB, government regulators and civil society groups.

L. Unanticipated Environmental Impacts

107. Unanticipated impacts are impacts that are not predicted during the project environmental assessment and are identified or become evident thereafter or during project construction or operation.[26] They may occur when specific locations or alignments of major infrastructure or project facilities are uncertain at the time of environmental assessment preparation and new locations or alignments are confirmed at a later date.
Translation: မျှော်လင့်မထားသော အကျိုးသက်ရောက်မှုများသည် စီမံကိန်းကာလအတွင်း ကြုံတင်မခန့်မှန်းခဲ့သော ပတ်ဝန်းကျင်ဆိုင်ရာ စိစစ်အကဲဖြတ်ခြင်း အကျိုးသက်ရောက်မှုများဖြစ်ပြီး စီမံကိန်းတည်ဆောက် ဆောင်ရွက်နေစဉ်အတွင်း သို့မဟုတ် ထို့နောက် သိမြင်သတ်မှတ်လာခြင်းဖြစ်သည်။

26 Unanticipated impacts do not include impacts arising from avoidance, minimization or mitigation measures which are not implemented as designed.

Example: *The alignment of a road may be known within a broad corridor when the assessment is undertaken, but final alignment might only be decided during implementation (final design phase).*

108. Unanticipated impacts may also occur if the assessment incorrectly predicts the significance of environmental impacts. The MOC/PWD may become aware of such unanticipated impacts through environmental monitoring, complaints received via a grievance mechanism, project periodic progress reports, or other mechanisms.
Translation:MOC/PWDသည်ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြည့်အကဲဖြတ်ခြင်း၊နစ်နာစေသည့်အကြောင်းအရာအစိတ်အပိုင်းတိုင်တန်းခြင်းများလက်ခံခြင်းကဲ့သို့စီမံကိန်းကြီးတင်လုပ်ငန်းစဉ်အစီရင်ခံစာများသို့မဟုတ် အခြားအစိတ်အပိုင်းများ သိမြင်လာနိုင်သည်။

109. If the unanticipated environmental impacts are significant, it may be necessary to 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.ADB will provide advice as to when unanticipated impacts are significant enough to warrant preparation of a new environmental assessment.
Translation:

အကယ်၍မျှော်လင့်မထားသော ပတ်ဝန်းကျင်ဆိုင်ရာသည် အရေးပါလျှင် ၎င်းသည် ပတ်ဝန်းကျင်ဆိုင်ရာ စိစစ်အကဲဖြတ်ခြင်းနှင့် ပတ်ဝန်ကျင်ဆိုင်ရာစီမံခန့်ခွဲမှု အစီအစဉ်အသစ်ပြင်ဆင်ရန်လိုအပ်သည်။ အကျိုးသက်ရောက်မှုများADBသည်မျှော်လင့်မထားသောအကျိုး သက်ရောက်မှုများအတိုင်းပတ်ဝန်းကျင်ဆိုင်ရာစိစစ်အကဲဖြတ်ခြင်းအသစ်နှင့်စပ်လျဉ်းသောအရေးပါလုံလောက်သည့်အာမခံပြင်ဆင်ချက်များ စီစဉ်အကြံပြု ညွှန်ကြားလိမ့်မည်။

110. Where it is known that unanticipated impacts are likely, (such as in linear projects), it is recommended that the EMP include agreed and detailed provisions for:

i) updating the existing assessment and EMP or preparing a new assessment and EMP, depending on the significance of the impacts:
ii) institutional arrangements, including capacity development, for managing environmental impacts and risks associated with the uncertainties; and
iii) financial commitments for implementing measures to mitigate unanticipated impacts. For example, the EMP for the Nam Theun 2 Hydroelectric project in Laos explicitly acknowledged that unanticipated impacts occur, and amongst other measures earmarked US$ 10,000,000 to address these impacts when identified. It is important to reflect the details of the agreed process in the loan agreement.

M. Strategic Environmental Assessment

111. **SEA Requirements at ADB.** The requirements for strategic environmental assessment are described in Safeguard Policy Statement (i) Principle 2, (ii) Para 11 of SR1, (iii) para. 2 of SR4, and (iv) OM F1 on Multilateral Financing Facilities.

112. **Understanding SEA.** SEA is an assessment of environmental impacts and risks associated with policies, plans, or programs. It employs a variety of tools, rather than a single, fixed and prescriptive approach. A good SEA is adapted and tailor-made to the context in which it is applied. This can be thought as a continuum of increasing integration: at one end of the continuum, the principle aim is to integrate environment, alongside economic and social concerns, into strategic decision making; at the other end, the

emphasis is on the full integration of the environmental, social and economic factors into a holistic sustainability assessment.

113. SEA is applied at the very earliest stages of decision making both to help formulate policies, plans and programs and to assess their potential development effectiveness and sustainability. This distinguishes SEA from more traditional environmental assessment tools, such as environmental impact assessment (EIA), which have a proven track record in addressing the environmental threats and opportunities of specific projects but are less easily applied to policies, plans and programs. SEA is not a substitute for, but complements, EIA and other assessment approaches and tools.

114. **When to Apply SEA.** The most likely activities required to initiate an SEA are program loans, sector loans and MFFs whose actions are likely to have transformational effect on a specific sector, demographic group, or geographic area.

 When to Apply SEA?	*Whether or not an SEA is required can normally be answered by asking the question: will the program, policy, or plan to be supported have a transformational effect over time and space? If yes, then the strategic impacts of this intervention may need to be investigated through SEA.* *- A program loan that aims to restructure major transport policy for a province* *- An MFF that aims to shift the current trajectory of urban development for a specific city.*

115. **How to Apply SEA.** Most SEAs undergo the following basic stages: (i) establish the context; (ii) undertake the needed analysis with appropriate stakeholders; (iii) inform and influence decision-making; and (iv) monitor and evaluate.[27]

116. **How to Evaluate an SEA.** The key deliverable of an SEA is a process with development outcomes, not a product. Quality control therefore considers how well procedures have been carried out. But in the long term, the achievement of development outcomes, while ensuring the maintenance of environmental sustainability, will be the key measure of success.

117. Key questions to help evaluators focus on development outcomes of an SEA relate to: the accuracy of assumptions made during the SEA; its influence on the policy, program, or plan process, on the implementation process, on development goals and on accountability; and the outcome of capacity-building activities.

N. Special Requirements for Different Finance Modalities

118. This manual pertains primarily to standard project loans. ADB also provides a variety of other investmentinstruments, including program loans, sector finance, multitranche financing facilities, emergency assistance loans, financial intermediary loans, general corporate finance, and cofinancing as presented in Safeguard Requirements 4 (SR4). [28] Environmental safeguard requirements vary with the nature of the lending

27 Due to broad scope of application, detailed SEA steps vary by project. See OECD, 2006. Applying Strategic Environmental Assessment: Good Practice Guidance for Development Cooperation; GRDP, 2006: Handbook on SEA for Cohesion Policy 2007-2013. World Bank provides online tools, TORs, and evaluation criteria for SEAs in http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:20885941~menuPK:2450778~pagePK:148956~piPK:216618~theSitePK:244381,00.html

28 Appendix 4 to the SPS.

instrument, and are summarized in Table 3. **Appendix 12**an outline for environmental assessment and review framework.

Table 3: Safeguard requirements for different finance modalities

Types of Loans and Environmental Safeguard Requirements	
Instrument	**Requirements**
Program Loan	– Prepare a matrix of environmental impacts associated with policy actions to be supported, including qualitative estimates of magnitude and reasons for the judgment, and appropriate mitigation measures. – A strategic environmental assessment which facilitates systematic evaluation of the environmental and social impacts of a program and its alternatives may be useful in the preparation of program loans.
Sector Loan	– An environmental assessment and review framework is to be in place before project approval. – One or more sample subprojects, and associated EIA or IEE (as relevant), will be appraised before project approval. – SR1 applies to all subprojects.
Multitranche Financing Facility (MFF)	– An environmental assessment and review framework is to be in place before project approval. – Where significant sector or regional environmental impacts from the investments under an MFF are anticipated, ADB requires the MOC/PWD to undertake a strategic environmental assessment to identify mitigation measures to be built into the MFF design.
Emergency Assistance Loan	– An environmental assessment and review framework is to be in place before project approval.
Existing Facilities	– An environmental compliance audit of facilities and/or business activities that already exist or are under construction is to be undertaken to assess compliance with SR1 requirements. – If in noncompliance, a corrective action plan, including remedial actions, budget, and timetable, is to be prepared. – For a project involving an upgrade or expansion of existing facilities that have potential impacts on the environment, the requirements for environmental assessment and planning specified in SR1 apply in addition to the audit.
Financial Intermediary[29]	– Where investments of the financial intermediary have minimal or no adverse social or environmental risks, the financial intermediary project will be treated as environment Category C and need not apply any other specific requirements. – All other financial intermediaries will be required to have in place or establish an appropriate environmental and social management system (ESMS)agreed with ADB before project approval.[30] – The screening procedure established under the ESMS will ensure that all subprojects are screened against the prohibited investment activities list. – Where the financial intermediary's subprojects to be funded by ADB are classified as environment Category A, the ESMS will incorporate relevant provisions that such subprojects meet ADB's requirements specified in SR1. – Except for financial intermediaries that have minimal or no adverse environmental impacts or risks, the financial intermediary will prepare and submit periodic reports (at minimum annually) on the implementation status of its ESMS. – If an annual report or ADB's review mission finds that the ESMS is not functioning properly, a corrective action plan will be prepared agreed to by the financial intermediary and ADB. The financial intermediary implements the corrective action plan.
General Corporate Finance	– An external audit of the ESMS's past and current performance against ADB's safeguard policy statement will be undertaken. – If required, a corrective action plan agreed with ADB to achieve or maintain compliance with ADB's safeguard policy statement will be developed.
Projects with Cofinancing	– ADB collaborates with the MOC/PWD and cofinanciers to adopt a single social and environmental assessment and planning process and unified safeguard documentation, consultation, and disclosure requirements to satisfy the safeguard principles and requirements of ADB and the cofinanciers.

29 In the case of financial intermediaries, the term "project" is used to mean ADB's transaction with the financial intermediary, whereas "subproject" means business activities financed by the financial intermediary.
30A model ESMS is currently under preparation, and will be made available once finalized.

IV. SPECIFIC SAFEGUARD REQUIREMENTS

A. Biodiversity Conservation and Sustainable Natural Resource Management

1. Applicability of Requirements to Projects

119. The applicability of biodiversity and natural resource management requirements are based on the potential for the project to constitute a threat to biodiversity such as through destruction of habitat, and whether the project will involve the use or management of natural resources.

Translation: ဇီဝမျိုးကွဲများနှင့် သဘာဝအရင်းအမြစ်စီမံခန့်ခွဲမှု လိုအပ်ချက်များသက်ဆိုင်မှုသည် စီမံကိန်းတွင် သဘာဝအရင်းအမြစ်များ စီမံခန့်ခွဲခြင်း (သို့မဟုတ်) အသုံးပြုခြင်း ကဲ့သို့ သော သက်ရှိတို့ပျက်စီးခြင်းနှင့် စီမံကိန်းဆက်လက် လုပ်ဆောင်ရန် အလားအလာရှိမှုတွင် အခြေခံသည်။

Biodiversity

120. Biological diversity or biodiversity is 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. Biodiversity is recognized as an integrating concept that includes the complex web of genes, species, ecosystems and ecological processes that sustain life on Earth and provides human society with food, medicines, natural resources, ecological services and spiritual and aesthetic benefits.

121. Biodiversity can be expressed at the genetic, species, or ecosystem level:

i) **Genetic diversity** refers to the total number of characteristics in the genetic makeup of a species, or more simply the diversity within a species, such as between varieties of a crop or within a tree species. It is particularly important with rare and declining species as it can affect species resilience.
ii) **Species diversity** means the frequency and diversity of different species which inhabit an area.
iii) **Ecosystem diversity** encompasses the variety of habitats that occur within a region, or the mosaic of patches found within a landscape.

2. Biodiversity and Environmental Assessment

a. General Biodiversity Requirements

122. If the screening indicates that biodiversity impacts are anticipated, the environmental assessment should assess:

i) the type and importance of biodiversity present in the project area of influence, whether at the genetic, species, or ecosystem level;
ii) the location and scale of project activities, including those of associated facilities and material impacts on biodiversity arising through supply chains or other third party relationships; and,
iii) the potential impacts of project-related activities on biodiversity present in the project area of influence.

123. The level of detail and comprehensiveness of the environmental assessment should be commensurate with the significance of the potential impacts and risks., including

evaluation of impacts on ecosystem services. [31]International good practice suggests that the MOC/PWD may need to consult with affected peoples and other stakeholders regarding potential impacts, especially where these stakeholders are known to have extensive indigenous and/or localized knowledge in relation to biodiversity. Significant biodiversity impacts identified in the assessment may require further analysis through specific studies undertaken by qualified and experienced professionals using standard sampling programs and tools.

124. The environmental assessmentshould identify measures to avoid, minimize, mitigate or compensate for potentially adverse impacts and risks, so as achieve "no net loss or a net gain" of the affected biodiversity. This principle requires that the pre-project *status quo* be maintained or, preferably enhanced, in terms of key biodiversity components such as species diversity (numbers and/or composition), habitat extent and/or structure, and ecosystem function. In other words, as a result of the project, biodiversity should be the same or better.

125. Priority should be given to avoidance and minimization of impacts at source, such as through alternative engineering processes and construction practices; regulating the timing of construction and other activities; variations in the layout of the project site; selection of different sites or routing of linear facilities; and screening of suppliers to select those with appropriate environmental/social risk management.

126. If it is not possible to fully avoid or minimize adverse impacts, it may be necessary to seek additional measures to mitigate the expected impacts such as restoring impacted areas with appropriate native species and consistent with local ecological conditions. As a last resort compensatory measures, such as biodiversity offsets, may be implemented so as to achieve no net loss or a net gain of the affected biodiversity. Biodiversity offsets are conservation actions intended to compensate for the residual, unavoidable harm caused to biodiversity by development projects. Offsetting frequently involves the creation of ecologically comparable areas (comparable in size, quality and function), generally close to the project site (if possible), in which biodiversity is managed and protected. Offsetting may involve undertaking positive management interventions such as improving the conservation status of an area by restoring habitats or ecosystems and reintroducing native species, or establishing ecosystems where they did not previously exists, such as with the establishment of new wetlands. It may also involve reducing or removing current biodiversity threats or pressures by, for instance, entering into agreements such as contracts or covenants with individuals or communities in which they give up the right to convert habitat in the future in return for payment or other benefits now.

127. Mitigation and/or compensation measures identified during the assessment processshould be defined in the project EMP (and in some cases may also be presented in a Biodiversity Action Plan or equivalent document), and will need to be supported by adequate financial resources from the MOC/PWD supplemented, if necessary, by other financial sources. The EMP should identify roles and responsibilities for the MOC/PWD and any third parties for mitigation implementation and monitoring.

---

31 Ecosystem services are the benefits that people obtain from ecosystems, and include provisioning services (such as food, fiber, fresh water, fuel wood, biochemicals, genetic resources); regulating services (such as climate regulation, disease regulation, water regulation, water purification, degradation of pollutants, carbon sequestration and storage, nutrient cycling); and cultural services (spiritual and religious aspects, recreation and ecotourism, aesthetics, inspiration, educational values, and sense of place).

b. Specific Requirements by Habitat Type

128. Habitats can be divided into modified habitats and natural habitats, both of which can support important biodiversity including endemic or threatened species, and critical habitat, a subset of both natural and modified habitat that deserves particular attention. In practice, natural and modified habitats exist on a continuum that ranges from completely undisturbed, pristine natural habitats at one end of the scale, through habitats with some degree of human impact, to modified habitats that are intensively managed and have an artificial assemblage of plants and animals. The identification of an area as either a natural or a modified habitat can therefore be complex, and a project may involve a mosaic of habitats that will each need to be addressed. Suitably qualified professionals can advise on how to recognize, delineate and assess habitats.

i. Modified Habitats

129. In areas of modified habitat the natural habitat has been altered, often through the introduction of alien species of plants and animals and/or conversion to other uses. Agricultural areas are a common example of modified habitat. Modified habitat can still provide living space for many species of plants and animals, and in some cases may contain unique ecosystems not found elsewhere. In addition, there is evidence to indicate that that biodiversity can be particularly high in the transition areas between modified habitat and undeveloped areas, as more species seem to be able to find appropriate ecological niches and these zones can serve as breeding grounds for adaptive variations.

130. The MOC/PWD is encouraged to recognize these values and exercise care to avoid or minimize any further conversion or degradation where technically and financially feasible and cost-effective. In addition, if appropriate to the scale and nature of the project, it may be possible to identify opportunities for habitat protection or enhancement.

A road/highway may have wild land and/or wetland areas on the periphery of its site. These areas could be left undisturbed as a buffer zone, or enhanced through planting of native species and removal of alien invasive species.

ii. Natural Habitats

131. Natural habitats are areas of land and water 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. Environmental assessments aim to help the MOC/PWD avoid significant conversion or degradation of natural habitat (e.g., through project relocation or re-routing). 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 reduces the habitat's ability to maintain viable populations of its native species. Significant conversion or degradation may result from activities such as land clearing; replacement of natural vegetation (for example, by crops or tree plantations); permanent flooding (by a reservoir for instance); drainage, dredging, filling, or channelization of wetlands; or surface mining.

132. Where avoidance is not possible, conversion or degradation should be restricted to cases where it can be demonstrated that:

i) there are no technically and financially feasible alternatives;
ii) the benefits of the project substantially outweigh the costs; and

iii) the conversion or degradation is reduced (e.g., through minimizing land take) or mitigated in a manner appropriate to the circumstances of the particular project, such that there is no net loss of biodiversity.

133. Mitigation measures may include a combination of actions, including:

i) Post-project restoration of impacted areas with appropriate native species and consistent with local ecological conditions.
ii) Offsetting biodiversity losses through the creation or effective conservation of ecologically comparable area(s) elsewhere (comparable in size, quality and function) that are managed for biodiversity. When developing offset measures it is important that ongoing use of such biodiversity by Indigenous Peoples or traditional communities is respected.
iii) Providing compensation to direct users of biodiversity. For example, financial compensation may be used to provide a similar benefit for affected peoples who have lost environmental benefits as a result of a project's residual impacts, such as the inability to harvest plants or animals from a projected affected forest. In such cases compensation may be used, frequently by another party such as the MOECAF, to provide environmental benefits of the same nature (e.g., to provide access to another forested area). The compensation should be commensurate with the loss caused by the project.

134. The construction phase can be particularly damaging to natural habitat, and the MOC/PWD is recommended to give specific attention to impacts likely to arise at this stage.

iii. Critical Habitats

135. Critical habitat areas have high biodiversity value, and include:

i) habitat required for the survival of critically endangered or endangered species;
ii) areas having special significance for endemic or restricted-range species;
iii) sites that are critical for the survival of migratory species;
iv) areas supporting globally significant concentrations or numbers of individuals of congregatory species;
v) areas with unique assemblages of species that cannot be found anywhere else;
vi) areas with key scientific value due to their association with evolutionary processes;
vii) areas recognized as particularly important for the provision of ecosystem services (such as water supply or flood control); and,
viii) areas having biodiversity that has significant social, cultural or economic importance to local communities.

136. Critical habitats include those areas either legally protected or officially proposed for protection, such as areas that meet the criteria of the IUCNclassification, the Ramsar List of Wetlands of International Importance, and the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) world natural heritage sites.

137. The determination of critical habitat requires professional expertise and judgment; the MOC/PWD may need to retain suitably qualified external experts to provide assistance if the project area of influence has not yet received an adequate biodiversity analysis.

138. Critically endangered or endangered species are species that are under threat of extinction. The IUCN Red List of Threatened Species (the IUCN Red List) is generally

considered to be the world's most comprehensive information source on the global conservation status of plant and animal species. In addition to the Red List, IUCN provides useful information on protected areas, conservation and biodiversity expertise, and other biodiversity and natural resources issues and has developed guidelines on protected areas including an outline of distinct categories of protected areas. These and other sources of information can be found in Chapter V(Additional Information Sources).Myanmar may also have their own listings of threatenedplant and animal species.

139. The probability of measurable adverse impacts on critical habitat, populations of endangered or critically endangered species, viable and representative host ecosystems and overall levels of biodiversity can be determined through a detailed biodiversity assessment.

 Biodiversity Assessment	*A biodiversity assessment involves measuring or surveying what exists in the area and what is known about it, judging its value and identifying the most important features, and assessing expected reductions in population numbers, habitat carrying capacity or other relevant parameters. It typically involves field-based surveys supported by reviews of relevant scientific literature and protected area management plans, and consultations with relevant MOECAF conservation authorities and local communities, including Indigenous Peoples. It may also utilize airphoto surveys and satellite imagery.*

iv. Legally Protected Areas

140. When project activities are proposed within a legally protected area,[32] in addition, it is important to:

i) Act in a manner consistent with any national land use, resource use, and management criteria (including Protected Area Management Plans, National Biodiversity Action Plans or similar documents). This will entail securing the necessary approvals from the responsible government agencies, and consulting with protected area sponsors and the local communities, including communities of Indigenous Peoples, and other key stakeholders.

ii) Consult protected area sponsors and managers, local communities, and other key stakeholders on the proposed project.

iii) Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area. This can be achieved through implementing programs that, for example, provide support for park management, address alternative livelihoods for local residents, or carry out research needed for the conservation aims of the protected area.

141. If project activities take place in or near legally protected areas which do not have clearly mapped or demarcated boundaries, international good practice is to consult with the relevant protected area management body so as to accurately define boundaries such that the location of project activities in relation to the protected areas is clearly understood.

142. There may be situations where it is appropriate for the MOC/PWD to give recognition to community conserved areas that are not legally protected areas. These areas can be natural and modified ecosystems with significant biodiversity values, voluntarily conserved by indigenous peoples and local communities through customary laws or other effective

32 An area may be designated as legally protected for different purposes. Legally protected here refers to areas legally designated for the protection or conservation of biodiversity, including areas proposed by governments for such designation.

means.[33] In the event that a project is proposed inside or in proximity to a community conserved area, the MOC/PWD is encouraged to ensure that relevant Indigenous Peoples and local communities are appropriately consulted as part of the environmental assessment process.

c. Invasive Alien Species

143. An alien plant or animal species is one that is introduced beyond its original range of distribution. Invasive alien species are alien species that become invasive or spread rapidly by out-competing native plants and animals when they are introduced into a new habitat that lacks their traditional controlling factors. Introductions can occur deliberately or accidentally through, for example, discharge of ballast water from ships, on-deck migration, movement along road corridors, etc. Invasive alien species are now recognized to be a major threat to biodiversity globally.[34]

144. Additional information sources on invasive species are presented in Chapter V, and through international sources of information such as the Global Invasive Species Database..

d. Genetically-Modified Organisms

145. Genetically-modified organisms (GMOs, also known as living modified organisms orLMOs), can also be considered to be alien species, with similar potential for invasive behavior as well as the potential for gene flow to related species. It is good practice for any new introduction of such organisms to be assessed in a manner consistent with the approach described above, and with due regard to the Government of Myanmar responsibilities (if a signatory) under the *Cartagena Protocol on Biosafety.*[35]

e. Biodiversity Action Plans

146. In projects with potentially significant biodiversity impacts and risks (e.g. involving critical habitats),the development of a Biodiversity Action Plan or equivalent document is one approach the MOC/PWD may wish to choose to highlight these issues and illustrate how they will be addressed. Regardless of whether also presented in a separate plan, mitigations and associated timelines for addressing biodiversity issues should be incorporated into the environmental assessment, and implemented through the MOC/PWD's EMP.

---

33 Community conservation areas are characterized by:
(i) one or more communities closely related to the ecosystems and/or species, because of cultural, livelihood, economic or other ties;
(ii) community management decisions and efforts lead to the conservation of habitats, species, ecological benefits and associated cultural values, although the conscious objective of management may not be conservation *per se*; and
(iii) communities are the major players in decision-making and implementing actions related to ecosystem management, implying that some form of community authority exists and is capable of enforcing regulations.

34 According to IUCN (2009), invasive species are the fifth most severe threat to amphibians, following habitat loss, pollution, disease and fires; the third most severe threat to bird species after agriculture and logging; the third most severe threat to mammals after habitat loss and utilization (mostly for food and medicine); and the fourth most severe threat to reptiles after pollution, persecution and natural disasters.

35 A supplementary agreement to the *Convention on Biological Diversity*, the *Cartegena Protocol* is an international treaty governing the movements of LMOs resulting from modern biotechnology from one country to another. The *Cartegena Protocol* defines a LMO as: any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology. Modern biotechnology means the application of: a) in vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or b) fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection.

3. Management and Use of Renewable Natural Resources

147. Sustainable resource management is 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 atmospheric, hydrological and soil systems. Experience has shown that the sustainable management and use of renewable natural resources is best achieved by balancing conservation and development priorities, and recognizing that this may require trade-offs on each side.

B. Pollution Prevention and Abatement

148. Urbanization can results in pollution levelsthat may threaten people and the environment at the local, regional and global level[36]. However, pollution prevention and control technologies and practices are becomingincreasingly more accessible and achievable..

1. Applicability of Requirements to Projects

149. Pollution prevention and abatement requirements are determined at the screening stage of the environmental assessment based on the potential for the project to generate pollution or anthropogenic greenhouse gas emissions, or to undertake pest and/or vector management activities.

2. International Good Pollution Prevention and Control Practice

150. Pollution prevention and control technologies and practices should be adopted to address impacts and risksconsistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's *Environment, Health and Safety Guidelines* (EHS Guidelines). The EHS Guidelines contain discharge effluent, air emissions, and other numerical guidelines and performance indicators as well as prevention and control approaches that are normally acceptable to ADB and are generally considered to be achievable at reasonable costs by existing technology.

3. Pollution Prevention, Resource Conservation, and Energy Efficiency

a. Pollution Prevention

151. For projects with limited potential emissions, pollution prevention or minimization may be achieved through compliance with emissions and effluent standards and the application of other pollution prevention and control approaches.

b. Resource Conservation and Energy Efficiency

152. Cleaner production refers to the concept of integrating pollution reduction into the production process and the design of a product. This involves continuous application of an integrated preventive environmental strategy to processes, products and services in order to increase overall efficiency and reduce risks to humans and the environment through the conservation of raw materials, water and energy, and through the reduction or elimination of

36 The term "pollution" refers to both hazardous and nonhazardous pollutants in the solid, liquid, or gaseous forms, and also includes other forms such as nuisance odors, noise, vibration, radiation, electromagnetic energy, and the creation of visual impacts including light.

the use of toxic and hazardous raw materials. Cleaner production can also mean taking advantage of renewable energy sources such as solar energy and geothermal resources. Cleaner production and energy efficiency are often cost-effective, especially when assessed over the project life-cycle.

c. Degraded Areas

153. In areas where air quality is already compromised, it is international good practice to evaluate whether the existing background ambient levels are in compliance with the relevant ambient quality guidelines and/or standards. If the project has the potential to contribute significant emissions in an already degraded airshed, and maximum technically and financially feasible reductions in pollution discharge intensity and/or loading have already been integrated into the design, additional strategies may be required to avoid further impacts to the airshed. This may include evaluating alternative project locations where ambient conditions are not as degraded, and/or introducing emission offsets. Emission offsetting involves compensating for a project's emissions by obtaining emission reductions elsewhere in the airshed. For example, the establishment of a central heating thermal power plant in eastern Asia may allow for the closure of a number of less efficient and more polluting small boilers, resulting in a net reduction in emissions and a resultant improvement in ambient air quality.

4. Wastes and Hazardous Materials

a. Waste Avoidance, Minimization and Recovery

154. Waste generally refers to unwanted or unusable materials. Substances classified as hazardous wastes possess at least one of four characteristics - ignitability, corrosivity, reactivity, or toxicity - or appear on special lists, such as Annex I of the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes*, or a comparable list under MOECAFlaws and rules. As part of the project's environmental assessment, the MOC/PWD should apply control techniques for avoidance, minimization, recovery and disposal of both hazardous and nonhazardous wastes during all stages of the project construction, operation and decommissioning.

i) **Avoidance** refers to actions by the producer to avoid generating waste. The most effective way to prevent the release of hazardous materials is to avoid using or producing them in the first place. The MOC/PWD is strongly encouraged to explore opportunities throughout the project life-cycle to use non-hazardous materials in place of hazardous materials, especially where the hazards of the materials cannot easily be prevented under normal use and disposal at the end of their life cycle. Substitutions have been found, for example, for the use of asbestos in building materials, polychlorinated biphenyls (PCBs) in electrical equipment, persistent organic pollutants in pesticides formulations, and ozone depleting substances in refrigeration systems.

ii) **Minimization** refers to actions that minimize the production of waste, including the range of actions that make the waste a useful input to other processes (e.g. reuse), eliminating the need for disposal.

iii) **Recovery** is the extraction from a waste of some components that have value in other uses. The level of effort in addressing this requirement will depend on the risks associated with the waste materials generated by a project.

155. The EHS Guidelines provide general and industry specific guidance and examples of international good practice with respect to hazardous and nonhazardous waste management.

The MOC/PWD is also required to comply with all relevant MOECAF environmental regulations.

b. Waste Treatment and Disposal

156. If waste cannot be reused or recovered, it can be treated, destroyed and/or disposed of it in an environmentally acceptable manner according to international good industry practice and in compliance with relevant MOECAF regulations.

157. Third party waste disposal is best undertaken by legitimate qualified enterprises that have all necessary regulatory approvals and/or licenses. It may be prudent to inquire about the location of the final disposal of their waste by the third party, and to ensure the final disposal facility is licensed by the relevant regulatory agencies. If no suitable disposal method is available through commercial or other means, the MOC/PWD may consider developing their own recovery or disposal facilities or work through local waste management business association or other similar entities to identify viable alternatives or approaches consistent with international good practice as expressed in the EHS Guidelines.

158. If the generated waste is considered hazardous, the MOC/PWDmay explore reasonable alternatives for environmentally sound disposal consistent with the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*. The *Basel Convention* is the most comprehensive global environmental treaty on hazardous wastes; it has 170 members (Parties), including 31 countries from the Asia Pacific region. The Convention aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movements and disposal of hazardous and other wastes. International good practice is to comply with all relevant requirements of the *Basel Convention* with respect to the transboundary movements of hazardous and other wastes, including applying the “Prior Informed Consent” procedure (shipments made without consent are illegal).

c. International Phaseouts or Bans

159. The MOC/PWDshould avoid the manufacture, trade or use of hazardous substances subject to international bans or phaseout under international conventions. Relevant conventions include the *Stockholm Convention on Persistent Organic Pollutants*; the *Rotterdam Convention of Prior Informed Consent for Certain Hazardous Chemicals and Pesticides in International Trade*; and, the *Montreal Protocol on Substances that Deplete the Ozone Layer*. In such cases substitutes that are less hazardous may be sought. See Chapter IV for additional guidance on compliance with these international conventions.

160. Additional information on the environmentally sound handling and disposal of wastes can be found in the General and Industry Sector *EHS Guidelines*, in numerous publications in support of the *Basel Convention,* and in the *Stockholm Convention on Persistent Organic Pollutants* (see Chapter V).

5. Pesticide Use and Management

161. Indiscriminate or misuse of pesticides can cause severe illness or death, contamination of soil and water, harm to crops, livestock and wildlife, and even reduction or elimination of the natural enemies of targeted pests.

a. Integrated Pest Management and Integrated Vector Management

162. The environmental assessment should assess potential impacts of any proposed pesticide use to the environment and the health and resources of nearby communities[37]. Identified impacts should be avoided, minimized or mitigated through the adoption of integrated pest management (IPM) and integrated vector management (IVM). IPM and IVM are environmentally sensitive approaches to pest control that use current, comprehensive information on the life cycles of pests and their interaction with the environment, in combination with available pest control methods (including mechanical devices, physical devices, genetic controls, biological controls, cultural practices management, and as a last resort, chemical pesticides), to manage pest damage to an acceptable level by the most economical means and with the least possible hazard to people, property, and the environment. Through the adoption of IPM/IVM approaches the use of synthetic chemical pesticides in agricultural and public health projects can be minimized, and they need only be utilized to the extent that other environmentally sound pest management practices have failed or proved inefficient.

163. If pesticides are to be used, international good practice involves exercising a high degree of diligence selecting those that are:

i) low in human toxicity (see also section 5.b below);
ii) known to be effective against the target species;
iii) have minimal effects on non-target species and the environment;
iv) are packaged insafe containers and clearly labeled for safe and proper use; and,
v) have been manufactured byan entity currently licensed by relevant regulatory agencies.

164. Appropriate consideration should also be given to precautions to prevent the improper use of the pesticides and to protect the health and safety of the project workers and the affected community. If required a program of capacity building may be provided in the regulation and monitoring of pesticide distribution and use, and in the development and application of IPM/IVM approaches.

b. Hazardous Pesticides

165. The *WHO Recommended Classification of Pesticides by Hazard* (2005) sets out a classification system to distinguish between the more and the less hazardous forms of selected pesticides based on acute risk to human health (e.g., the risk of single or multiple exposures over a relatively short period of time). It takes into consideration the toxicity of the technical compound and its common formulations. The document lists common technical grade pesticides and recommended classifications together with a listing of active ingredients believed to be obsolete or discontinued for use as pesticides, pesticides subject to the prior informed consent procedure, limitations to trade because of international conventions, and gaseous or volatile fumigants not classified under these recommendations.

---

37 Pesticide generally means any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport.

166. Products classified in the *WHO Recommended Classification of Pesticides by Hazard* as Class Ia (extremely hazardous), Ib (highly hazardous) and Class II (moderately hazardous) may only be utilized where the MOC/PWD can demonstrate that there is a pesticide regulatory framework, and technical and occupational health and safety capacity for its implementation, consistent with the *WHO Recommended Classification of Pesticides by Hazard*.

c. International Good Practice

167. Good practice on handling, storing, applying and disposing of pesticides is set out in the *International Code of Conduct on the Distribution and Use of Pesticides.* The Code of Conduct establishes voluntary standards of conduct for all public and private entities engaged in, or associated with, the distribution and use of pesticides, and since its adoption has served as the globally accepted standard for pesticide management.The MOC/PWDshould handle, store, apply and dispose of pesticides in accordance with international good practice such as the Code of Conduct.

6. Greenhouse Gas Emissions

a. Anthropogenic Greenhouse Gases

168. Greenhouse gases (GHGs) are gases in the atmosphere that absorb and emit infrared radiation, thereby warming the atmosphere through the "greenhouse affect". Anthropogenic GHGs arethose GHGs which emitted into the atmosphere as a result of human activities and which are listed in the Kyoto Protocol to the *United Nations Framework Convention on Climate Change*:

i) Carbon dioxide (CO_2);
ii) Methane (CH_4);
iii) Nitrous oxide (N_2O);
iv) Hydrofluorocarbons (HFCs);
v) Perfluorocarbons (PFCs); and,
vi) Sulphur hexafluoride (SF_6).

b. Applicability Requirements to Projects

169. The environmental assessment screening process should determine if the project falls into a sector[38] that has the potential for emitting GHGs listed in the Kyoto Protocol. Although project GHG emissions vary by sector, it is generally considered that the threshold for project significance is 100,000 tonnes of carbon dioxide equivalent (CO_2e)[39] per year or greater for the project's aggregate direct and indirect emissions.[40]

c. Quantification and Monitoring of GHGs

170. The environmental assessment of projects that are expected to or currently produce 100,000 tonnes CO_2e per year should quantify i) net (e.g. after all reduction measures are adopted) GHG direct emissions from the facilities within the physical project boundary, and ii) indirect emissions associated with the off-site production of power used by the project.

---

38 Sectors that have the potential to generate significant emissions of GHGs include energy, transport, heavy industry, agriculture, forestry and waste management.
39Carbon dioxide equivalent (CO2e) is a universal standard of measurement against which the impacts of releasing (or avoiding the release of) different greenhouse gases can be evaluated over a time horizon.
40 This is based on good international practice presented in IFC Performance Standard 3: Pollution Prevention and Abatement, in *Performance Standards on Social and Environmental Sustainability 2006*.

171. There are many internationally recognized methodologies for estimating and monitoring direct greenhouse gas emissions of projects, including the 2006 IPCC *Guidelines for National Greenhouse Gas Inventories*. Indirect emissions associated with the off-site production of power used by the project can be estimated by using national average GHG emissions performance for electricity generation (e.g., national average of carbon dioxide emissions per unit of electricity generated for the country), although this may not be appropriate if the project can preferentially obtain its electricity from a renewable source. Project specific GHG emissions performance for electricity generation are preferred, if available (e.g., utility average of carbon dioxide emissions per unit of electricity generated for the utility from which the project purchases electricity).

d. Applying GHG Monitoring Data

172. GHG monitoring data can help (i) understand CO2 emission amount and trend of ADB supported projects; (ii) test and improve the methodology for CO2 quantification and monitoring; (iii) help the borrowers to enhance their awareness and promote emission reduction (see below).

e. GHG Reduction, and Offsets

173. For projects with potential significant GHG emissions, the environmental assessment may evaluate technically and financially feasible alternatives to reduce or offset project GHG emission levels. Reduction options the MOC/PWD may consider include:

i) enhancement of energy efficiency;
ii) promotion, development and increased use of renewable forms of energy; and
iii) limitation and/or reduction of methane emissions through recovery and use in waste management, as well as in the production, transport and distribution of energy (coal, oil, and gas).

174. Carbon finance through emissions trading under the *Clean Development Mechanism* or similar carbon markets may create additional funding sources for pursuing these reduction and control options.

175. Carbon offsetting may be undertakenby carbon capture and storage technologies, the protection and enhancement of sinks and reservoirs of greenhouse gases, the promotion of sustainable forms of agriculture and forestry, or through other activities that sequester carbon, such as forest or mangrove restoration projects which store carbon in the biomass of the trees and other vegetation. Carbon offsets are measured in metric tonnes of CO_2e.

C. Health and Safety

176. Occupational health and safety refers to protecting workers, including contracted workers and any others who work at project sites or provide project-related services (e.g. cooks, cleaners), from accident, injury or illness associated with exposure to hazards encountered in the workplace.[41] Hazards can arise from materials (including chemical,

41 Occupational health and safety is not the same as core labor standards, and SR1 does not include core labor standards (e.g. (a) freedom of association and the effective recognition of the right to collective bargaining, (b) the abolition of all forms of forced or compulsory labor, (c) the elimination of discrimination in respect of employment and occupation, and (d) the elimination of child labor). Core labor standards are addressed through ADB's *Social Protection Strategy*, and through routine inclusion of relevant covenants in loan agreements, and tender and bidding documents. Further, all Asian and Pacific DMCs, by virtue of being members of the International Labour Organization, are held to respect, promote, and realize fundamental core labor standards.

physical and biological substances and agents), environmental or working conditions (such as oxygen deficient environments, excessive temperatures, improper ventilation, poor lighting, faulty electrical systems or unshored trenches), or work processes (including tools, machinery and equipment)..

177. Community health and safety refers to protecting local communities from project related hazards, including flooding, landslides or other natural hazards exacerbated by project activities; disease; and the accidental collapse or failure of project structural elements such as dams. Project related activities may directly, indirectly or cumulatively change community exposure to hazards. For example, abandoned borrow pits filled with stagnant water may promote establishment or growth of *Anopheles* mosquitoes, the vector by which malaria is transmitted; and an influx of workers during the construction stage may overwhelm local sanitation and waste management systems and result in increased traffic and traffic accident fatalities. These types of impacts may cause project delays and damage relationships with communities. Proper management of health and safety impacts can reduce unnecessary costs and help create positive community perceptions of the project.

1. Applicability of Health and Safety Requirements to Projects

178. If relevant, the environmental assessment should include an analysis of the project's potential impacts and risks on occupational and community health and safety, and develop preventive and protective measures. The assessment should consider all stage of the project cycle (design, construction, operation, and decommissioning). The depth and breadth of analysis and the preventive measures should be commensurate with the identified risks and impacts.

2. Occupational Health and Safety

179. Keyaspects in providing workers with a safe and healthy working environment are summarized below.

i) **Identify and eliminate or minimize the causes of potential hazards** to workers, so far as reasonably practicable. It is preferable to eliminate sources of hazard to workers' health and safety rather than allowing the hazards to continue and providing personal protective equipment.

ii) **Establish preventive and protective measures**. When an occupational hazard is inherent to a project activity or it is otherwise not feasible to eliminate or further minimize the hazard, appropriate protective measures (such as barriers or machine guards) should be installed, and as necessary adequate personal protective equipment (PPE) should be provided at no cost to the workers. PPE includes respirators, eyewear, gloves, clothing, hearing protection, and steel toed shoes.
Preventive and protective measures should be consistent with international good practice, as reflected in internationally recognized standards such as the EHS Guidelines.

iii) **Train workers** on relevant aspects of occupational health and safety associated with their work, including emergency arrangements,and provide them with appropriate incentives to use protective equipment and comply with health and safety procedures.

iv) **Document and report** occupational accidents, diseases, and incidents to relevant local authorities and to ADB. It is good practice to retain related monitoring data, such as exposure levels and health testing. Workers should not face any disciplinary measures or negative consequences for reporting or raising concerns about occupational health and safety conditions.

v) **Have emergency prevention, preparedness, and response plans** in place. Effective emergency preparedness and response plans are tailored to the risks faced by the project and include an integrated approach to address emergency needs and protect the health and safety of workers, the local affected communities and the environment inside and outside the project physical boundary. Emergency preparedness and response plans encompass all persons normally working on or visiting the project site, are prepared in cooperation with external emergency services and agencies such as local fire departments and emergency response teams, and include adequate procedures for communication with workers, local communities and relevant authorities during emergency events.

vi) **Comply with Government of Myanmar laws**. Most countries have laws regulating occupational health and safety and workplace conditions and the MOC/PWD is expected to comply with such laws.

180. Occupational health and safety measures should be incorporated into the project EMP.Additional guidance on occupational health and safety is provided in the general and sector-specific EHS Guidelines. Additional sources of information on occupational health and safety are presented in **Chapter V**.

3. Community Health and Safety

181. Key aspects in protecting local communities from project related hazards are summarized below.

A road rehabilitation project may create increased traffic, noise, dust, and movement of heavy machinery during construction phase. Affected communities should be informed in advance of construction schedules, alternate travel routes, and measures they can take to safeguard their families near construction sites (e.g. by following construction signage, taking extra precautions near the site, especially if dark/rainy weather), and their views on both impacts and planned responses should be elicited.

i) **Identify and assess risks** to, and potential impacts on, the safety of affected communities during the all stages of the project.

ii) **Establish preventive and protective measures**in a manner commensurate with the identified risks and impacts. These measures should favor the prevention or avoidance of risks and impacts over their minimization and reduction, such as properly managing borrow pits so they do not become sources of disease vectors. However, when potential impacts and risks are inherent to the project activity or it is otherwise not feasible to completely eliminate them, the MOC/PWDshould implement appropriate minimization and mitigation measures. Many community health issues can be resolved with the application of well established, simple and cost effective public health interventions, such as information and education programs, while safety concerns may be addressed by, for example, fencing and posting warning signs so as to avoid accidental community intrusion onto hazardous project sites, or implementing traffic control and calming measures such as enforcement of traffic safety regulations, establishment of controlled intersections and/or roundabouts, and pedestrian safety measures such as pedestrian crossings, tunnels or bridges.[42]

42 Research indicates that up to 75% of all road fatalities in developing countries involve pedestrians.

iii) **Conduct contractors and subcontractors due diligence**.Even if the MOC/PWD cannot exert direct control over the actions of its contractors and subcontractors, the MOC/PWD should use reasonable means to investigate their capacity to address safety issues, communicate its expectations of safety performance, and otherwise influence the safety behavior of contractors, especially those involved in the transportation of hazardous materials to and from the project site.

iv) **Manage natural hazards**. Measures should avoid or minimize the exacerbation of impacts caused by natural hazards, such as landslides or floods that could result from significant changes to vegetation cover, topography, and hydrologic regimes. For example, clearing forest cover on a slope may result in increased erosion and the risk of landslides and/or flooding, especially during high rainfall events, as well as a subsequent reduction in the quality of water in local streams or rivers. In such cases, relevant precautions include preventing geological instability, safely managing storm water flow, preventing a reduction in the availability of surface water and groundwater for human and agricultural use (depending on the sources of water that the community has traditionally relied on), and preventing degradation in the quality of these resources.

v) **Have community emergency prevention, preparedness, and response arrangements** in place where the consequences of emergency events are likely to extend beyond the project site or originate outside of the project site (e.g. a hazardous material spill during transportation on public roadways). Emergency response plans should be designed based on the risks to community health and safety identified during the environmental assessment, should be developed in close collaboration and consultation with potentially affected communities and local authorities.
Additional emergency response guidance is provided in the general and sector-specific EHS Guidelines.

vi) **Inform affected communities, local authorities and emergency services**on the nature and extent of environmental and human health effects that may result from routine operations or unplanned emergencies at the project facility. Information campaigns should describe appropriate behavior and safety measures in the event of an accident involving project facilities, and actively seek community views concerning risk management and associated community preparedness.Disclosure may be in the form of newspaper articles, temporary signs, community meetings, etc. Information should be disclosed in a culturally appropriate manner in language(s) utilized by the affected people. The process should reflect communities' capacities to understand and act on health and safety information.

vii) **Conduct an independent review of high-risk structural elements or components**. High risk structural elements are most commonly encountered in larger projects and include those that could threaten human life in the event of failure, such as dams located upstream of communities. In these cases,in addition to local engineering certification requirements, a risk assessment should be undertaken by qualified and experienced external experts. In the case of dams and impoundments, the experts can base their evaluation of safety on specific risk criteria.[43] Experts can initially refer to national regulations and methodologies. Should such regulations not be available in the country, existing well-developed methodologies promulgated by authorities

43 Including hydroelectric power dams, mine tailings dams, dams for ash ponds, fluid overburden and spoils, water and other liquid storage, and dams for wastewater and storm water management.

in countries with mature dam safety programs can be referred to and adapted as necessary to local conditions.

182. Community health and safety measures should be incorporated into the project EMP. Additional guidance on community health and safety is provided in the general and sector-specific EHS Guidelines, and in the IFC *Introduction to Health Impact Assessment* which provides good practice guidance for conducting a health impact assessment of a project. Additional sources of information on community health and safety are presented in Chapter V.

D. Physical Cultural Resources

183. Physical cultural resources are 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 underwater. Their cultural interest may be at the local, provincial, national or international level. Protecting these resources from deterioration or loss is recognized as being vitally important in the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage (commonly known as the World Heritage Convention). The World Heritage Convention is one of the most widely adopted international legal instruments with 186 member states having ratified the Convention, including 41 countries from the Asia Pacific region. Chapter IV (Tools and Templates) discusses types of physical cultural resources in more detail.

1. Screening for Physical Cultural Resources

184. The applicability of this requirement is initially determined at the screening stage of the environmental assessment based on:

i) the nature of the project activities (e.g. the project will involve significant excavations, demolition, movement of earth, flooding or other environmental changes); and/or
ii) the location of the project being in, or in the vicinity of, a known physical cultural resources site based upon a review of global and relevant national heritage lists (e.g. the World Heritage List; the Government of Myanmar's World Heritage Tentative List[44] and other national or local heritage lists) and in consultation with competent national and localheritage authorities.

185. If the screening indicates that there is the potential for a project to affect physical cultural resources, the environmental assessment should include a more detailed analysis of the project's potential impacts and risks. This is typically accomplished through a physical culture resources survey.

2. Physical Cultural Resources Survey

186. A physical cultural resources survey is an internationally recognized process for identifying and gathering information on, and assessing potential risks to, physical cultural resources within a project's area of influence. The survey typically involves:

44 A Tentative List is an inventory of those properties which each State Party to the *World Heritage Convention* considers to have cultural and/or natural heritage of outstanding universal value suitable for inscription on the World Heritage List, and which they intend to nominate to the List in later years.

i) a review of relevant available literature, maps, satellite photos and satellite imagery;
ii) a field-based investigation to locate, photograph, map and assess physical cultural resources; and,
iii) consultation with local and international experts, government authorities, and members of local communities and Indigenous Peoples. The knowledge of local communities is particularly important for identifying physical cultural resources that may be tied to the natural environment and not evident to outsiders.

187. Physical cultural resource surveys should be undertaken by experts with relevant academic qualifications and extensive relevant field and geographic experience. The level of detail and comprehensiveness of the survey should be commensurate with the significance of the potential impacts and risks. The results of the physical cultural resources survey should be integrated into the project environmental assessment.

3. Protections of Physical Cultural Resources

188. When a physical cultural resource survey indicates that a project is likely to have adverse impacts onthese resources, the environmental assessment should identify appropriate protection measures. These measures may include, in order of preference:

i) **Avoidance** - changes to project location, design, technology, and components which eliminate predicted impacts.
ii) **Minimization** - changes to project location, design, technology, and components which reduce predicted impacts to acceptable levels.
iii) **Mitigation** - project design measures such as protection measures or other actions, procedures and technologies designed to counteract negative impacts. Physical cultural resources are best protected by full protection in place (e.g. preservation)through local, national or international mechanisms, since removal may result in irreparable damage or destruction of the heritage resource. These measures may also include selective mitigation, including salvage and documentation, in cases where a portion or all of the physical cultural resources may be lost.

189. Avoidance, minimization and mitigation measures should be incorporated into the project EMP. When the proposed location of a project is in an area where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures should also be included in the EMP.

4. Chance Find Procedure

190. A chance find procedure is a project-specific procedure that outlines what will happen if previously unknown physical cultural resources are encountered during construction or operation. The procedure typically requires that chance finds shall not be disturbed until an assessment by a competent expert is made and avoidance, minimization or mitigating measures are developed. The breadth, depth and type of analysis should be proportionate to the nature and scale of the proposed project's potential adverse impacts on the chance find. Consideration should be given, where feasible, to alternative siting or design of the project to avoid significant damage to the chance find physical cultural resources.

191. A chance find procedure generally includes record keeping and expert verification procedures, chain of custody instructions for movable finds, and clear criteria for temporary work stoppages. It is important that the procedure outline the roles, responsibilities and

response times required on the part of project staff and any relevant heritage authority, as well as any agreed consultation procedures.

5. Removal of Physical Cultural Resources

192. Where avoidance is not feasible, no alternatives to removal exist, and the project benefits outweigh the anticipated cultural heritage loss from removal, the MOC/PWD may remove and preserve the physical cultural resource according to the best available technique. International good practice dictates that the technique proposed by the MOC/PWD or its expert will benefit from a peer review by other qualified experts. In addition, prior to removal of the physical cultural resources, the MOC/PWDshould consult the historical or traditional owners and users of the physical cultural resources and take their views into account. Any removal should be conducted in accordance with relevant provisions of national and/or local laws and regulations, protected area management plans (if relevant), and national obligations under international laws.

6. Consultation and Disclosure

193. When the environmental assessment process indicates that a project may affect physical cultural resources, meaningful consultation should be undertaken with the affected communities to identify physical cultural resources of importance (e.g. during the survey) and, where possible, their views on the resources should be incorporated into the project design. Affected communities include communities currently using physical resources for long-standing cultural practices and/or which have used those resources within living memory.[45]Consultation should also include relevant national or local regulatory agencies that are entrusted with protecting physical cultural resources, such as ministries of archeology, culture or similar national or heritage institutions, national and local museums, and cultural institutes.

194. The assessment findings shouldbe disclosed in the environmental assessment report. Exceptions may be considered where the MOC/PWD, in consultation with ADB and specialists with relevant expertise, determines that disclosure would compromise or jeopardize the safety or integrity of the physical cultural resources involved, such as through uncontrolled tourism, theft or vandalism. In such cases sensitive information relating to these particular aspects may be omitted from the environmental assessment documentation.

45 There is no formal definition of “living memory”; for the purposes of this Sourcebook it is considered to be the period of time experienced and remembered by the oldest people who are now alive, or roughly 100 years.

V. TOOLS AND TEMPLATES

A. Biodiversity Protection

1. IUCN Red List Protection Categories

195. The IUCN Red List of Threatened Species (or the IUCN Red List) has a long established history as the world's most comprehensive information source on the global conservation status of plant and animal species. It is based on an objective system of assessing the risk of extinction for a species. Species listed as Critically Endangered, Endangered or Vulnerable are collectively described as "threatened". The IUCN Red List is available at www.iucnredlist.org.

196. There are nine categories in the IUCN Red List system:

EXTINCT (EX) - A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

EXTINCT IN THE WILD (EW) - A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR) - A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, (see Red List Categories and Criteria booklet for details) and it is therefore considered to be facing an **extremely high risk of extinction** in the wild.

ENDANGERED (EN) - A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Red List Categories and Criteria booklet for details), and it is therefore considered to be facing a **very high risk of extinction** in the wild.

VULNERABLE (VU) - A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Red List Categories and Criteria booklet for details), and it is therefore considered to be facing a **high risk of extinction** in the wild.

NEAR THREATENED (NT) - A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for, or is likely to qualify for, a threatened category in the near future.

LEAST CONCERN (LC) - A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD) - A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on

its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

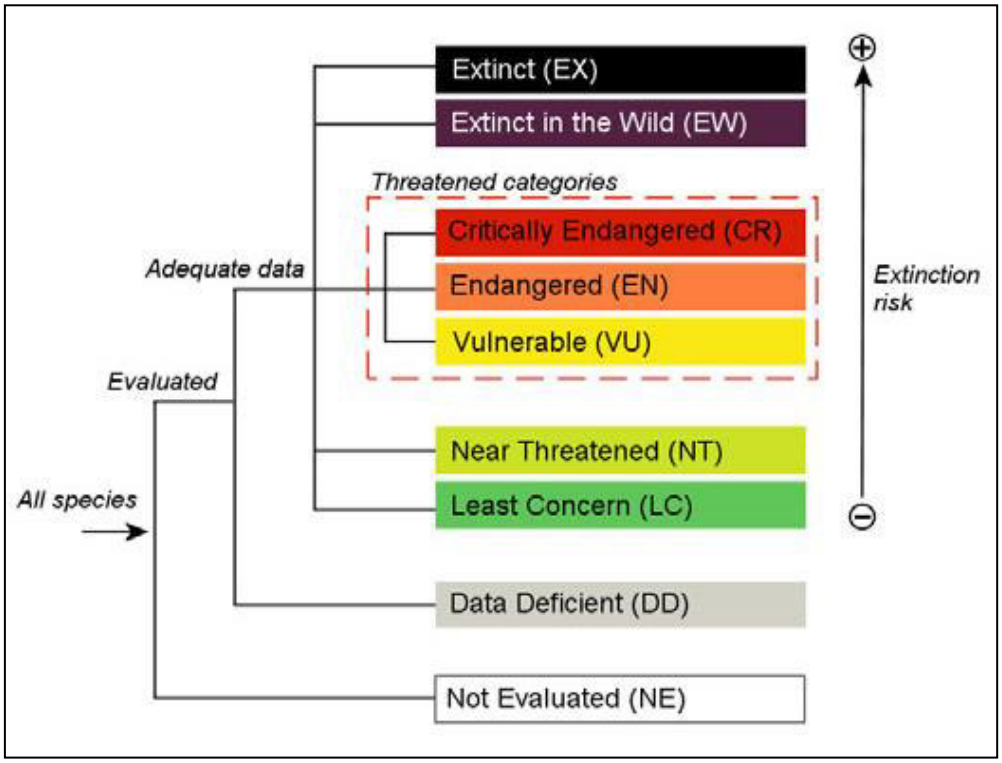


Figure 4: Structure of the Red List Categories. (Source: IUCN, 2008)

2. Biodiversity Action Plans

197. In situations with potentially significant biodiversity issues associated with a project, the preparation of a Biodiversity Action Plan (BAP) or equivalent document is one approach to highlight these issues and illustrate how they will be addressed. The BAP is developed as an integral part of the project's environmental assessment, and is incorporated into the assessment documentation.

198. A BAP typically assesses how proposed project activities will affect biodiversity and renewable natural resources; determines how biodiversity and renewable natural resources can be managed as part of the project activities and how adverse impacts can be mitigated or compensated; and identifies responsibilities (internally and externally) and resources for management and mitigation.

199. The scope and content of a BAP may vary considerably depending on the size and scale of the project and the location in which it is operating. The scale, depth and complexity of the BAP is thus be defined on a case-by-case basis, but the following components will typically be present:

i) **Baseline Review and Impact Assessment -** Baseline review involves the collection and analysis of relevant information. The review should consider:

- What biological and other natural resources will be affected by the proposed activity (including short-term, long term and cumulative impacts).
- Who has legitimate interests in and responsibilities for these resources, and who represents those interests.
- Whether there are there already biodiversity (or other natural resources) management plans that cover the area of operations.
- What the key environmental and social issues are for the area (and whether these will affect biodiversity plans that the MOC/PWD is developing).

In situations where projects are being developed in locations where little is known about the range and importance of biodiversity, but where it is likely to be significant, a rapid assessment program may be appropriate. Rapid appraisals are increasingly used as the first stage of a comprehensive biodiversity assessment. They utilize a combination of international and local expertise to undertake an initial assessment of the biological value of poorly known areas (including assessment of the value of biodiversity to local communities, Indigenous Peoples, and other resource dependent peoples), and help define any additional more detailed studies which may be required.

ii) **Defining Scope of the Plan** - When sufficient information on biodiversity and natural resources has been gathered and agreement has been reached on the likely project impacts, as well as an understanding of wider impacts on natural resources that may become apparent, the scope and scale of the plan, and its timescale can be defined. This will be informed by a range of factors including regulatory and compliance expectations, the use of natural resources by the project, and the need to engage and consult with stakeholders (particularly local communities) who use or have interests in the biodiversity and natural resources that will be affected by project operations. The BAP will need to demonstrate how the project will avoid significant adverse impacts. Impacts should be avoided where possible, reduced and mitigated where avoidance is not practical, and offset where impacts are unavoidable. Opportunities for enhancing biodiversity (through active management of natural habitats) should also be considered, as appropriate to the specific circumstances.

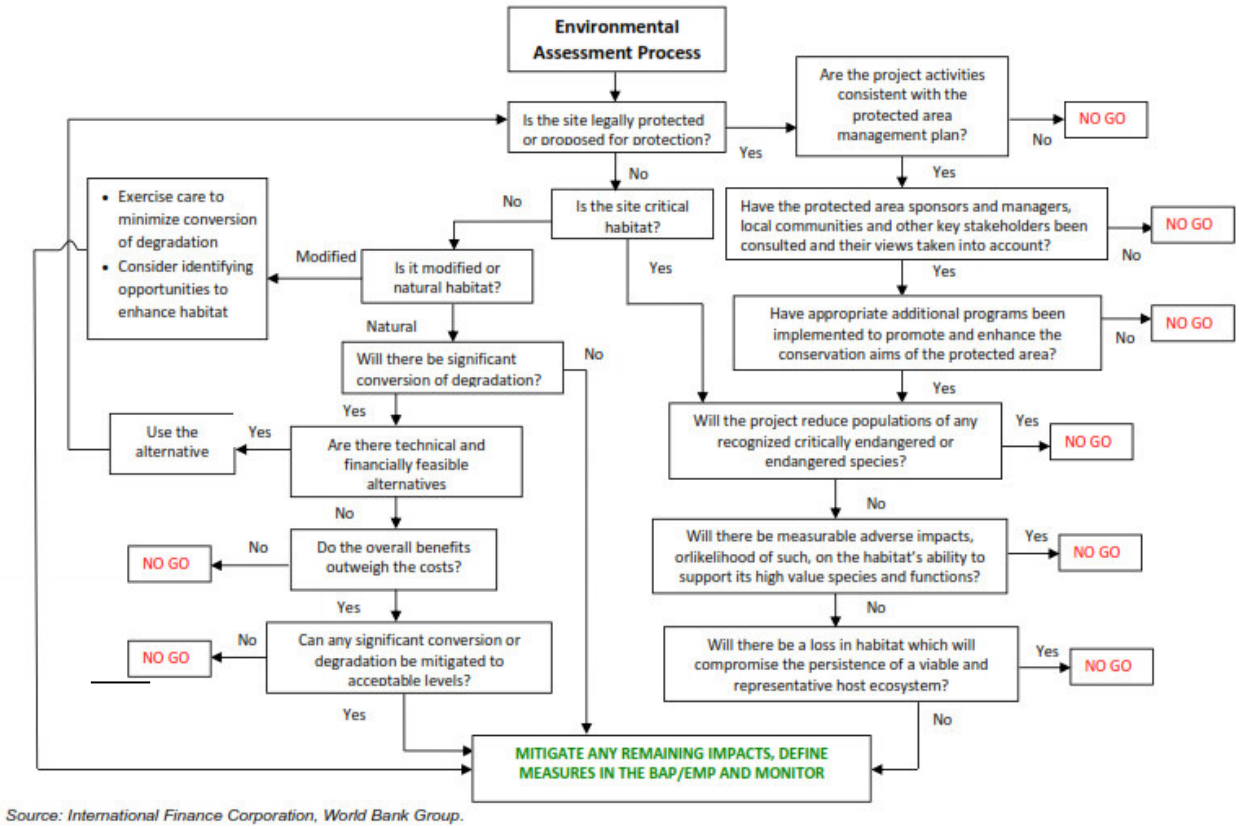
Iii) **Establishment of Objectives, Targets, and Responsibilities** - The BAP should identify detailed objectives and targets which specify the desired outcomes. Targets should be prioritized, discussed with relevant stakeholders, and be realistic and time-bound. The MOC/PWD may choose to use indicators to monitor progress towards targets and objectives as well as to measure performance in their achievement. Indicators can be set at site and project levels depending on needs. Site-based indicators are used for measuring impacts in and around project sites and reporting on the impact of biodiversity management efforts at specific locations or as part of specific activities (e.g., impacts of supply chains). Project-level indicators may reflect a more process-oriented set of targets, such as the delivery of strategic policy commitments (e.g., training programs for staff, number of sites with active BAPs).Overall, the indicators should have the following attributes:

- Focus on factors that have the greatest impacts on biodiversity (these may be direct or indirect impacts).
- Reflect the key risk management needs (at site or project level).
- Reflect both positive and negative impacts.
- Be quantitative where possible and be practical in terms of the collection of data/monitoring.

Biodiversity objectives should, to the extent possible, be aligned with and integrated into wider project objectives and targets. The "mainstreaming" of biodiversity objectives increases the likelihood of their successful implementation and ensures that biodiversity aspects are seen as an integral part of core project decision-making. Responsibilities for specific outcomes and reporting lines need to be defined.

3. Biodiversity Decision Framework

200. Figure 5(biodiversity decision framework) illustrates "no-go" circumstances (i.e., not meeting the requirements of SR1 and therefore unlikely to be eligible for financing by ADB) for projects working in various types of habitat and legally protected areas.



Source: International Finance Corporation, World Bank Group.

Figure 5: Biodiversity decision framework for project siting

4. Biodiversity Offsets

a. Introduction

201. Biodiversity offsets are conservation actions intended to compensate for unavoidable residual harm (e.g., after all avoidance, minimization and mitigation measures have been exhausted) caused to biodiversity by development projects. Offsetting frequently involves the creation of ecologically comparable areas (comparable in size, quality and function), generally close to the project site (if possible), in which biodiversity is managed and protected. Offsetting may includeundertaking positive management interventions such as improving the conservation status of an area by restoring habitats or ecosystems and reintroducing native species, or establishing ecosystems where they did not previously exists, such as with the establishment of new wetlands. It may also involve reducing or removing current biodiversity threats or pressures by, for instance, entering into agreements

such as contracts or covenants with individuals or communities in which they give up the right to convert habitat in the future in return for payment or other benefits now.

b. Critical Design Elements

202. International literature and experience in biodiversity offsets suggest that the following crucial elements should be addressed in the design of offsets:

(i) Equivalence: impacted biodiversity values should be the same as those that are offset.
(ii) Additionally: biodiversity benefits should be the direct result of new and additional efforts, and would not have existed otherwise; an action that protects an area that is not being degraded is not an offset.
(iii) Ratio: the biodiversity benefits of the offset should be greater than the biodiversity costs the offset is intended to address, to account for risk of offset failure (e.g., no net loss or a net gain).
(iv) Timing and duration: the biodiversity offset should be implemented when the negative impacts to biodiversity begin, and last for the duration of the impacts (e.g., the offset is established in perpetuity if the development project impacts are permanent). In addition, depending on the nature of the offset it may be decades before its full biodiversity value is realized, such as with the planting of a new forest to offset clearing of mature trees.

203. The principle of **no net loss or a net gain** of biodiversity requires that the pre-project *status quo* be maintained or, preferably enhanced, in terms of key biodiversity components such as species diversity (numbers and/or composition), habitat extent and/or structure, and ecosystem function. In other words, biodiversity should be at minimum the same but preferably better as a result of the project.

204. During the environmental assessment process baseline biodiversity data should be collected in order to allow a determination whether or not “no net loss or a net gain” has been achieved, though in practice it is not always easy to determine what should be measured or accounted for in an offset. Biodiversity in its entirety is impossible to measure, so the process of offset design involves decisions about suitable biodiversity metrics. A variety of objective measures have been created in order to empirically measure biodiversity, including but not limited to species diversity (the least sophisticated); Simpson's diversity index (which takes into account the number of species present as well as the relative abundance of each species); the Shannon-Wiener Index (which takes into account number of species and the evenness of species populations); and the Mean Species Abundance Index (which calculates the trend in population size of a cross section of indicator species). Although there is no international consensus on biodiversity metrics, experience indicates that the most effective metrics are those which are simple (e.g., avoid compound indices), allow for a variety of analytical options, are suitable for statistical analysis, allow for rapid assessments, and are low cost.

205. It is also important to consider how similar the biodiversity structure, composition and function at an offset site needs to be to that affected by the development project for no net loss or a net gain to be achieved. Exchange rules may be used to determine what levels of difference might be acceptable and to show how exchange between different sites will be accounted for in the metrics.

206. Biodiversity offsets should be designed to comply with all relevant national and international law, and planned and implemented in accordance with the Convention on Biological Diversity and its ecosystem approach, as articulated in National Biodiversity Strategies and Action Plans. The use of experts with relevant academic qualifications in

biology, ecology or ecological restoration, and experience in offset implementation in the Government of Myanmar or similar developing country when preparing and implementing biodiversity offsets is highly recommended.

c. Uncertainty in Biodiversity Offsetting

207. There is considerable uncertainty associated with the success of biodiversity mitigation and compensation measures, and the MOC/PWD is encouraged to take a precautionary approach in the design of offsets. For example, a 1:1 ratio of habitat area replacement may be insufficient to ensure no net loss due to edge effects (drying, fire, blow-down, etc) and partial failures of rehabilitation and/or protection methods. There is no generally accepted standards for this ratio, and best practice might be considered a ratio of 3:1 in some countries and 10:1 or beyond in others.

208. Given the uncertainties associated with offsets, the MOC/PWD is encouraged to provide evidence of the effectiveness of recommended offset measures, and if possible information from similar projects should be used to support statements about the level of success that can be reasonably expected. Consultation with relevant national and local authorities, affected communities and biodiversity experts when developing mitigation and compensatory measures is encouraged. Given the importance of biodiversity in not only environmental but also economic, social, cultural and scientific terms, the various components of biodiversity can have different values to different stakeholders, and these different values should be clarified during consultation and taken into account in the biodiversity assessment.

d. Key Steps in Developing an Offset

209. The design of a biodiversity offset is undertaken as part of the environmental assessment process, and will be incorporated into the relevant project documentation. Table 5 presents a summary of the design steps typically undertaken. The process is presented in a broadly chronological order and some later steps depend upon the outcomes from earlier steps. Some of these activities and steps are interdependent and may be addressed in parallel, rather than sequentially. This is particularly the case for the first four steps, all of which are necessary to understand a project's context, its likely implications for biodiversity, the likely need for and appropriateness of an offset, and who should be involved at what stage in the process of offset design.

210. There may be opportunities to bundle steps to achieve greater efficiency without undermining the quality of the offset design process. There may also be several ways of undertaking a particular step. For example, as noted above, there are a number of different ways to quantify biodiversity loss and gain and this aspect of offset design is the subject of considerable ongoing debate among practitioners. Choose the method most applicable to the specific project site and context, and best suited to available time and resources.

Table 5: Summary of steps in the offset design process

Steps in offset design		Purpose
1	Review project scope and activities	To understand the purpose and scope of the development project and the main activities likely to take place throughout the different stages of its life cycle. Identify key decision "windows" and suitable "entry points" for integration of biodiversity offsets with project planning.
2	Review the legal framework and / or policy context for a biodiversity offset	To clarify any legal requirement to undertake an offset and understand the policy context within which a biodiversity offset would be designed and implemented. The policy context would cover government policies, financial or lending institutions' policies (e.g. ADB), as well as internal MOC/PWD policies.
3	Initiate a stakeholder participation process	To identify relevant stakeholders at an early stage and establish a process for their effective involvement in the design and implementation of any

Steps in offset design		Purpose
		biodiversity offset.
4	Determine the need for an offset based on residual adverse effects	To confirm whether there are residual adverse effects on biodiversity remaining after appropriate application of the mitigation hierarchy, for which an offset is required and appropriate.
5	Choose methods to calculate loss / gain and quantify residual losses	To decide which methods and metrics will be used to demonstrate that "no net loss" will be achieved through the biodiversity offset and to quantify the residual loss using these metrics.
6	Review potential offset locations and activities and assess the biodiversity gains which could be achieved at each location	To identify potential offset locations and activities using appropriate biophysical and socioeconomic criteria, to compare them, and to select preferred options for more detailed offset planning.
7	Calculate offset gains and select appropriate offset locations and activities	To finalize the selection of offset locations and activities that should result in no net loss of biodiversity. Applying the same metrics and methods that were used to quantify losses due to the project, calculate the biodiversity gains that could be achieved by the shortlist of preferred offset options, check they offer adequate compensation to any communities affected so they benefit from both the project and the offset, and select final offset location(s) and activities.
8	Record the offset design and enter the offset implementation process	To record a description of the offset activities and location(s), including the final "loss / gain" account which demonstrates how no net loss of biodiversity will be achieved, how stakeholders will be satisfied and how the offset will contribute to any national requirements and policies.

Source: Business and Biodiversity Offsets Programme (BBOP). 2009. *Biodiversity Offset Design Handbook*. BBOP, Washington, D.C. Available from: www.forest-trends.org/biodiversityoffsetprogram/guidelines/odh.pdf

B. Hazardous Materials

1. Compliance with International Conventions

211. **Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention).**The *Stockholm Convention* onpersistent organic pollutants (POPs) is a global treaty to protect human health and the environment from organic chemicals that are toxic, remain intact in the environment for long periods, become widely distributed geographically, magnify in the food chain, and accumulate in the fatty tissue of humans and wildlife. Their high mobility makes POPs a global issue, while their other properties mean that they are hazardous to animal and human health even at low levels of exposure. Exposure to POPs can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and even diminished intelligence.

212. As part of the environmental assessment the list of active ingredients included in Annex A and B of the *Stockholm Convention*should be reviewed, and no chemical formulations should be manufactured, imported, exported, sold or used in the project that include these ingredients unless it is under the highly exceptional circumstances noted in Annexes A and B of the Convention. Where projects have pre-existing involvement with such ingredients, including the presence of existing stockpiles of obsolete chemicals, the project should develop a strategy for their phase-out within a reasonable amount of time.

213. The project should manage and ultimately dispose of PCBs identified on the project site in an environmentally sound manner according to the terms of Annex A of the *Stockholm Convention*. Further guidance on the management and disposal of PCBs can be found in the EHS Guidelines.

214. The project should minimize the unintentional generation and release, such as by incineration, of chemicals listed in Annex C of the *Stockholm Convention*. Guidance on how to identify, quantify and reduce emissions of Annex C chemicals from potentially significant sources is included in the publications in support of the *Stockholm Convention* (see Chapter

V). For projects that manufacture Polyvinyl chloride (PVC) products the overall benefits of the project should be weighed against costs, including those to the environment and the communities. This is due to their association with the unintentional release of POPs, primarily through the incineration of mixed waste streams containing PVC products,

215. **Rotterdam Convention of Prior Informed Consent for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention).**The objectives of the Rotterdam Convention are to promote shared responsibility and cooperative efforts among members (Parties) in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; and to contribute to the environmentally sound use of those hazardous chemicals by facilitating information exchange about their characteristics, providing for a national decision-making process on their import and export, and disseminating these decisions to Parties.

216. The list of chemicals included in Annex III of the *Rotterdam Convention*should be reviewed, and the project should avoid their manufacture, trade and use. These chemicals are listed in the convention because their use has been banned or severely restricted in one or more national jurisdictions in order to protect human health and the environment. The list also includes some pesticide formulations considered severely hazardous due to their severe health or environmental effects.

217. **Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol).**The *Montreal Protocol* is an international treaty designed to protect the ozone layer by phasing out the production of (currently) ninety-six chemicals believed to be responsible for ozone depletion. The list of controlled chemicals found in Annexes A, B, C and E of the Protocol should be reviewed, and the project should avoid their manufacture, trade and use.

C. Climate Change

1. Methods for Quantifying GHG Emissions

a. Project GHG Emission Threshold for Significance

218. Although project GHG emissions vary by sector, SR1 generally considers that the threshold for project significance is 100,000 tonnes of carbon dioxide equivalent (CO_2e) per year or greater for the project's aggregate direct and indirect emissions.[46]

b. GHG Emission Estimation and Monitoring Methodologies

219. There are many internationally recognized methodologies for estimating and monitoring direct greenhouse gas emissions of projects. The most authoritative methodologies can be found in the 2006 *IPCC Guidelines for National Greenhouse Gas Inventories*. The 2006 IPCC Guidelines consist of:

- **Volume 1 – General Guidance and Reporting:** gives general information on inventory compilation, QA/QC, uncertainty and guidance on the choice of methods.
- **Volume 2 – Energy:** covers the use, production and transport of energy. Includes coverage of carbon dioxide capture and storage.

46 Based on good international practice presented in IFC Performance Standard 3: Pollution Prevention and Abatement, in *Performance Standards on Social and Environmental Sustainability 2006*.

- **Volume 3 – Industrial Processes and Product Use** (**IPPU**)**:** covers industrial processes such as metal production, petrochemicals and other chemical production. Also covers the use of products including fluorinated gases.
- **Volume 4 – Agriculture, Forestry and Other Land Use** (**AFOLU**)**:** integrates agriculture with all other land uses and changes in land use. Covers agricultural sources such as livestock, manure management and fertilizer use as well as emissions and removals of greenhouse gases from differing land uses such as forestry, grasslands and settlements.
- **Volume 5 – Waste:** covers the collection, treatment and disposal of wastes including solid wastes, landfills and waste water treatment.

220. The 2006 IPCC Guidelines build on the previous Revised 1996 IPCC Guidelines and the subsequent Good Practice reports, and cover new sources and gases as well as updates to previously published methods where technical and scientific knowledge have improved. They can be found at: http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

221. Depending on the type and sector of the project MOC/PWDs may wish to refer to several other internationally-recognized greenhouse gas emissions methodologies, including:

- **Greenhouse Gas Protocol (GHG Protocol)**, a widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions. The GHG Protocol is the result of a decade-long partnership between the World Resources Institute and the World Business Council for Sustainable Development. http://www.ghgprotocol.org/
- **ClimateLeaders GHG Inventory Protocol (US Environmental Protection Agency)**, which provides guidance on how to inventory and report GHG emissions. http://www.epa.gov/climateleaders/resources/guidance.html
- **Guidelines for the Measurement and Reporting of Emissions (UK Department of Environment and International Affairs, 2003)**, a set of reporting guidelines and protocols for direct participants in the UK emissions trading scheme. http://www.defra.gov.uk/environment/climatechange/trading/uk/pdf/tradingreporting.pdf
- **Emission Inventory Improvement Program, Volume VIII – Estimating Greenhouse Gas Emissions (US Environmental Protection Agency, 2003)** currently under revision. http://www.epa.gov/ttn/chief/eiip/techreport/

D. ADDITIONAL INFORMATION SOURCES

1. Environmental Impact Assessment

- *International Association for Impact Assessment*

IAIA is a forum for advancing innovation, development, and communication of best practice in impact assessment.
http://www.iaia.org/

- International Association for Impact Assessment - *Principles of Environmental Impact Assessment Best Practice*. 1999. The Principles of EIA Best Practice are designed primarily for reference and use by those professionally involved in environmental impact assessment. The aim is to promote the effective practice of environmental impact assessment consistent

with the institutional and process arrangements that are in force in different countries. Accordingly, the Principles are broad, generic, and non-prescriptive, emphasize EIA as a process, and are intended to be applicable to all levels and types of proposals, having regard to the limits of available time, information and resources.
http://www.iaia.org/publicdocuments/special-publications/Principles%20of%20IA_web.pdf

- International Association for Impact Assessment- *Biodiversity in Impact Assessment*. 2005. These principles are intended to promote biodiversity-inclusive impact assessment, including EIA for projects, and strategic environmental assessment.
http://www.iaia.org/publicdocuments/special-publications/SP3.pdf

- International Association for Impact Assessment. *Health Impact Assessment. International Best Practice Principles*. 2006. These principles are intended to promote health impact assessment (HIA), to lead to better consideration of the health implications of decisions and render them more sustainable. They should help practitioners to integrate health into impact assessment (IA), decision-makers to commission and review IAs and other stakeholders to ensure that health concerns and aspirations are addressed in development planning.
http://www.iaia.org/publicdocuments/special-publications/SP5.pdf

- International Association for Impact Assessment- *Public Participation - International Best Practice Principles*. August 2006. The Public Participation Best Practice Principles document aims to promote a meaningful practice of public participation amongst impact assessment practitioners.
http://www.iaia.org/publicdocuments/special-publications/SP4%20web.pdf

- EU - *Guidelines on the Assessment of Indirect and Cumulative Impacts as well as Impact interactions.* These Guidelines consider the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions within the EIA process. They are intended for use by the EIA practitioner and developer. The aim is to provide guidance on practical methods and approaches to assess indirect and cumulative impacts of a project as well as impact interactions. The Guidelines are not intended to be formal or prescriptive but are designed to assist EIA practitioners in developing an approach which is appropriate to a project, and to consider these impacts as an integral part of the EIA process.
http://ec.europa.eu/environment/eia/eia-studies-and-reports/guidel.htm

- A Framework for Cumulative Risk Assessment. Beth Mileson, Elaine Faustman, Stephen Olin, P. Barry Ryan, Sue Ferenc, Thomas Burke, Eds. An ILSI Risk Science Institute Workshop Report.
http://www.ilsi.org

- Conducting Environmental Impact Assessment for Developing Countries. Prasad Modak and Asit K. Biswas. United Nations University, 1999.

- Environmental Assessment in Developing and Transitional Countries. Norman Lee and Clive George, Eds. John Wiley and Sons, 2000.

- Multicriteria Environmental Assessment: A Practical Guide. Nolberto Munier, 2004.

- Theory and Practice of Transboundary Environmental Impact Assessment. Kees Bastmeijer, Timo Koivurova,, eds. 2007.

2. Strategic Environmental Assessment

- OECD – *Applying* Strategic *Environmental Assessment: Good Practice for Development Co-operation*. DAC Guidelines and References Series, 2006. http://www.oecd.org/dataoecd/28/12/36451340.pdf?bcsi_scan_7823DFCE46415F3E=0&bcsi_scan_filename=36451340.pdfhttp://www.oecd.org/dataoecd/4/21/37353858.pdf;

- World Bank provides online tools, TORs, and evaluation criteria for SEAs in http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/0,,contentMDK:20885941~menuPK:2450778~pagePK:148956~piPK:216618~theSitePK:244381,00.html

- International Association for Impact Assessment - *Strategic Environmental Assessment Performance Criteria*. 2002. This set of criteria aims to provide general guidance on how to build effective new SEA processes and evaluate the effectiveness of existing SEA processes.
http://www.iaia.org/publicdocuments/special-publications/sp1.pdf

- Strategic Environmental Assessment Information Service. This website seeks to provide a gateway to the latest information on Strategic Environmental Assessment and Sustainability Appraisal.
http://www.sea-info.net/

- European Commission - *SEA and Integration of the Environment into Strategic Decision-Making – Volume 1: Main Report*, (May 2001).
http://ec.europa.eu/environment/eia/sea-studies-and-reports/sea_integration_main.pdf

3. Stakeholder Consultation and Participation

- IFC (International Finance Corporation). 2007. *Stakeholder Engagement: A Good Practice Handbook for* Companies *Doing Business in Emerging Markets*. Washington, DC.

- ADB - *Strengthening Participation for Development Results: A Staff Guide to Consultation and Participation*. This guide provides practical tools and tips to make participation more accessible and effective in improving ADB operations. It also helps staff to fulfill ADB obligations and strategic objectives to consult or otherwise promote participation. The publication targets ADB mission teams and staff working in Resident Missions, but will also prove helpful to consultants, project executing and implementing agencies, and government departments in applying participatory methods.
http://www.adb.org/Documents/guidelines/strengthening-participation-for-dev/default.asp

4. Stakeholder Consultation and Participation

- IFC (International Finance Corporation). 2008. A *Guide to Designing and Implementing Grievance Mechanisms for Development Projects*. Washington, DC.Published by the Compliance Advisor/Ombudsman, the independent office that ensures accountability of IFC and MIGA projects and programs, this advisory note on designing and implementing grievance mechanisms for development projects addresses challenges that clients face in establishing effective grievance mechanisms and how they can be operationalized. It is intended as a good practice guide for IFC and MIGA, as well as for client companies and communities.
http://www.cao-ombudsman.org/howwework/advisor/documents/implemgrieveng.pdf

A. Biodiversity Conservation and Sustainable Natural Resource Management

1. Relevant International Agreements

- *Convention on Biological Diversity* (1992) – the *Convention on Biological Diversity* (CBD) is an international legally-binding treaty with three main goals: conservation of biodiversity; sustainable use of biodiversity; fair and equitable sharing of the benefits arising from the use of genetic resources. Its overall objective is to encourage actions which will lead to a sustainable future.The website provides information on the convention, lists of signatory nations and biodiversity experts and other useful information.
http://www.biodiv.org

- *Convention on Wetlands of International Importance (1971)* - known as the *Ramsar Convention*, it is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. As of 2009 there are 159 Contracting Parties to the Convention, with 1,855 wetland sites totaling 181.9 million hectares designated for inclusion in the Ramsar List of Wetlands of International Importance. The website provides extensive information on Ramsar sites, wetlands management, wise use of wetlands, etc.
http://www.ramsar.org

- *CITES - The Convention on International Trade in Endangered Species of Wild Fauna and Flora* (1973) - an international agreement with 175 Parties to the Convention, aimed at ensuring that international trade in specimens of wild animals and plants does not threaten their survival. Around 28,000 plant species and 5,000 animal species are covered by the provisions of the Convention. The CITES website provides substantial resources on endangered species. http://www.cites.org

- *Convention on Migratory Species* (1983) - The Convention on Migratory Species (CMS), also known as the *Bonn Convention,* is an intergovernmental treaty which aims to conserve terrestrial, marine and avian migratory species throughout their range. The CMS website includes information on species covered by the Convention and on other supporting international agreements.
http://www.cms.int

- *Cartagena Protocol on Biosafety* (2000) – The Cartagena Protocol is a supplementary agreement to the Convention on Biological Diversity. The Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology.
http://www.cbd.int/biosafety/

2. Biodiversity

- *A Guide to the Convention on Biological Diversity (1994)* – provides analysis on the Convention for those involved in its implementation. Glowka, L, et al., (1994), IUCN Gland and Cambridge. xii + 161pp., 2nd printing 1996.

- *World Conservation Union (IUCN)* – in 2008 the IUCN Red List web site was revamped. The User's Guide provides guidance on how to search the web site, how to navigate through the species fact sheets, how to save searches and export data from the site, and where to find and download GIS data for amphibians and mammals.
http://www.iucnredlist.org/documents/redlist_website_users_guide.pdf

- *World Conservation Union (IUCN)* – provides useful information on endangered species (http://www.redlist.org/), protected areas (http://www.iucn.org/themes/wcpa/), conservation and biodiversity expertise and other biodiversity and natural resources issues.

- *World Conservation Union (IUCN)* – the IUCN Guidelines for Protected Area Management Categories (1994) also provides useful information on protected areas and outlines a number of distinct categories of protected areas.
http://app.iucn.org/dbtw-wpd/edocs/1994-007-En.pdf

- *World Conservation Monitoring Centre (WCMC)* – provides information on biodiversity, habitats and species, as well as protected areas, conservation legislation and related issues.
http://www.unep-wcmc.org/

- *Global Environment Facility (GEF),* established in 1991, helps developing countries fund projects and programs that protect the global environment. GEF grants support projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. IFC works with GEF to assist IFC clients to protect and enhance global biodiversity benefits associated with their operations.
http://www.gefweb.org/

- The *World Bank-WWF Alliance for Forest Conservation and Sustainable Use* maintains a website which includes information on the identification and conservationof high conservation value forests and forest certification systems.
www.forest-alliance.org

- *Birdlife International* – Birdlife International is a global partnership of conservation organizations that focuses on conservation of birds, bird habitat and global biodiversity. Birdlife International makes available data on endangered bird species and important bird areas through its publications and on-line database.
http://www.birdlife.org/

- *FAO – Food and Agriculture Organization of the United Nations* – FAO is the UN agency which specializes in agriculture, forestry and fisheries. Their website provides information on biodiversity aspects in food and agriculture, including aspects related to agro-ecosystems and biotechnology.
http://www.fao.org/biodiversity/

- *IFC's Biodiversity Guide* - provides further information to guide IFC clients in the development of Biodiversity Action Plans and also provides further information on how businesses can address biodiversity in their business activities.
http://www.ifc.org/ifcext/enviro.nsf/Content/BiodiversityGuide

- The *HCV High Conservation Value Resource Network* - developed by WWF, provides useful tools and information in assessing conservation value and critical habitats.
http://www.hcvnetwork.org/

- *Business and Biodiversity Resource Centre*, (BBRC), hosted by Earthwatch Institute (Europe), provides case studies and information resource covering a number of commercial and industrial sectors.
http://www.businessandbiodiversity.org/

- *Integrated Biodiversity Assessment Tool* (IBAT). IBAT has been developed by UNEP, IUCN, Conservation International and Birdlife International, for businesses, to facilitates access to information about high priority sites *for* conservation – namely protected areas and

key biodiversity areas – to inform the implementation of corporate biodiversity policies and enhance environmental management systems and project planning processes. The tool includes interactive maps and data, useful for site and landscape level assessment processes.
http://www.ibatforbusiness.org/

- *Millennium Ecosystem Assessment*. From 2001 to 2005 the MEA involved the work of more than 1,360 experts worldwide to assess the consequences of ecosystem change for human well-being. Their findings provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide, as well as the scientific basis for action to conserve and use them sustainably.
http://www.millenniumassessment.org/en/index.aspx

3. Biodiversity and Impact Assessment

- The International Association for Impact Assessment (IAIA) (http://www.iaia.org/) provides a variety of resources on the impact assessment process

- Principles of Environmental Impact Assessment Best Practice
http://www.iaia.org/publicdocuments/special-publications/Principles%20of%20IA_web.pdf

- Biodiversity in Impact Assessment
http://www.iaia.org/publicdocuments/special-publications/SP3.pdf

- *The Capacity Building for Biodiversity in Impact Assessment* (CBBIA) project is a three-year global project managed by the International Association for Impact Assessment (IAIA) and funded by the Netherlands Ministry of Foreign Affairs. The project set out to develop capacity amongst stakeholders in a number of regions, including south and south-east Asia.
http://www3.webng.com/jerbarker/home/eia-toolkit/overall/home.html

- *The Good Practice Guidance for Mining and Biodiversity* was developed as part of an extensive dialogue between the International Council on Mining and Metals (ICMM) and the World Conservation Union (IUCN), which has been set up to explore different aspects of biodiversity conservation in the mining and metals sector. The guide provides an informative, accessible and highly practical reference source on biodiversity which can be used by mining companies at all stages of their operations, from initial exploration to mine closure planning and implementation.
http://www.icmm.com/document/13

4. Biodiversity Offsets

- The Business and Biodiversity Offset Program (BBOP), a partnership between companies, governments and conservation experts to explore biodiversity offsets, has developed a series of guidance and resource documents, including:

  - Business, Biodiversity Offsets and BBOP, An Overview.
    http://bbop.forest-trends.org/guidelines/overview.pdf
  - Principles on Biodiversity Offsets
    http://bbop.forest-trends.org/guidelines/principles.pdf
  - Biodiversity Offset Design Handbook
    http://bbop.forest-trends.org/guidelines/odh.pdf
  - Biodiversity Offset Design Handbook Appendices
    http://bbop.forest-trends.org/guidelines/odh-appendicies.pdf
  - Biodiversity Offset Cost-Benefit Handbook

http://bbop.forest-trends.org/guidelines/cbh.pdf
- Biodiversity Offset Implementation Handbook
  http://bbop.forest-trends.org/guidelines/oih.pdf
- The Relationship Between Biodiversity Offsets and Impact Assessment
  http://bbop.forest-trends.org/guidelines/eia.pdf
- Biodiversity Offsets and Stakeholder Participation
  http://bbop.forest-trends.org/guidelines/participation.pdf

- *Biodiversity Offsets: Views, experience and the business case*. This report -- produced jointly by Insight Investment and IUCN -- explores the potential of biodiversity offsets: it considers the concepts involved, such as "net benefit" and "no net loss", as well as why, where, when and by whom biodiversity offsets might be used. November 2004.
http://cmsdata.iucn.org/downloads/bdoffsets.pdf

5. Invasive Species

- The *Global Invasive Species Programme* (GISP) was established in 1997 to address global threats caused by invasive alien species, and to provide support to the implementation of Article 8(h) of the Convention on Biological Diversity. GISP maintains a website with links to databases and related information on invasive species, including the *Global Invasive Species Database (GISD)* a free, online searchable source of information about species that negatively impact biodiversity.
www.gisp.org

- *Pacific Island Ecosystems at Risk* (PIER) project provides information on invasive plants that threaten Pacific ecosystems.
www.hear.org/pier.

B. Pollution Prevention and Abatement

1. World Bank Group Environmental, Health and Safety Guidelines

- World Bank Group's *Environmental, Health and Safety Guidelines* (the EHS Guidelines). The EHS Guidelines include both general EHS guidance and specific guidance covering over 60 industry and project activities in 8 sectors.
http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines

2. Cleaner Production

Various examples of cleaner production are being compiled by international organizations such as:

- United Nations Environmental Program (UNEP). The Sustainable Consumption & Production Branch website provides a summary of *UNEP's Cleaner Production* activities.
www.unep.fr/scp/cp/

- United Nations Industrial Development Organization (UNIDO). The UNIDO Cleaner Production programme (CP) aims at building national CP capacities, fostering dialogue between industry and government and enhancing investments for transfer and development of environmentally sound technologies.
http://www.unido.org/index.php?id=o4460

- Asian Productivity Organization (APO).
http://www.apo-tokyo.org

3. Waste and Hazardous Materials

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (UNEP, 1989) provides assistance and guidelines on legal and technical issues, gathers statistical data, and conducts training on the proper management of hazardous waste
http://www.basel.int/index.html

- Supportinginformation to the Basel Convention are available at:
http://www.basel.int/meetings/sbc/workdoc/techdocs.html

- Stockholm Convention on Persistent Organic Pollutants (UNEP, 2001) promotes the reduction or elimination of releases of POPs through intentional and/or unintentional production and use of chemicals, and from stockpiles and wastes.
http://www.pops.int/

- Montreal Protocol on Substances that Deplete the Ozone Layer (UNEP, 2000). Sets targets for reducing the production and consumption of ozone depleting substances.
http://hq.unep.org/ozone/Montreal-Protocol/Montreal-Protocol2000.shtml

- Rotterdam Convention on the Prior Informed Consent for Certain Hazardous Chemicals and Pesticides in International Trade (UNEP, revised 2005). Procedure for certain hazardous chemicals and pesticides in international trade (Annex III).
http://www.pic.int/home.php?type=t&id=49

4. Internationally Recognized Ambient Quality Guidelines and Standards

- Air Quality Guidelines – Global Update 2005 (World Health Organization, 2006).
http://www.euro.who.int/Document/E90038.pdf

- Guidelines for Safe Recreational Water Environments - Volume 1. Coastal and Fresh Waters (World Health Organization, 2003). Describes the present state of knowledge regarding the impact of recreational use of coastal and freshwater environments upon the health of users.
http://www.who.int/water_sanitation_health/bathing/srwe1/en/

- Guidelines for Drinking-Water Quality - Third Edition (World Health Organization, 2004). Sets worldwide basis for regulation and standard setting to ensure the safety of drinking-water.
http://www.who.int/water_sanitation_health/dwq/gdwq3/en/

- Guidelines for Community Noise (World Health Organization, 1999) provide guidance to environmental health authorities and professional trying to protect people from the harmful effects of noise in non-industrial environments.
http://www.who.int/docstore/peh/noise/guidelines2.html

C. Health and Safety

1. Health and Safety Impact Assessment

- *Environmental, Health and Safety Guidelines* (IFC) - technical guidance informing those parts of the new policy structure related to environmental, health and safety issues.
http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines

- *Introduction to Health Impact Assessment*(IFC) - provides good practice guidance for conducting a health impact assessment of a project.
http://www.ifc.org/ifcext/sustainability.nsf/Content/Publications_GoodPractice_HealthAssessment

- *Fundamental Principles of Occupational Health and Safety.*(International Labor Office). 2008.

- *Health Impact Assessment: Main Concepts and Suggested Approach* (WHO/ECHP) - creates a common understanding of health impact assessment and provides a departure point for discussion, comments and suggestions for the further development of an HIA approach. http://www.euro.who.int/document/PAE/Gothenburgpaper.pdf

- *A Guide to Health Impact Assessment in the oil and gas industry (IPIECA/OGP2005)* –provides a summary checklist of activities consider when conducting health impact assessments.
http://www.ipieca.org/activities/health/downloads/publications/hia.pdf

- *Strategic Health Management: Principles and Guidelines for the Oil & Gas Industry, International Association of Oil & Gas Producers (OGP 2000)* - provides a basis for incorporating workforce and community health consideration systematically into project planning and management.
http://www.ogp.org.uk/pubs/307.pdf

- *Environmental Health: Bridging the Gap* (World Bank 2001), James A. Listorti and Fadi M. Doumani, *World Bank Discussion Paper 422* – This review written by World Bank consultants provides a detailed analysis of an approach to environmental health assessment.

- Banken, R. 2001. "Strategies for Institutionalizing Health Impact Assessment." Health Impact Assessment Discussion Paper, Number 1 (September). WHO European Centre for Health Policy. Brussels, Belgium.

- enHealth Council, Commonwealth of Australia. 2001. *Health Impact Assessment Guidelines* (September). Canberra, Australia.

- Erlanger, T. E., G. R. Krieger, B. H. Singer, and J. Utzinger. 2008. *Environmental Impact Assessment Review* 28 (2008): 349–358.

- Kemm, John, *et al.* (eds). 2004. *Health impact assessment: concepts, theory, techniquesand applications*. Oxford University Press. Oxford, United Kingdom.

- Kemm, J. 2003. *Perspectives on health impact assessment*. Bulletin of the World Health Organization 81: 387.

- Krieger, N., M. Northridge, S. Gruskin, *et al*. 2003. – "Assessing health impact assessment: multidisciplinary and international perspectives." *Journal of Epidemiology and Community Health* 57: 659–662.

- Morgan, R. K. 2003. *Health impact assessment: the wider context*. Bulletin of the World Health Organization 81: 390.

- Public Health Advisory Committee (New Zealand). March 2004. *A guide to health impact* a*ssessment: A policy tool for New Zealand*. National Health Committee. Wellington, New Zealand.

- Ezzati, M., J. Utzinger, S. Cairncross, A. J. Cohen, and B. H. Singer. 2004. "Environmental exposure indicators in the developing world: review, conceptual framework, and examples." *Journal of Epidemiology and Community Health* (submitted for publication).

2. Health Impact Assessment Methods Websites

http://www.iaia.org
http://www.who.int/hia

http://www.hiagateway.org.uk
http://www.hiadatabase.net
http://www.who.dk/eprise/main/WHO/Progs/HMS/Home
http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/index_e.html

3. Health and Safety Data Sources

- WHO Statistics and Health Information Systems – This information systems introduce disability-adjusted life years (DALY), which is a health gap measure that extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of "healthy" life lost by virtue of being in states of poor health or disability
http://www.who.int/healthinfo/boddaly/en/index.html

- *Demographic Surveillance Site (DSS) (The INDEPTH Network)* – DDS is an extremely cost-effective and well established program that can transparently and longitudinally collect and evaluated a wide range of social, health and economic survey data.
http://www.indepth-network.org/

- *Multiple Indicator Cluster Survey* (UNICEF) - developing-country national/country-level surveys for under-five children.
http://www.childinfo.org/MICS2/Gj99306k.htm

- *DHS* (*Demographic Health Surveys*) - Key health surveys for the developing world.
http://www.measuredhs.com/countries/start.cfm

- *WHO Statistical* Information System (WHOSIS) - Country-specific health Key Performance Indicators (KPIs).
http://www.who.int/whosis/en/

- *Roll Back Malaria (RBM)* - Country-specific data for malaria.
http://www.rbm.who.int/countryaction/index.html

- *National Library Medicine (PubMed)* - Key medical *database* search engine for peer-reviewed papers.
http://www.ncbi.nlm.nih.gov/sites/entrez?db=PubMed&itool=toolbar

- *World Bank Living Standards Measurement Surveys (LSMS)* - Key statistical source for LSMS data for developing countries.
http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:21610833~pagePK:64168427~piPK:64168435~theSitePK:3358997,00.html

- *Core Welfare Indicators Questionnaire (CWIQ)* - Key survey, including selected health outcomes.
http://www4.worldbank.org/afr/stats/cwiq.cfm

- *World Bank Data and Statistics.* http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,menuPK:232599~pagePK:64133170~piPK:64133498~theSitePK:239419,00.html

4. Disasters, Natural Hazards, Emergency Preparedness

- Guidance for Life and Fire Safety for new buildings accessible for public can be found in the *"Life and Fire Safety"* section of the sub section *"3.0 Community Health and Safety"* included in the General Environmental, health and Safety Guidelines of the IFC. http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_GeneralEHS_3/$FILE/3+Community+Health+and+Safety.pdf

- *Natural Disasters: Protecting the Public's Health* (Pan American Health Organization, 2000) - provides a framework to make effective decisions in managing the health sector's activities to reduce the *consequences* of disasters. http://www.paho.org/English/PED/sp575.htm

- Davis, Jan, and Robert Lambert. 2002. *Engineering in Emergencies, A Practical Guide for Relief Workers*. Warwickshire, UK: Practical Action Publishing.

5. Disease Control

- Prüss-Üstün, A., C. Mathers, C. Corvalán, and A. Woodward. 2003. *Introduction and methods: Assessing the environmental burden of disease at national and local levels*. World Health Organization Environmental Burden of Disease Series, No. 1: Geneva, Switzerland.

- Chin, J., ed. 2000. *Control of Communicable Diseases Manual*. 17th ed. Washington, DC: APHA.

- Ezzati, M., A. D. Lopez, A. Rodgers, *et al*. 2002. "Selected major risk factors and global and regional burden of disease." *Lancet* 360: 1347–60.

- Hunter, J. M., L. Rey, K. Y. Chu, E. O. Adekolu-John, and K. E. Mott. 1993. *Parasitic diseases in water resources development: the need for intersectoral negotiation*. World Health Organization, Geneva.

- Lindsay, S. W., M. Jawara, K. Paine, *et al*. 2003. "Changes in house design-reduce exposure to malaria mosquitoes." *Tropical Medicine and International Health* 8: 512–517.

- *A Guide to Malaria Management Programmes in the oil and gas industry (IPIECA/OGP 2006)* - This Guide outlines and describes the scientific concepts, rationale and value of Malaria Management Programmes (MMPs). The Guide provides a broad overview of MMPs, and templates such as implementation checklists and audit protocols that might typically form part of key activities when implementing. http://www.ipieca.org/activities/health/downloads/publications/malaria.pdf

D. Physical Cultural Resources

1. Relevant International Agreements

- *Convention Concerning the Protection of the World Cultural and Natural Heritage* (UNESCO, 1972) - establishes a system of collective identification, protection, and preservation of cultural and natural heritage and to provide both emergency and long-term protection for cultural and natural heritage. http://whc.unesco.org/en/convention

- *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property* (UNESCO, 1970) - states the necessary means in order to prohibit and prevent illicit import, export and transfer of ownership of cultural property.
http://portal.unesco.org/en/ev.php-URL_ID=13039&URL_DO=DO_TOPIC&URL_SECTION=201.html

- *Convention on the Protection of Underwater Cultural Heritage* (UNESCO, 2001) - protects underwater cultural heritage.
http://www.unesco.org/culture/laws/underwater/html_eng/convention.shtml

2. Guides and Resources

- *Operational Guidelines for the Implementation of the World Heritage Convention (UNESCO, 2008)* - aims to facilitate the implementation of the World Heritage Convention by setting forth the procedure for: a) the inscription of properties on the World Heritage List and the List of World Heritage in Danger; b) the protection and conservation of World Heritage properties; c) the granting of International Assistance under the World Heritage Fund; and d) the mobilization of national and international support in favor of the Convention.
http://whc.unesco.org/en/guidelines

- *World Heritage List* (from the *Convention Concerning the Protection of the World Cultural and Natural Heritage*) - currently includes 890 properties forming part of the cultural and natural heritage which the World Heritage Committee considers as having outstanding universal value.
http://whc.unesco.org/en/convention

- *List of World Heritage in Danger* (from the *Convention Concerning the Protection of the World Cultural and Natural Heritage*) - designed to inform the international community of conditions which threaten the very characteristics for which a property was inscribed on the World Heritage List, and to encourage corrective action.
http://whc.unesco.org/en/158/

- *Akwé: Kon Guidelines* (Secretariat of the Convention on Biological Diversity, 2004) - voluntary guidelines for the conduct of cultural environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous or local communities.
http://www.biodiv.org/doc/publications/akwe-brochure-en.pdf

- *Streetwise Asia, a practical guide for the conservation and revitalisation of heritage cities and towns in Asia.* Vines, Elizabeth 2005. Jointly published by the World Bank and UNESCO, this is a practical and accessible guide for residents and professionals concerned to preserve and revitalize heritage cities in Asia. Using inset color photographs to complement the text, the realities of destructive and constructive development, repairs, restoration and usage are made clear. Legal, financial, administrative, historical and educational aspects of conservation policies, incentives and implementations are discussed. With outlines for strategy, goals and bibliography.
http://www2.unescobkk.org/elib/publications/StreetWise_Asia/index.htm

Appendix 1: ADB Safeguard Policy Statement: Safeguards Requirement 1 (SR1)

Appendix 1: ADB Safeguard Policy Statement: Safeguards Requirement 1 (SR1)

Objectives: To ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process.

Scope and Triggers: Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts.

Policy Principles:

1. Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.

2. Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.

3. Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.

4. Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.

5. Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.

6. Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.

7. Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.

8. Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.

9. Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phaseouts. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.

10. Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.

11. Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.

Appendix 2: Myanmar EIA Procedures (Draft as of October 2014)

DRAFT – ENVIRONMENTAL IMPACT ASSESSMENT RULES

The Government of the Union of Myanmar
Ministry of Environmental Conservation and Forestry
Notification No. ----------/12
Nay Pyi Taw, the _____Day of_____, 1374 M.E.
(_____, 2012)

In exercise of the powers conferred by Section ??, Subsection (?) of the Myanmar Environmental Conservation Law and with the approval of the Government, the Ministry of Environmental Conservation and Forestry hereby makes the following Rules:-

CHAPTER I
Title and Definitions

1. These Rules shall be called the Environmental Impact Assessment Rules.

2. The expressions contained in these Rules shall have the same meanings as defined in Section (?) of the Myanmar Environmental Conservation Law. In addition thereto the following expressions have the meanings given hereunder:-

(a) **Law** means the Myanmar Environmental Conservation Law 2012 and any subsequent amendments;

(b) **Environment** shall have the same meaning as defined in Section (?) of the Law;

(c) **Environmental Impacts** means the probable effects or consequences of proposed projects or businesses or activities or undertakings on the physical, biological and socioeconomic environment that can be direct or indirect, cumulative and positive or negative;

(d) **Environmental Impact Assessment** means the process of studying the significant impact of a proposed project or business or activity on the physical, biological and socioeconomic environment, which is required as part of the decision making process;

(e) **Initial Environmental Examination** means a preliminary examination of the possible impacts of a proposed project or business or activity with a view to determining whether such impacts are significant and, as such, require the preparation of an environmental impact assessment report and any other documents as may be prescribed;

(f) **Environmental Management and Monitoring Plan** means a document which describes the measures to be taken for preventing, mitigating and monitoring significant environmental impacts resulting from the implementation and operation of a proposed project or business or activity;

(g) **National Committee** means the Myanmar National Environmental Conservation Committee as established by Section ? of the Law;

(h) **Project** means any activity or combination of activities including actions or undertakings, regardless of magnitude, which may have a significant impact on the environment;

(i) **Project Proponent** means an individual, company, or organization proposing to initiate a project;

(j) **Screening** means an initial assessment undertaken to determine whether or not an Initial Environmental Examination and/or an Environmental Impact Assessment, or any other form of reporting are required; and

(k) **Scoping** means the stage in the environmental impact assessment process where information and assessment requirements are established to provide the project proponent with the scope and terms of reference for the Environmental Impact Assessment.

CHAPTER II
Establishment of Environmental Impact Assessment Scheme

3. Pursuant to Section ? of the Law there shall be established a system of environmental impact assessment which shall require any proposed project or business or activity or undertaking in Myanmar by any ministry, government department, corporation, board, development committee, local authority, company, cooperative, institution, enterprise, firm or individual likely to have a significant impact on the environment to obtain approval for its implementation in accordance with these Rules.

4. (a) The Ministry of Environmental Conservation and Forestry shall be the executing agency for the purpose of these Rules;

(b) There shall be established under policy guidance of the National Committee an Environmental Impact Assessment Committee that shall, after obtaining and considering the recommendation of the Ministry of Environmental Conservation and Forestry, give environmental approval under these Rules;

(c) The composition of the Environmental Impact Assessment Committee shall be determined by the National Committee and the Minister responsible for the environment or a person delegated by the Minister and may vary depending on the project to be assessed but shall involve at least five persons with the requisite expertise from, *inter alia*, government, industry, academia and civil society;

(d) Any project which requires an Initial Environmental Examination or Environmental Impact Assessment shall not be issued a permit to commence exploration or construction or operation by the Myanmar Investment Commission or any relevant authority without the written environmental approval of the Environmental Impact Assessment Committee, and agreement in writing by the project proponent with any of the conditions attached to that approval, in the form required by the Ministry of Environmental Conservation and Forestry;

(e) Subject to the provisions of these Rules, the functions and duties of the Ministry of Environmental Conservation and Forestry shall include:-

(i) defining project screening criteria;

(ii) creating guidelines for Initial Environmental Examinations and Environmental Impact Assessments;

(iii) reviewing and approving Initial Environmental Examination Reports;

(iv) providing guidelines for and approving terms of reference for Environmental Impact Assessments;

(v) reviewing Environmental Impact Assessment reports and requiring any amendments thereof;

(vi) providing recommendations to the Environmental Impact Assessment Committee in relation to approval of Environmental Impact Assessment reports, including any possible conditions that may be required;

(vii) evaluating Environmental Management and Monitoring Plans;

(viii) reviewing and recommending to the Environmental Impact Assessment Committee any contract provision or other legally binding document to fully incorporate the Environmental Management and Monitoring Plans;

(ix) monitoring and enforcing the implementation of the Environmental Management and Monitoring Plans, and recommending to the Environmental Impact Assessment Committee any amendments thereof occasioned by experience during implementation of the project; and

(x) performing other duties relating to Environmental Impact Assessment as stipulated by the Government.

(b) The powers and functions of the Environmental Impact Assessment Committee shall include:-

(i) approval of project screening criteria;

(ii) approval, subject to conditions, if any, of the Environmental Impact Assessment Reports; and

(iii) approval, subject to conditions, if any, of the Environmental Management and Monitoring Plans.

6. The Ministry of Environmental Conservation and Forestry shall arrange, as it deems necessary, for the public participation of civil society and relevant agencies in the conduct of Environmental Impact Assessment and in implementation of the Environmental Management and Monitoring Plan.

CHAPTER III
Screening

7. The project proponent shall present the project proposal in the prescribed format to the Ministry of Environmental Conservation and Forestry for screening, at the same time as the project is submitted to the Myanmar Investment Commission or other relevant agencies for project approval.

8. (a) With respect to screening, the powers and functions of the Ministry for Environmental Conservation and Forestry shall include:-

(i) prescribing those projects or businesses or activities that require an Initial Environmental Examination, even though the project or activity is not included in Schedule 1 of these Rules, having regard to whether or not the project or business or activity involves any of the following:

(a) modification of landforms, natural ecosystems and natural landscapes;

(b) exploitation of renewable and non-renewable natural resources;
(c) processes and activities with the potential to cause waste, damage, or decline in ecosystem services;
(d) processes and activities which may affect the social and cultural environment;
(e) processes and activities which may affect the preservation of natural resource conservation areas and/or the protection of cultural and historical reserves;
(f) introduction of new species of plants, animals and microorganisms, including genetically modified organisms;
(g) applications of technology which are predicted to have considerable potential to affect the environment;
(h) activities having high risks and potentially affecting national security;
(i) production and use of biotic and abiotic substances; and
(j) such other criteria as may be prescribed by the National Committee to safeguard the environment.

(ii) prescribing the format and timeframe for the Statement of No Significant Impact to the Environment, Initial Environmental Examination Reports and Environmental Impact Assessment Reports; and

(iii) reaching a decision based on the Initial Environmental Examination Report as to whether or not the proposed project or business or activity may have potentially significant environmental impacts and where it so determines requiring the project or business or activity to undergo a full Environmental Impact Assessment.

(b) The selection of the type of projects or businesses or activities as referred to in the above sub-rule (a) and Schedule 1 shall be reviewed periodically, at least once every five years.

9. With respect to screening, the project proponent shall carry out the following duties, under guidance of the Ministry of Environmental Conservation and Forestry:-

(a) If the proposed project or business or activity falls within the activities listed in Schedule 1, the project proponent shall conduct an Initial Environmental Examination of the proposed project or business or activity and shall ensure that it is carried out by experts in the field of environmental impact assessment, who are duly certified by the Ministry of Environmental Conservation and Forestry; and

(b) Submit the draft and final Initial Environmental Examination to the Ministry of Environmental Conservation and Forestry in the format and timeframe as may be prescribed by the Ministry of Environmental Conservation and Forestry.

CHAPTER IV
Scoping

10. At the scoping stage of the environmental impact assessment, the Ministry of Environmental Conservation and Forestry shall have the following powers and functions relating to scoping:-

(a) developing and promulgating guidelines for scoping;

(b) identifying in cooperation with the project proponent any issues and concerns related to the project that are likely to have a significant environmental impact; and

(c) providing guidelines for, advising on, and approving the terms of reference for the investigation of environmental impacts and for preparation of the Environmental Impact Assessment Report and the Environmental Management and Monitoring Plan.

11. All project proponents for projects that are required to carry out a full Environmental Impact Assessment, either by virtue of Schedule II or III, or by order of the Ministry of Environmental Conservation and Forestry shall first conduct a scoping process which shall involve the following:-

(a) providing full disclosure to the Ministry of Environmental Conservation and Forestry of all relevant information regarding the likely environmental impacts of the proposed project; and

(b) failing to disclose information that is, or should have been, known to the project proponent shall be an offence under the Law and may also be grounds for rejection of the proposed project.

CHAPTER V
Investigation

12. During the investigation of a proposed project's environmental impacts, the Ministry of Environmental Conservation and Forestry shall have the following powers and functions:-

(a) To supervise the investigations carried out by the project proponents and their certified or approved experts, and where necessary call on the assistance and support of relevant Ministries, agencies and institutions for this purpose; and

(b) To call for and receive interim reports on the progress of the investigation from the project proponent, and recommend remedial steps as necessary.

13. (a) On the basis of the terms of reference, as approved by the Ministry of Environmental Conservation and Forestry, the project proponent shall carry out a full analysis and investigation of all the potential environmental impacts, both adverse and beneficial, of the proposed project;

(b) The investigation shall also include an analysis of feasible alternatives, mitigation measures, and the costs and benefits of both, and identify the likely residual environmental impacts after all mitigation measures are implemented;

(c) The investigation shall be carried out by experts in the field of environmental impact assessment, who are certified and approved by the Ministry of Environmental Conservation and Forestry and appointed by the project proponent; and

(d) The environmental impact assessment team shall include qualified national experts and/or any other experts, as deemed necessary by the Ministry of Environmental Conservation and Forestry.

CHAPTER VI
Reporting, Review and Approval

14. (a) Every project proponent required to carry out an Environmental Impact Assessment in respect of a proposed project shall prepare an Environmental Impact Assessment Report detailing every stage of the assessment and its conclusion in a format and timeframe as may be prescribed by the Ministry of Environmental Conservation and Forestry; and

(b) The project proponent shall prepare an Environmental Management and Monitoring Plan in a format prescribed by the Ministry of Environmental Conservation and Forestry and shall submit it with the Environmental Impact Assessment Report.

15. (a) Upon receipt of the Environmental Impact Assessment Report and the Environmental Management and Monitoring Plan from the project proponents, the Ministry of Environmental Conservation and Forestry shall invite relevant agencies, institutions, civil society organizations, and project-affected persons to provide comments and suggestions on the reports;

(b) The Ministry of Environmental Conservation and Forestry shall, within the timeframe as may be prescribed, review and evaluate the Environmental Impact Assessment Report and the Environmental Management and Monitoring Plan on the basis of the prescribed guidelines and the approved terms of reference;

(c) Upon review and evaluation of the Environmental Impact Assessment Report and the Environmental Management and Monitoring Plan, and consideration of the comments and suggestions from relevant agencies, institutions, civil society organizations, and project-affected persons, if it is determined by the Ministry of Environmental Conservation and Forestry that any of these documents do not fulfill the requirements as prescribed by the guidelines and the specific terms of reference, then the project proponent shall be called upon to undertake the necessary amendment in accordance with the directives issued by the Ministry of Environmental Conservation and Forestry; and

(d) The Ministry of Environmental Conservation and Forestry shall, where it considers necessary, call upon the expertise of other Ministries, agencies, institutions and experts in the evaluation of such Environmental Impact Assessment Reports and Environmental Management and Monitoring Plans. Any costs or parts thereof, incurred in obtaining the above expertise as determined by the Ministry of Environmental Conservation and Forestry shall be borne by the project proponent.

16. (a) The Ministry of Environmental Conservation and Forestry after approving the Initial Environmental Examination or upon receipt of the Environmental Impact Assessment Report and the Environmental Management and Monitoring Plan, including all prescribed amendments conforming to the requirements of the Ministry of Environmental Conservation and Forestry, if any, the Ministry of Environmental Conservation and Forestry shall submit all documents with comments and recommendations to the Environmental Impact Assessment Committee;

(b) The Environmental Impact Assessment Committee shall:-

(i) grant environmental approval for implementation of the proposed project either as proposed or subject to any conditions as may be prescribed; or

(ii) refuse to issue environmental approval for the proposed project and cite the reasons for doing so.

(c) If the project has received environmental approval, the Environmental Impact Assessment Committee shall issue a certificate to the project proponent conferring environmental approval and specifying the terms and conditions of implementation and operation of the project, as well as advising the Myanmar Investment Commission or other relevant agencies of the decision and publicizing the decision in appropriate media;

(d) The certificate issued pursuant to sub-rule (c) above shall include the duties imposed on the project proponent by virtue of the Environmental Management and Monitoring Plan;

(e) Upon receiving environmental approval from the Environmental Impact Assessment Committee, the project proponent will include the certificate of environmental approval in submitting any application to the Myanmar Investment Commission or other relevant agency for a permit to proceed with implementation of the project; and

(f) When the Myanmar Investment Commission or the relevant authority has given approval to an environmentally approved project, it shall communicate such approval to the Ministry of Environmental Conservation and Forestry. Upon receipt of the approval by the Myanmar Investment Commission or relevant authority the project proponent may commence implementation of the project according to the conditions attached to the approval and the Environmental Management and Monitoring Plan, within the timeframe as may be prescribed by the Ministry of Environmental Conservation and Forestry.

17. A project proponent whose Environmental Impact Assessment Report has been rejected pursuant to these Rules shall have the right to take necessary remedial measures and amend or entirely redraft the Environmental Impact Assessment Report and the Environmental Management and Monitoring Plan in conformity with the comments made by the Environmental Impact Assessment Committee on the submitted report, and shall have the right, within a given timeframe, to resubmit the report to the Ministry of Environmental Conservation and Forestry for their re-consideration as prescribed by these Rules.

CHAPTER VII
Monitoring

18. (a) The Ministry of Environmental Conservation and Forestry shall, where necessary in collaboration with other Ministries, agencies and institutions, carry out monitoring according to the Environmental Management and Monitoring Plan prepared by the project proponent;

(b) During all stages of implementation and operation of a project, the project proponent shall comply with the terms and conditions of the approval certificate issued pursuant to Rule 16, sub-rule (c) including the specific obligations under the Environmental Management and Monitoring Plan; and

(c) Failure to comply with the terms and conditions of the approval certificate shall be an offence under the Law and the Ministry of Environmental Conservation and Forestry shall have the authority to assess penalties as may be prescribed or to order the project to suspend construction or operation until such time as the project complies with the provisions of the Environmental Management and Monitoring Plan and provide necessary compensation for the environment or project-affected people damaged by non-compliance with the terms and conditions of the approval certificate.

19. (a) If, after approval has been granted for a project, there are proposals for any alterations, extensions, or modifications to the project which either cause or are likely to cause significant environmental impacts or require modification of the Environmental Management and Monitoring Plan, the project proponent shall notify the Ministry of Environmental Conservation and Forestry of such changes, within the timeframe as may be prescribed. The Ministry of Environmental Conservation and Forestry shall review the alterations, extensions, or modifications and send them with its comments and recommendations to the Environmental Impact Assessment Committee for its consideration;

(b) The Environmental Impact Assessment Committee shall determine the scope and format of any supplemental documentation that may be necessary before such changes can be implemented; and

(c) The Environmental Impact Assessment Committee shall, upon consideration of the application and any supplemental documentation, if any, make a decision on the alteration, extension or modification proposed by the project proponent.

20. (a) The Ministry of Environmental Conservation and Forestry, if deemed necessary, may establish an independent panel of experts in the field of environmental impact assessment who shall conduct an audit of the Environmental Impact Assessment process in a manner and time prescribed that shall focus on:-

(i) the effectiveness of Environmental Impact Assessment as a decision making and planning tool;

(ii) the environmental changes arising from project implementation;

(iii) the accuracy and utility of predictive techniques by comparing predicted against actual impacts;

(iv) the methods and approach adopted during the Environmental Impact Assessment study; and

(v) any other matters prescribed by the Ministry of Environmental Conservation and Forestry.

(b) The panel of experts shall prepare a report on their findings and submit it to the Minister of Environmental Conservation and Forestry and the Environmental Impact Assessment Committee for their consideration for the purpose of effecting any

necessary changes to the current Environmental Impact Assessment process as necessary to make it more effective.

21. All costs incurred by the designated authorities in the performance of functions pursuant to these Rules and directives made hereunder shall be borne by the project proponent and shall be provided to the Ministry of Environmental Conservation and Forestry before the commencement of project implementation, or such other times as may be prescribed by the Ministry of Environmental Conservation and Forestry.

22. The Ministry of Environmental Conservation and Forestry shall have the authority to make regulations and to issue notifications, orders, directives and instructions prescribing:-

(a) any activities that may require an Environmental Impact Assessment not covered by these Rules;

(b) the format of the Statement of No Significant Impact to the Environment, the Initial Environmental Examination Report and the Environmental Impact Assessment Report;

(c) the format of the Environmental Management and Monitoring Plan; and

(d) any other matters as may be necessary in implementing the provisions of these Rules.

_____

Minister responsible for Environmental Conservation and Forestry

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) သို့မဟုတ် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) ဆောင်ရွက်ရန်လိုအပ်သည့် စီမံကိန်းနှင့် သတ်မှတ်ချက်များ

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
အထူးရင်းနှီးမြှုပ်နှံမှုစီမံကိန်း					
၁	ပြည်ထောင်စုလွှတ်တော် သို့မဟုတ် ပြည်ထောင်စုအစိုးရ အဖွဲ့ သို့မဟုတ် နိုင်ငံတော်သမ္မတက အတည်ပြု ဆုံးဖြတ်ချက်ဖြင့် ဆောင်ရွက်သော ရင်းနှီးမြှုပ်နှံမှု စီမံကိန်းကြီးများ		အရွယ်အစားအားလုံး		
စွမ်းအင်ကဏ္ဍဖွံ့ဖြိုးရေးစီမံကိန်း					
၂	ရေအားလျှပ်စစ်ထုတ်လုပ်ရေးစီမံကိန်း	၁ မီဂါဝပ် နှင့် အထက် ၁၅ မီဂါဝပ် အောက် သို့မဟုတ် ကန်ရေပြည့်သိုလှောင်ပမာဏ ကုဗမီတာ ၂၀,၀၀၀,၀၀၀ အောက် သို့မဟုတ် ရေလှောင်တမံဧရိယာ ၄၀၀ ဟက်တာ အောက်	၁၅ မီဂါဝပ်နှင့် အထက် သို့မဟုတ် ရေသိုလှောင်ပမာဏ ကုဗမီတာ ၂၀,၀၀၀,၀၀၀ နှင့် အထက် သို့မဟုတ် ရေလှောင်တမံဧရိယာ ၄၀၀ ဟက်တာနှင့်အထက်		
၃	နျူကလီးယားစွမ်းအင်သုံး လျှပ်စစ်ဓာတ်အားပေးစက်ရုံ	-	အရွယ်အစားအားလုံး		
၄	သဘာဝဓာတ်ငွေ့သုံး သို့မဟုတ် ဇီဝဓာတ်ငွေ့သုံး လျှပ်စစ် ဓာတ်အားပေးစက်ရုံ	၅ မီဂါဝပ်နှင့်အထက် ၅၀ မီဂါဝပ်အောက်	၅၀ မီဂါဝပ်နှင့်အထက်	IFC Thermal Power Plant	
၅	ကျောက်မီးသွေးသုံးလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ	၁ မီဂါဝပ် အထက် ၁၀ မီဂါဝပ်အောက်	၁၀ မီဂါဝပ်နှင့်အထက်	IFC Thermal Power Plant	
၆	အပူငွေ့သုံး လျှပ်စစ်ဓာတ်အားပေးစက်ရုံ	၅ မီဂါဝပ်နှင့်အထက်	*၅၀ မီဂါဝပ်နှင့်အထက်*	IFC Thermal Power	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	(အမှတ်စဉ် ၄ နှင့် ၅ နှင့်မသက်ဆိုင်သော အခြားအမျိုးအစား)	၅၀ မီဂါဝပ်အောက်		Plant	
၇	လေစွမ်းအင်သုံး လျှပ်စစ် ဓာတ်အားပေးစက်ရုံ	၁၀ မီဂါဝပ် နှင့် အထက် ၅၀ မီဂါဝပ် အောက်	၅၀ မီဂါဝပ်နှင့်အထက်	IFC Wind Energy	
၈	ဘူမိအပူစွမ်းအင်သုံးလျှပ်စစ်ဓာတ်အားပေးစက်ရုံ	၅ မီဂါဝပ် နှင့် အထက် ၅၀ မီဂါဝပ် အောက်	၅၀ မီဂါဝပ်နှင့်အထက်		
၉	ပေါင်းစပ်စွမ်းအင်(ဓာတ်ငွေ့နှင့်အပူစွမ်းအင်) သုံး လျှပ်စစ်ဓာတ်အားပေးစက်ရုံ	၅ မီဂါဝပ် နှင့် အထက် ၅၀ မီဂါဝပ် အောက်	၅၀ မီဂါဝပ်နှင့်အထက်		
၁၀	နေရောင်ခြည်သုံး ဓာတ်အားပေးစက်ရုံ	၅၀ မီဂါဝပ်နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
	စွန့်ပစ်ပစ္စည်းမှ လျှပ်စစ်ဓာတ်အားထုတ်လုပ်ခြင်းစက်ရုံ	၅၀ မီဂါဝပ်နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၁၁	ရေနံနှင့် သဘာဝဓာတ်ငွေ့ ပိုက်လိုင်းသွယ်တန်းခြင်း သို့မဟုတ် ဖြန့်ဖြူးခြင်းစနစ်	၁၀ ကီလိုမီတာနှင့်အထက် ၅၀ ကီလိုမီတာ အောက်	၅၀ ကီလိုမီတာနှင့်အထက်	IFC Gas distribution systems	Oil or Gas transmission pipeline: 4930 Transport via pipeline Gas distribution: 3520 Manufacture of gas; Distribution of gaseous fuels through mains

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၁၂	ရေနံချက်စက်ရုံ သို့မဟုတ် သဘာဝ ဓာတ်ငွေ့စက်ရုံ (ရေနံဓာတ်ငွေ့ရည် (LPG)၊ စက်မောင်းဆီ(Mo Gas)၊ ရေနံဆီ၊ ဒီဇယ်၊ မီးထိုးဆီ၊ ဓာတ်ဆီ၊ ကတ္တရာစေး၊ နိုင်လွန်ကတ္တရာ၊ ကန့်)	-	အရွယ်အစားအားလုံး	IFC Petroleum Refining	1920 Manufacture of refined petroleum products
၁၃	ရေနံနှင့် သဘာဝဓာတ်ငွေ့အလုပ်ရုံ	-	အရွယ်အစားအားလုံး	IFC Cruid Oil and Petroleum Product Terminals	5210 Warehousing and storage
၁၄	စက်သုံးဆီအရောင်းဆိုင် (ဓာတ်ငွေ့ရည်(LPG)၊ သဘာဝ ဓာတ်ငွေ့ (CNG)အပါအဝင်)	သိုလှောင်နိုင်မှု ပမာဏ ၁၀ ကုဗမီတာ (လီတာ ၁၀၀၀၀) အောက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Retail Petroleum Networks	
၁၅	ရေနံသိုလှောင်ကန် သို့မဟုတ် သဘာဝ ဓာတ်ငွေ့ လှောင်ကန် တည်ဆောက်ခြင်း	ရေနံ သိုလှောင်နိုင်မှု ပမာဏ တန် ၁၀၀၀၀ အောက် ဓာတ်ငွေ့သိုလှောင်နိုင်မှု ပမာဏ တန် ၂၅၀၀ အောက်	ရေနံ သိုလှောင်နိုင်မှု ပမာဏ တန် ၁၀၀၀၀ နှင့်အထက် ဓာတ်ငွေ့သိုလှောင်နိုင်မှု ပမာဏ တန် ၂၅၀၀ နှင့်အထက်		522 Support activities for transportation
၁၆	၂၃၀ ကီလိုဝပ်အောက် လျှပ်စစ် ဓာတ်အားလိုင်း သွယ်တန်းခြင်း	၅၀ ကီလိုမီတာအောက်	၅၀ ကီလိုမီတာနှင့်အထက်	IFC Electric Power Transmission and Distribution	
၁၇	၂၃၀ ကီလိုဝပ်နှင့် အထက်လျှပ်စစ်ဓာတ်အားလိုင်း(မဟာဓာတ်အားလိုင်း) သွယ်တန်းခြင်း		အရွယ်အစားအားလုံး	IFC Electric Power Transmission and Distribution	
၁၈	ဗို့အားမြင့် ဓာတ်အားခွဲရုံ	*၁၀ ဟက်တာအောက်*	*၁၀ ဟက်တာနှင့်အထက်*	IFC Electric Power Transmission and Distribution	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၁၉	ဘူမိရူပတူးဖော်ခြင်းနည်းလမ်းဖြင့် ရေနံသို့မဟုတ် သဘာဝဓာတ်ငွေ့ စမ်းသပ်ရှာဖွေခြင်း	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၂၀	ကုန်းတွင်းရေနံနှင့်သဘာဝဓာတ်ငွေ့ဖွံ့ဖြိုးရေး (မြေတုန်ခါမှုဖြင့် စမ်းသပ်ရှာဖွေခြင်း၊ အစမ်းတွင်းတူးခြင်း၊ ထုတ်လုပ်ခြင်း၊ ပိုက်လိုင်းသွယ်တန်းခြင်းအပါအဝင်သယ်ယူ ပို့ဆောင်ခြင်း၊ မှုတ်ထုတ်ခြင်း၊ တိုင်းတာခြင်း၊ သတ္တုချောင်းပြုလုပ်ခြင်း၊စုပ်တင်ခြင်းနှင့် သိုလှောင်ခြင်း လုပ်ငန်းများ၊ အထောက်အကူပြုလုပ်ငန်းစဉ်များ၊ရပ်ဆိုင်းခြင်း လုပ်ငန်းများ၊	ကြိုတင်ခွင့်ပြုချက်ဖြင့် မြေတုန်ခါမှုနှင့် စမ်းသပ်ရှာဖွေခြင်း၊ အစမ်းတွင်း တူးခြင်း၊ သယ်ယူပို့ဆောင်ခြင်း၊ မှုတ်ထုတ်ခြင်း၊ တိုင်းတာ ခြင်း (IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားပါက EIA ဆောင်ရွက်ရမည်)	~~အရွယ်အစားအားလုံး~~ ထုတ်လုပ်ခြင်း၊ ပိုက်လိုင်းသွယ်တန်းခြင်း အပါအဝင် သတ္တုချောင်းပြုလုပ်ခြင်း၊ စုပ်တင်ခြင်းနှင့် သိုလှောင်ခြင်းလုပ်ငန်းများ၊ အထောက်အကူပြုလုပ်ငန်းစဉ်များ၊ ရပ်ဆိုင်းခြင်း လုပ်ငန်းများ	IFC Onshore Oil and Gas Development	
၂၁	ကမ်းလွန် ရေနံနှင့် သဘာဝဓာတ်ငွေ့ဖွံ့ဖြိုးရေး (မြေတုန်ခါမှုဖြင့် စမ်းသပ်ရှာဖွေခြင်း၊ အစမ်းတွင်းတူးခြင်း၊ ထုတ်လုပ်ခြင်း၊ ပိုက်လိုင်းသွယ်တန်းခြင်းအပါအဝင်သယ်ယူ ပို့ဆောင်ခြင်း၊မှုတ်ထုတ်ခြင်း၊တိုင်းတာခြင်း၊ စုပ်တင်ခြင်းနှင့် သိုလှောင်ခြင်း လုပ်ငန်းများ၊ အထောက်အကူပြုလုပ်ငန်းစဉ်များ၊ရပ်ဆိုင်းခြင်းလုပ်ငန်းများ	ကြိုတင်ခွင့်ပြုချက်ဖြင့် မြေတုန်ခါမှုနှင့် စမ်းသပ်ရှာဖွေခြင်း၊ အစမ်းတွင်း တူးခြင်း၊ သယ်ယူပို့ဆောင်ခြင်း၊ မှုတ်ထုတ်ခြင်း၊ တိုင်းတာ ခြင်း (IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားပါက EIA ဆောင်ရွက်ရမည်)	~~အရွယ်အစားအားလုံး~~ ထုတ်လုပ်ခြင်း၊ ပိုက်လိုင်းသွယ်တန်းခြင်း အပါအဝင် စုပ်တင်ခြင်းနှင့် သိုလှောင်ခြင်းလုပ်ငန်းများ၊ အထောက်အကူပြုလုပ်ငန်းစဉ်များ၊ ရပ်ဆိုင်းခြင်း လုပ်ငန်းများ	IFC Offshore Oil and Gas Development	
၂၂	ရေနံ အခြေပြု အော်ဂဲနစ် ဓာတုဗေဒပစ္စည်းများထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး	IFC Large Volume Petroleum-based Organic Chemical	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
				Manufacturing	
၂၃	သဘာဝဓာတ်ငွေ့ထုတ်ကုန်ပစ္စည်းထုတ်လုပ်ခြင်းလုပ်ငန်း၊ (Naphtha, gasoline, kerosene, disel fuel, waxes, lubes အပါအဝင် ရေနံဓာတ်ငွေ့ရည်ထုတ်ကုန်ပစ္စည်းများသို့မဟုတ် မက်သနော)		အရွယ်အစားအားလုံး	IFC Natural Gas Processing	
၂၄	သဘာဝဓာတ်ငွေ့ရည်ထုတ်လုပ်ခြင်းလုပ်ငန်း		အရွယ်အစားအားလုံး	IFC Liquefied Natural Gas(LNG) Facilities	
စိုက်ပျိုးရေး၊ မွေးမြူရေးနှင့် သစ်တောရေးရာ ဖွံ့ဖြိုးရေးစီမံကိန်း					
၂၅	သီးနှံ/စက်မှုကုန်ကြမ်းစိုက်ပျိုးထုတ်လုပ်ခြင်း (ရော်ဘာ၊ ဆီအုန်း၊ ကိုကိုး၊ လက်ဘက်၊ ကော်ဖီ၊ ငှက်ပျော၊ ကြံ စည်များ)	ဟက်တာ ၂၀၀ နှင့်အထက် ဟက်တာ ၅၀၀ အောက်	၅၀၀ ဟက်တာနှင့်အထက်	IFC Plantation Crop production	
၂၆	ရာသီသီးနှံစိုက်ပျိုးထုတ်လုပ်ခြင်း (cereals၊ pulses၊ roots၊ tubers၊ oil-bearing crops၊ fibre crops၊ vegetables၊ and fodder crops)	ဟက်တာ ၅၀၀ နှင့်အထက် ဟက်တာ ၃၀၀၀ အောက်	၃၀၀၀ ဟက်တာနှင့်အထက်	IFC Annual crop production	
၂၇	အပြောင်ရှင်းစနစ်ဖြင့် သစ်ထုတ်ခြင်း	ဟက်တာ ၅၀၀ အောက်	ဟက်တာ ၅၀၀ နှင့်အထက်		
၂၈	နှစ်အကန့်အသတ်ဖြင့် သစ်တောပြုစုထိန်းသိမ်းခြင်း	ဟက်တာ ၁၀၀၀၀ အောက်	ဟက်တာ ၁၀၀၀၀ နှင့်အထက်		
၂၉	ဆည်မြောင်းစနစ်များ	ဟက်တာ ၁၀၀ နှင့်အထက် ဟက်တာ ၅၀၀၀ အောက်	ဟက်တာ ၅၀၀၀ နှင့်အထက်		

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၃၀	တိရစ္ဆာန်မွေးမြူရေး (နွား၊ ကျွဲ၊ မြင်း၊ ဆိတ်၊ သိုးနှင့် အခြား)	Livestock Unit (LSU) ၅၀၀ နှင့်အထက် ၃,၀၀၀ အောက်	LSU ၃,၀၀၀ နှင့်အထက်	IFC Mammalian Livestock Production	0141 Raising of cattle and buffeloes, and 0142 Raising of Horses and other equines, and 0144 Raising of sheep and goats
၃၁	ကြက်၊ ဘဲနှင့် အခြား စီးပွားဖြစ် ငှက်မွေးမြူရေး	ကြက်၊ ဘဲ၊ ကြက်ဆင် အကောင် ၅,၀၀၀ နှင့်အထက် အကောင် ၂၀,၀၀၀ အောက် လည်ပင်း/ခြေထောက်ရှည် ငှက်အကြီးစား အကောင် ၅၀ နှင့်အထက် အကောင် ၂၀၀ အောက် ငုံး အကောင် ၂၅,၀၀၀ နှင့်အထက် အကောင် ၁၀၀,၀၀၀ အောက်	ကြက်၊ ဘဲ၊ ကြက်ဆင် အကောင် ၂၀,၀၀၀ နှင့်အထက် လည်ပင်း/ခြေထောက်ရှည် ငှက်အကြီးစား အကောင် ၂၀၀ နှင့်အထက် ငုံး အကောင် ၁၀၀,၀၀၀ နှင့်အထက်	IFC Poultry Production	0146 Raising of poultry
၃၂	ဝက်မွေးမြူရေးခြံ	အကောင် ၂,၀၀၀ နှင့်အထက် အကောင် ၅,၀၀၀ အောက်	အကောင် ၅,၀၀၀ နှင့်အထက်	IFC Mammalian Livestock Production	0145 Raising of swine/pigs
၃၄	ငါးသားပေါက်နှင့်ငါးမွေးမြူရေး(ရေကန်အတွင်း ငါးသားဖောက်ခြင်း)၊ ပုဇွန်မွေးမြူရေး	ကန်ဧရိယာ ၁၀ ဟက်တာနှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Aquaculture	032 Aquaculture
၃၅	ငါးသားပေါက်နှင့် ငါးမွေးမြူရေး(မြစ်တွင်းလျှောင်ကန် တည်ဆောက်၍ မွေးမြူခြင်း)	လျှောင်ကန် ဧရိယာ ၁၀၀၀ စတုရန်းမီတာနှင့်အထက် သို့မဟုတ် တန် ၁၀၀	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
		နှင့်အထက် မွေးမြူထုတ်လုပ်နိုင်သည့် လုပ်ငန်း			
၃၆	ဒီရေတောခုတ်ထွင်ရှင်းလင်း၍ ကုန်းတွင်းငါး/ပုဇွန် မွေးမြူရေး	ဧရိယာဟက်တာ ၁၀ အထက် ၁၀၀ အောက်	ဧရိယာဟက်တာ ၁၀၀ နှင့်အထက်		
၃၇	မုတ်ကောင်မွေးမြူခြင်း၊ ပုလဲထုတ်လုပ်ခြင်း	ဧရိယာဟက်တာ ၅၀ အထက် - ၂၀၀ အောက်	ဧရိယာဟက်တာ ၂၀၀ နှင့်အထက်		
၃၈	တောရိုင်းတိရစ္ဆာန်များ မွေးမြူရေးနှင့် စောင့်ရှောက်ရေး လုပ်ငန်း	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၃၉	တွားသွားသတ္တဝါ မွေးမြူရေး	မိကျောင်း၊ အရေခွံမာ၍ ခြေလက် အတိုလေးချောင်းနှင့် အမြီးရှည်ပါ တွားသွားသတ္တဝါနှင့် မြွေအကြီးစား အကောင် ၁,၀၀၀ အောက် မြွေနှင့် အခြားတွားသွားသတ္တဝါ အကောင် ၅,၀၀၀ အောက်	မိကျောင်း၊ အရေခွံမာ၍ ခြေလက် အတိုလေးချောင်းနှင့် အမြီးရှည် ပါ တွားသွားသတ္တဝါနှင့် မြွေအကြီးစား အကောင် ၁,၀၀၀ နှင့်အထက် မြွေနှင့် အခြားတွားသွားသတ္တဝါ အကောင် ၅,၀၀၀ နှင့်အထက်		
စက်မှုကဏ္ဍဖွံ့ဖြိုးရေးစီမံကိန်း					
အစားအစာနှင့်အဖျော်ယမကာ					
၄၀	အသားထုတ်လုပ်ခြင်းလုပ်ငန်း(နွား၊ ဝက်၊ သိုးနှင့်အခြားသားသတ်ရုံတည်ဆောက်ခြင်း)	တစ်ရက်လျှင် ၁၅ တန်နှင့် အထက် တန် ၅၀ အောက်	တစ်ရက်လျှင် တန် ၅၀ နှင့်အထက်	IFC Meat Processing IPPC 2008 Annex 1: 6.4(a)	1010 Processiing and preserving of meat

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၄၁	ကြက်၊ ဘဲ အသားထုတ်လုပ်ခြင်း(ကြက်၊ ဘဲနှင့် အခြား စီးပွားဖြစ်မွေးမြူထားသော ငှက်များ အသားထုတ်စက်ရုံ)	တစ်ရက်လျှင် ၁၅ တန်နှင့် အထက် တန် ၅၀ အောက်	တစ်ရက်လျှင် တန် ၅၀ နှင့်အထက်	IFC Poultry Processing IPPC 2008 Annex 1: 6.4(a)	1010 Processing and preserving of meat
၄၂	ငါးထုတ်လုပ်ခြင်း (fish, crustaceans, gastropods, cephalopods, and Bivalves, includes by products such as fich oil and fich meals)	တစ်ရက်လျှင် ၁၅ တန်နှင့် အထက် ၇၅ တန်အောက်	တစ်ရက်လျှင် တန် ၇၅ နှင့်အထက်	IFC Fish Processing IPPC Annex 1: 6.4(b)	1020 Processing and preserving of fish, crustaceans and molluscs
၄၃	အစားအစာနှင့်အဖျော်ယမကာထုတ်လုပ်ခြင်း (အသားနှင့် အသီးအရွက် ကုန်ကြမ်းများမှ တန်ဖိုးမြင့်စားသောက်ကုန်ထုတ်လုပ်ခြင်း	၁၀ တန် နှင့် အထက် တန် ၂၀ အောက်	တန် ၂၀ နှင့် အထက်	IFC Food and Beverage Processing	
၄၄	နို့နှင့် နို့ထွက်ပစ္စည်းထုတ်လုပ်ခြင်း (ကုန်ကြမ်းမှကုန်ချောထုတ်လုပ်မှုအဆင့်ဆင့်)	နှစ်စဉ်ထုတ်လုပ်မှုအပေါ် အခြေခံ၍ တစ်ရက်လျှင် တန် ၂၀၀ နှင့်အထက် /၅၀ နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Dairy Processing IPPC 2008 Annex 1: 6.4(c)	
၄၅	တိရစ္ဆာန်အစားအစာထုတ်လုပ်ခြင်း	တစ်ရက်လျှင် တန် ၃၀၀ အောက် < 600 t/d if the production is operating a maximum of 90d/a	တစ်ရက်လျှင် တန် ၃၀၀ နှင့်အထက် ≥ 600 t/d if the production is operating a maximum of 90d/a	DK: Environmental Permitting Decree	1080 Manufacture of prepared animal feeds
၄၆	ကစီဓာတ်ပါသော အစားအစာနှင့် ထုတ်ကုန်များထုတ်လုပ်ခြင်း	တစ်ရက်လျှင် တန် ၃၀၀ အောက် < 600 t/d if the production	တစ်ရက်လျှင် တန် ၃၀၀ နှင့်အထက် ≥ 600 t/d if the	DK: Environmental Permitting Decree	1062 Manufacture of starches and starch products

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
		is operating a maximum of 90d/a	production is operating a maximum of 90d/a		
၄၇	နှံစားသီးနှံကုန်ကြမ်းများထုတ်လုပ်ခြင်း (ဆန်နှင့် ဂျုံမှုန့်၊ ပြောင်းဖူးမှုန့်၊ ကော်ဖီမှုန့်၊ ကွေကာမှုန့်၊ ပဲမှုန့်၊ ငရုတ်သီးမှုန့်၊ သီးနှံအမှုန့် အမျိုးမျိုးထုတ်လုပ်ခြင်း လုပ်ငန်း)	တစ်ရက်လျှင် တန် ၃၀၀ အောက် < 600 t/d if the production is operating a maximum of 90d/a	တစ်ရက်လျှင် တန် ၃၀၀ နှင့်အထက် ≥ 600 t/d if the production is operating a maximum of 90d/a	DK: Environmental Permitting Decree	1061 Manufacture of grain mill products
၄၈	အသီးအရွက်မှ စားသုံးဆီထုတ်လုပ်ခြင်း	တစ်ရက်လျှင် တန် ၃၀၀ အောက် < 600 t/d if the production is operating a maximum of 90d/a	တစ်ရက်လျှင် တန် ၃၀၀ နှင့်အထက် ≥ 600 t/d if the production is operating a maximum of 90d/a	IFC Vegetable Oil Processing DK: Environmental Permitting Decree	1040 Manufacture of vegetable and animal oils and fats
၄၉	အချိုမှုန့်စက်ရုံ တည်ဆောက်ခြင်း	တစ်ရက်လျှင် တန် ၅၀ မှ တန် ၁၀၀ အောက်	တစ်ရက်လျှင် တန် ၁၀၀ နှင့်အထက်		
၅၀	သကြားစက်ရုံ	တစ်ရက်လျှင် သန့်စင်ပြီး တန် ၃၀၀ အောက် < 600 t/d if the production is operating a maximum of 90d/a	တစ်ရက်လျှင် သန့်စင်ပြီး တန် ၃၀၀ နှင့်အထက် ≥ 600 t/d if the production is operating a maximum of 90d/a	IFC sugar manufacturing DK: Environmental Permitting Decree	
၅၁	အရက်၊ ဝိုင်၊ ဘီယာ၊ ထုတ်လုပ်သည့် စက်ရုံ	~~တစ်ရက်လျှင် တန် ၃၀၀ အောက်~~ < 600 t/d if the production is operating a maximum	~~တစ်ရက်လျှင် တန် ၃၀၀ နှင့်အထက်~~ ≥ 600 t/d if the production is operating	IFC Breweries DK: Environmental Permitting Decree	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
		of 90d/a တစ်နှစ်လျှင် လီတာ ၅၀၀,၀၀၀ အောက်	a maximum of 90d/a တစ်နှစ်လျှင် လီတာ ၅၀၀,၀၀၀နှင့် အထက်		
၅၂	အရက်မဟုတ်သည့် ဖျော်ရည် ထုတ်လုပ်သည့် စက်ရုံ (ဆိုဒါ၊ အချိုရည်၊ သဘာဝရေ ထုတ်လုပ်ခြင်း)	တစ်ရက်လျှင် လီတာ ၁၀,၀၀၀ နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၅၃	ရေခဲစက် တည်ဆောက်ခြင်း	တစ်ရက်လျှင် တန် ၃၀၀ နှင့် အထက် တန် ၁,၀၀၀ အောက်	တစ်ရက်လျှင် တန် ၁,၀၀၀ နှင့်အထက်		
၅၄	ရေသန့်ထုတ်လုပ်ခြင်းနှင့် ရေသန့်ဗူး/ပုလင်း ထုတ်လုပ်သည့် စက်ရုံ	တစ်ရက်လျှင် ရေသန့် လီတာ ၅၀,၀၀၀ နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထား သည့် စီမံကိန်းအားလုံး		
၅၅	ဆေးရွက်ကြီးနှင့် ဆေးရွက်ကြီးအသုံးပြု ထုတ်ကုန်အမျိုးမျိုး ထုတ်လုပ်ခြင်း	တစ်ရက်လျှင် ထုတ်ကုန် ၁၅ တန်အောက်	တစ်ရက်လျှင် ထုတ်ကုန် ၁၅ တန်နှင့်အထက်		
အဝတ်အစား၊ အထည်အလိပ်နှင့် သားရေ					
၅၆	ချည်မျှင်နှင့်အထည်ထုတ်လုပ်ခြင်း (ရက်လုပ်အထည်၊ ချည်မျှင်နှင့် ချည်မျှင် အတုအမျိုးမျိုး)	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထား သည့် စီမံကိန်းအားလုံး	IFC Textile Manufacturing	13 Manufacture of textile
၅၇	သားရေထည်ပစ္စည်းထုတ်လုပ်ခြင်း (သားရေ အစစ်နှင့် သားရေတု လက်ဆွဲအိတ်၊ လက်ဆွဲသေတ္တာ၊ ထိုင်ခုံ၊ ရှူးဖိနပ်၊ စသည်များ)	~~တစ်နှစ်လျှင် ထုတ်ကုန် တန် ၁၀၀၀ နှင့်အထက်~~ *တစ်နှစ်လျှင် အရေအတွက် ၅၀၀,၀၀၀-၁,၀၀၀,၀၀၀ အောက်*	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထား သည့် စီမံကိန်းအားလုံး *တစ်နှစ်လျှင် အရေအတွက် ၁,၀၀၀,၀၀၀ နှင့် အထက်*	DK: Environmental Permitting Decree	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၅၈	သားရေနယ်စက်ရုံ	တစ်ရက်လျှင် ကုန်ချော ၁၂ တန်အောက်	တစ်ရက်လျှင် ကုန်ချော ၁၂ တန်နှင့်အထက်	IFC Tanning and Leather Finishing IPPC 2008 Annex 1: 6.3	1511 Tanning and dressing of leather; dressing and dyeing of fur
သစ်အခြေခံပစ္စည်း					
၅၉	သစ်စက်နှင့် သစ်အချောထည်ပစ္စည်း ထုတ်လုပ်ခြင်း	သစ်စက်များ- တစ်နှစ်လျှင် ကုန်ကြမ်းကုဗမီတာ ၃၀၀၀ နှင့်အထက် ကုဗမီတာ ၅၀,၀၀၀ အောက် သစ်အချောထည်ပစ္စည်း- တစ်နှစ်လျှင် ကုဗမီတာ ၁၀၀၀ နှင့်အထက် ကုဗမီတာ ၁၅,၀၀၀ အောက်	သစ်စက်များ- တစ်နှစ်လျှင် ကုန်ကြမ်းကုဗမီတာ ၅၀,၀၀၀ နှင့်အထက် သစ်အချောထည်ပစ္စည်း- တစ်နှစ်လျှင် ကုဗမီတာ ၁၅,၀၀၀ နှင့်အထက်	IFC Sawmilling and Manufactured Wood Products	
၆၀	အထပ်သားနှင့် သစ်အပိုင်းအစအခြေခံ ထုတ်ကုန်ပစ္စည်း ထုတ်လုပ်ခြင်း (သစ်သားပြားနှင့် ပါကေး၊ အထပ်သား၊ သစ်ပါးလွှာချပ် များ၊ ကြံ၊ လျှော်တို့ဖြင့် ပြုလုပ်သော ဘုတ်ပြားများ ထုတ်လုပ်ခြင်း)	တစ်ရက်လျှင် ကုဗမီတာ ၆၀၀ အောက် တစ်ရက်လျှင် တန် ၄၂၀ အောက်	တစ်ရက်လျှင် ကုဗမီတာ ၆၀၀ နှင့်အထက် တစ်ရက်လျှင် တန် ၄၂၀ နှင့်အထက်	IFC Board and Particle-based Products DK: Environmental Permitting Decree	
၆၁	စက္ကူပျော့ဖတ် နှင့် စက္ကူထုတ်လုပ်ခြင်း	တစ်ရက်လျှင် ပျော့ဖတ် တန် ၂၀ နှင့်အထက် တန် ၅၀ အောက်	တစ်ရက်လျှင် ပျော့ဖတ် တန် ၅၀ နှင့် အထက်	IFC Pulp and Paper Mills	1070 Manufacture of pulp and paper and paperoard
၆၂	ပုံနှိပ်လုပ်ငန်းနှင့် အခြား အလှဆင်လုပ်ငန်း (အော်ဂဲနစ် ပျော်ဝင်ပစ္စည်းသုံးစွဲ၍ အလှဆင်ခြင်း၊ ပုံနှိပ်ခြင်း၊ ဖုံးအုပ်ခြင်း၊ ဆေးခွာ	အော်ဂဲနစ် ပျော်ဝင်ပစ္စည်း သုံးစွဲသည့်ပစ္စည်း- တစ်နာရီလျှင် ၆ ကီလိုဂရမ်	အော်ဂဲနစ် ပျော်ဝင်ပစ္စည်း သုံးစွဲသည့်ပစ္စည်း- ၁၅၀ ကီလိုဂရမ်အထက်	IFC Printing IPPC 2008 Annex 1: 6.7	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	ခြင်း၊ရေစိမ်ခံပြုလုပ်ခြင်း၊ဖြတ်တောက်ခြင်း၊ ဆေးသုတ်ခြင်း၊ သန့်စင်ခြင်း သို့မဟုတ် ဖြည့်တင်းခြင်း)	နှင့်အထက် ၁၅၀ ကီလိုဂရမ်အောက်	သို့မဟုတ် တစ်နှစ်လျှင် တန် ၂၀၀ နှင့်အထက်	DK: Environmental Permitting Decree	
ဓာတုပစ္စည်း					
၆၃	အော်ဂဲနစ်မဟုတ်သော ဓာတုပစ္စည်း ပမာဏများပြားစွာထုတ်လုပ်ခြင်းနှင့်ကျောက်မီးသွေးကတ္တရာချက်လုပ်ခြင်း၊ (အမိုးနီးယား၊ နိုက်ထရစ်အက်စစ်၊ ဟိုက်ဒရို ကလိုရစ်အက်စစ်၊ ဆာလဖျူရစ်အက်စစ်၊ ဟိုက်ဒရို ဖလိုရစ် အက်စစ်၊ ဖော့စဖောရစ်အက်စစ် နှင့် ကလိုအယ်ကာလိုင်း (ကလိုရင်း၊ ကော့စတစ်ဆိုဒါ၊ ဆိုဒါအက်ရှ် စသည်များ)၊ ကျောက်မီးသွေးကတ္တရာ(နက်ဖက်သလင်း၊ ဖီနန်သရင်း၊ အင်သာရာဇင်း)	-	အရွယ်အစားအားလုံး	IFC Large volume Inorganic Compounds Manufacturing and Coal Tar Distillation	
၆၄	ရေနံ အခြေပြု ထုတ်လုပ်သည့် ပေါ်လီမာထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး	IFC Petroleum-based Polymers Manufacturing	
၆၅	ကျောက်မီးသွေး ပြုပြင်သန့်စင်ခြင်း (ကျောက်မီးသွေးမှဓာတ်ငွေ့များ၊ လောင်စာဆီများအပါအဝင်ဓာတုအရည်များထုတ်လုပ်ခြင်း)		အရွယ်အစားအားလုံး	IFC Coal Processing	
၆၆	ဓာတုဓာတ်မြေဩဇာထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး		
၆၇	ပိုးသတ်ဆေး အမျိုးမျိုး ထုတ်လုပ်ခြင်း၊ ဖော်စပ်ခြင်း၊ ထည့်သွင်း ထုပ်ပိုးခြင်း၊	-	အရွယ်အစားအားလုံး	IFC Pesticide Manufacturing	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	သိုလှောင်ခြင်း			Formulation, and Packaging	
၆၈	အိုလီယိုဓာတုပစ္စည်းထုတ်လုပ်ခြင်း (ဖက်တီးအက်စစ်၊ ဂရစ်စလင်း၊ ဇီဝဒီဇယ် အသုံးပြု၍ အသီးအရွက်နှင့် တိရစ္ဆာန်များမှ အဆီ၊ ဆီထုတ်လုပ်ခြင်း)		အရွယ်အစားအားလုံး	IFC Oleochemicals Manufacturing	
၆၉	ဆေးဝါးအမျိုးမျိုးနှင့် ဇီဝနည်းပညာ ထုတ်လုပ်ခြင်း	-	~~အရွယ်အစားအားလုံး~~ တစ်နှစ်လျှင် တန် ၅၀ နှင့်အထက် (Viet Nam)	IFC Pharmaceuticals and Biotechnology Manufacturing	
၇၀	ဆေးဘက်ဆိုင်ရာဆေးရုံးသုံးပစ္စည်းနှင့် တိုင်းတာရေးကိရိယာ၊ မျက်မှန်၊ နာရီ အမျိုးမျိုးထုတ်လုပ်ခြင်း	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၇၁	ရာဘာနှင့်စေးကပ်သောပစ္စည်း (ကော်အမျိုးမျိုး) ထုတ်လုပ်ခြင်း	တစ်နှစ်လျှင် တန် ၂၀၀၀ နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၇၂	ပေါက်ကွဲစေတတ်သောပစ္စည်းများ ထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး		2029 Manufacture of other chemical products
၇၃	အခြား အခြေခံ အော်ဂဲနစ်ဓာတုပစ္စည်းများ ထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး	IPPC 2008 Aneex 1: 4.1	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၇၄	အခြား အခြေခံအော်ဂဲနစ်မဟုတ်သော ဓာတုပစ္စည်းများ ထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး	IPPC 2008 Aneex 1: 4.2	
၇၅	အခြားဓာတ်တုပစ္စည်းများထုတ်လုပ်ခြင်း (သုတ်ဆေး၊ မှင်၊ အရောင်တင်ဆီ၊ ဆပ်ပြာခဲ၊ ဆပ်ပြာမှုန့်၊ ရေမွေး၊ မီးရှူးမီးပန်းနှင့် ဓာတ်ပုံလုပ်ငန်းဆိုင်ရာ ဓာတုပစ္စည်း)	တစ်ရက်လျှင် ၅ နှင့် အထက် ၁၀ တန်အောက်	တစ်ရက်လျှင် ၁၀ တန်နှင့်အထက်		202 Manufacture of other chemical products
၇၆	မီးသတ်ဆေးဗူးနှင့် အခြားမီးသတ်လုပ်ငန်းသုံးပစ္စည်းစက်ရုံ	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၇၇	ကာဗွန်ဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့ ထုတ်လုပ်ခြင်း၊ ဖြည့်သွင်းခြင်းနှင့် စက်မှု လုပ်ငန်းသုံးဓာတ်ငွေ့ရည်ထုတ်လုပ်ခြင်း	တစ်နှစ်လျှင် တန် ၁၀၀၀ နှင့်အထက် တန် ၃၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၃၀၀၀ နှင့်အထက်		
အိမ်သုံးပစ္စည်း					
၇၈	မှန်နှင့် မှန်ထည်ပစ္စည်းစက်ရုံ	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Glass Manufacturing	2310 Manufacture of glass and glass products
၇၉	ကြွေထည်မြေထည်၊ ကြွေပြားနှင့် သန့်ရှင်းရေးသုံးပစ္စည်းများထုတ်လုပ်ခြင်း	ကြွေထည်မြေထည် ပစ္စည်း တစ်နှစ်လျှင် တန် ၁၀၀၀ နှင့်အထက် ကြွေပြား တစ်နှစ်လျှင် တန် ၁၀၀၀၀ နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Ceramic Tile and Sanitary Ware Manufacturing *(Typical production levels for ceramic manufacturing facilities vary from*	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
				10 to 50 tons/day for fine ceramics and 450 to 500 tons/day for ceramic tiles)	
၈၀	TSR သို့မဟုတ် Block ရော်ဘာပစ္စည်း ထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး		
ဆောက်လုပ်ရေးစက်မှုလုပ်ငန်း:					
၈၁	ဘိလပ်မြေနှင့် ထုံး ထုတ်လုပ်ခြင်းစက်ရုံ	ဘိလပ်မြေ တစ်နှာရီလျှင် တန် ၃၀ အောက် ထုံး တစ်ရက်လျှင် တန် ၅၀ အောက်	ဘိလပ်မြေ- တစ်နှာရီလျှင် တန် ၃၀ နှင့်အထက် ထုံး- တစ်ရက်လျှင် တန် ၅၀ နှင့်အထက်	IFC Cement and Lime Manufacturing	
၈၂	ကျောက်မီးသွေးချော် စက်ရုံ	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၈၃	အခြား ဆောက်လုပ်ရေးလုပ်ငန်း သုံးပစ္စည်းများ၊ ကုန်ကြမ်းများ ထုတ်လုပ်ခြင်း	တစ်နှစ်လျှင် တန် ၃၀,၀၀၀ နှင့်အထက် တန် ၅၀,၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၅၀,၀၀၀ နှင့်အထက်		
၈၄	နိုင်လွန်ကတ္တရာ ထုတ်လုပ်ခြင်း	တစ်ရက်လျှင် တန် ၁၀၀ အောက်	တစ်နေ့လျှင် တန် ၁၀၀ နှင့်အထက်	IFC Pertoleum Refinery	
သတ္တု၊ စက်ပစ္စည်းနှင့် လျှပ်စစ်ပစ္စည်းများ					
၈၅	သတ္တု၊ ပလတ်စတစ်၊ ဖိုက်ဘာနှင့် ရော်ဘာပစ္စည်း ထုတ်လုပ်ခြင်း (စက်မှုလုပ်ငန်းမျိုးစုံတွင် သတ္တု၊ ပလတ်	ထုတ်လုပ်သည့် ဧရိယာ ၁၀၀၀ စတုရန်းမီတာနှင့်အထက် အော်ဂဲနစ်ပျော်ဝင်ပစ္စည်း	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Metal, Plastic, and Rubber Products Manufacturing	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	စတစ်၊ ဖိုက်ဘာနှင့် ရော်ဘာပစ္စည်း ထုတ်လုပ်ခြင်းနှင့် အတွက် အသုံးပြုနိုင်ရန် ကုန်ကြမ်းပစ္စည်းထုတ်လုပ်ခြင်းအဆင့်ဆင့်)	တစ်နာရီလျှင် ၆ ကီလိုဂရမ်နှင့်အထက် သုံးစွဲခြင်း			
၈၆	အခြေခံသတ္တုအရည်ကျိုချက်ခြင်းနှင့် သန့်စင်ခြင်း စက်ရုံ (အခြေခံသတ္တုကို အရည်ကျိုချက်၍ ခဲ၊ သွပ်၊ ကြေးနီ၊ နစ်ကယ်နှင့် အလူမီနီယံထုတ်လုပ် သန့်စင်ခြင်း)	~~သံသတ္တု တစ်ရက်လျှင် တန် ၂၀ အောက်ထုတ်လုပ်ခြင်း~~ သံမဟုတ်သော သတ္တု တစ်ရက်လျှင် တန် ၂၀ အောက် အရည်ကျိုထုတ်လုပ်ခြင်း၊ ခဲ နှင့် ကက်ဒမီယံ မဟုတ်သော သတ္တု တစ်ရက်လျှင် ၄ တန်အောက် ~~အရည်ကျိုး~~ ထုတ်လုပ်ခြင်း	~~သံသတ္တု တစ်ရက်လျှင် တန် ၂၀ နှင့်အထက် ထုတ်လုပ်ခြင်း~~ သံမဟုတ်သော သတ္တု တစ်ရက်လျှင် တန် ၂၀ နှင့် အထက် ~~အရည်ကျိုး~~ ထုတ်လုပ်ခြင်း၊ ခဲ နှင့် ကက်ဒမီယံ မဟုတ်သော သတ္တု တစ်ရက်လျှင် ၄ တန်နှင့်အထက် ~~အရည်ကျိုး~~ ထုတ်လုပ်ခြင်း၊	IFC Base Metal Smelting and Refining	
၈၇	သံမဏိစက်ရုံ (သံရိုင်း၊ ကုန်ကြမ်း သို့မဟုတ် ရောစပ်မှု နည်းသော သံမဏိ)	တစ်နာရီလျှင် ၂.၅ တန် အောက်	တစ်နာရီလျှင် ၂.၅ တန် အောက်	IFC Integrated Steel mills	
၈၈	အရည်ကျိုစက်ရုံ (သံ၊ သံမဏိ၊ နှင့် သံမဟုတ်သော အလူမီနီယံ၊ ကြေးနီ၊ ခဲ၊ နစ်ကယ်၊ သံဖြူ၊ မဂ္ဂနီဆီယမ် နှင့် တိုင်တေးနီယမ်အခြေခံ သတ္တုအမျိုးမျိုး အရည်ကျိုခြင်း)	သံသတ္တု တစ်ရက်လျှင် တန် ၂၀ အောက်ထုတ်လုပ်ခြင်း၊ သံမဟုတ်သော သတ္တု တစ်ရက်လျှင် တန် ၂၀ အောက် ~~အရည်ကျိုး~~ ထုတ်လုပ်ခြင်း၊ ~~ခဲ နှင့် ကက်ဒမီယံ မဟုတ်သော~~	သံသတ္တု တစ်ရက်လျှင် တန် ၂၀ နှင့်အထက် ထုတ်လုပ်ခြင်း၊ သံမဟုတ်သော သတ္တု တစ်ရက်လျှင် တန် ၂၀ နှင့်အထက် ~~အရည်ကျိုး~~	IFC Foundries IPPC 2008 Annex 1: 2.4 and 2.5(b)	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
		အဖိုးတန်သတ္တု တစ်ရက်လျှင် ၄ တန်အောက် ~~အရည်ကျိုး~~ ထုတ်လုပ်ခြင်း၊	ထုတ်လုပ်ခြင်း၊ ~~ခဲ နှင့် ကက်ဒမီယံ မမှုတ်သော~~ အဖိုးတန်သတ္တု တစ်ရက်လျှင် ၄ တန်နှင့်အထက် ~~အရည်ကျိုး~~ထုတ်လုပ်ခြင်း၊		
၈၉	ဆီမီးကွန်ဒတ်တာနှင့် အခြား အီလက်ထရောနစ်ပစ္စည်းများ ထုတ်လုပ်ခြင်း (ဆီမီးကွန်ဒတ်တာ၊ ဆားကစ်ပြား (Printed Circuit Boards-PCBs)၊ ပိုင်ယာဘုတ် (Pronted Wiring Assembles-PWAs)၊ တစ်ဆင့်ခံ ပစ္စည်းများနှင့် လျှပ်စစ်သံလိုက် ပစ္စည်းများထုတ်လုပ်ခြင်း)	ထုတ်လုပ်သည့် ဧရိယာ ၁၀၀၀ စတုရန်းမီတာနှင့်အထက် အော်ဂဲနစ်ပျော်ဝင်ပစ္စည်း တစ်နာရီလျှင် ၆ ကီလိုဂရမ်နှင့်အထက် သုံးစွဲခြင်း	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Semiconductors & Other Electronics Manufacturing	
၉၀	လျှပ်စစ်နှင့် အီလက်ထရောနစ် ကိရိယာများ အိမ်သုံးလျှပ်စစ်ပစ္စည်းများထုတ်လုပ်ခြင်း (ကွန်ပျူတာ၊ ဆက်သွယ်ရေးစက်ပစ္စည်း၊ အများသုံးအီလက်ထရောနစ်ပစ္စည်း၊ ဓာတ်ခွဲခန်းသုံးပစ္စည်း၊ လျှပ်စစ်မော်တာ၊ လျှပ်စစ်မီးသီး/မီးချောင်းများ)	ထုတ်လုပ်သည့် ဧရိယာ ၁၀၀၀ စတုရန်းမီတာနှင့်အထက် သို့မဟုတ် အော်ဂဲနစ်ပျော်ဝင်ပစ္စည်း တစ်နာရီလျှင် ၆ ကီလိုဂရမ် နှင့်အထက် အသုံးပြုသည့် လုပ်ငန်း	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		261 Manufacture of electronic components 271 Manufacture of electric motrs, generators, transformers and electricity distribution and contiol apparatus

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
					274 Manufacture of electric lighting equipment
၉၁	ဘက်ထရီနှင့် လျှပ်သိုပစ္စည်း ထုတ်လုပ်သည့် လုပ်ငန်း	တစ်နှစ်လျှင် တန် ၃၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၃၀၀၀ နှင့်အထက်		272 Manufacture of Batteries and accumulators
၉၂	စက်ပစ္စည်း၊ ယာဉ်နှင့် စက်ကိရိယာပစ္စည်း အမျိုးမျိုး ထုတ်လုပ်သည့် စက်ရုံ	ထုတ်လုပ်သည့် ဧရိယာ ၁၀၀၀ စတုရန်းမီတာနှင့်အထက် သို့မဟုတ် အောဂဲနစ်ပျော်ဝင်ပစ္စည်း တစ်နာရီလျှင် ၆ ကီလိုဂရမ် နှင့်အထက် အသုံးပြုသည့် လုပ်ငန်း	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		28 Manufacture of machinery and equipment 2910 Manufacture of motor vehicles
၉၃	လက်နက်၊ ခဲယမ်းများ ထုတ်လုပ်ခြင်း	-	အရွယ်အစားအားလုံး		2520 manufacture of weapons and ammunition
၉၄	သံ၊ ~~သတ္တု၊ လျှစ်စစ်ဖြင့် ပြုလုပ်သော အန္တရာယ်ရှိပစ္စည်း၊ သံဆူးကြိုး၊ သံပိုက်ကွန် ဆုတ်ဖုပ်ခြင်း~~ နှင့်သံမဟုတ်သောသတ္တုများ အရည်ကျိုပုံသွန်းလုပ်ငန်း၊ပန်းပဲလုပ်ငန်း၊ နန်းဆွဲလုပ်ငန်း	-	~~အရွယ်အစားအားလုံး~~ ထုတ်ကုန်ပစ္စည်း တစ်ရက်လျှင် တန် ၂၀ အထက်		
၉၅	သင်္ဘောကျင်းနှင့် သင်္ဘောတည်ဆောက်ခြင်း လုပ်ငန်း	သင်္ဘောကျင်း ဧရိယာ ၁ ဟက်တာအောက်နှင့် ဆွဲတင်နိုင်မှုတန်ချိန်	သင်္ဘောကျင်း ဧရိယာ ၁ ဟက်တာနှင့်အထက် ဆွဲတင်နိုင်မှုတန်ချိန်		301 Building of ships and boats

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
		၂၀,၀၀၀ အောက်	၂၀,၀၀၀ နှင့်အထက်		
၉၆	အိမ်သုံးပစ္စည်းထုတ်လုပ်သည့် စက်ရုံ (အမှတ်စဉ် ၉၀ နှင့် အမျိုးအစား တူညီသည်ဟု ယူဆရပါသည်) (အပြည်ပြည်ဆိုင်ရာလုပ်ငန်းအမျိုးအစား စံသတ်မှတ်ချက် မတူညီပါ)	ထုတ်လုပ်သည့် ဧရိယာ ၁၀၀၀ စတုရန်းမီတာနှင့်အထက် သို့မဟုတ် အောဂဲနစ်ပျော်ဝင်ပစ္စည်း တစ်နာရီလျှင် ၆ ကီလိုဂရမ် နှင့်အထက် အသုံးပြုသည့် လုပ်ငန်း	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		2750 Manufacture of domestic appliance
ယာဉ်များ					
၉၇	ရထားစက်ခေါင်းများ၊ တွဲများတည်ဆောက်၊ ပြင်ဆင်၊ တပ်ဆင်ခြင်း	-	တစ်နှစ်လျှင် တွဲဆိုင်း ၁၀၀ နှင့်အထက်		
၉၈	ယာဉ်အိုဟောင်းများ မီးရှို့ ခြေမွှ ဖျက်ဆီးခြင်းလုပ်ငန်း	တစ်နေ့လျှင် မော်တော်ယာဉ် ၁၀ စီးအောက် မော်တော်ဆိုင်ကယ် အစီး ၅၀ အောက်	တစ်နေ့လျှင် မော်တော်ယာဉ် ၁၀ စီးနှင့်အထက် မော်တော်ဆိုင်ကယ် အစီး ၅၀ နှင့်အထက်		ကညန
၉၉	မော်တော်ယာဉ်ပြုပြင်ထိန်းသိမ်းတပ်ဆင်ရေးအလုပ်ရုံ	အသုံးပြုဧရိယာ စတုရန်းမီတာ ၁၀၀၀ နှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		″
၁၀၀	မော်တော်ဆိုင်ကယ်၊ မော်တော်ယာဉ်အမျိုးမျိုး တပ်ဆင်ထုတ်လုပ်သည့် စက်ရုံ	-	တစ်နှစ်လျှင် မော်တော်ဆိုင်ကယ် အစီးရေ ၁၀,၀၀၀ နှင့်အထက်/ မော်တော်ယာဉ် အစီးရေ ၅၀၀ နှင့်အထက်		″

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၁၀၁	မော်တော်ယာဉ်နှင့်ပတ်သက်သောအပိုပစ္စည်း၊ ဆက်စပ် ကိရိယာ အစိတ်အပိုင်းနှင့် အင်ဂျင် ထုတ်လုပ်သည့် စက်ရုံ	-	တစ်နှစ်လျှင် တန် ၁,၀၀၀ အထက်		II
၁၀၂	တာယာထုတ်လုပ်သည့် စက်ရုံ (ရော်ဘာ တာယာများနှင့် ကျွတ်/ဖလပ်များ)	-	မော်တော်ယဉ်(ကြီး/သေး) တာယာ တစ်နှစ်လျှင် အလုံးရေ ၅၀,၀၀၀ နှင့်အထက် ဆိုင်ကယ်နှင့် စက်ဘီးတာယာ တစ်နှစ်လျှင် အလုံးရေ ၁၀၀,၀၀၀ နှင့်အထက်		II
စွန့်ပစ်ပစ္စည်းများ					
၁၀၃	ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်း စွန့်ပစ်ခြင်း	မြေဖို့ခြင်း တစ်ရက်လျှင် ၁၀ တန် အောက်နှင့် စွန့်ပစ်ပစ္စည်း တန် ၂၅၀၀၀ အောက် အခြားစွန့်ပစ်ပစ္စည်း တစ်ရက်လျှင် တန် ၅၀ အောက်	မြေဖို့ခြင်း တစ်ရက်လျှင် ၁၀ တန်နှင့် အထက် စွန့်ပစ်ပစ္စည်း တန် ၂၅၀၀၀ နှင့်အထက် အခြားစွန့်ပစ်ပစ္စည်း တစ်ရက်လျှင် တန် ၅၀ နှင့်အထက်	IFC Waste Management Facilities IPPC 2008 Annex 1: 5.3 and 5.4 DK: Environmental Permitting Decree	
၁၀၄	ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများ မီးရှို့စက်ရုံ	တစ်နာရီ ၃ တန် အောက်	တစ်နာရီ ၃ တန်နှင့်အထက်	IFC Waste Management Facilities IPPC 2008 Annex 1: 5.2	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
				DK: Environmental Permitting Decree	
၁၀၅	ဘေးအန္တရာယ်မရှိသော စွန့်ပစ်ပစ္စည်းများအား ပြန်လည်ရယူခြင်း သို့မဟုတ် ပြန်လည်အသုံးပြုခြင်း	တစ်ရက်လျှင် တန် ၅၀ အောက်	တစ်ရက်လျှင် တန် ၅၀ နှင့်အထက်	IFC Waste Management Facilities IPPC 2008 Annex 1: 5.3 DK: Environmental Permitting Decree	
၁၀၆	ဘေးအန္တရာယ်ဖြစ်စေသော အစိုင်အခဲ စွန့်ပစ် ပစ္စည်းများ စွန့်ပစ်ခြင်း	-	အရွယ်အစားအားလုံး	IFC Waste Management Facilities	
၁၀၇	ဘေးအန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းများအား ပြန်လည်ရယူခြင်း သို့မဟုတ် ပြန်လည်အသုံးပြုခြင်း	တစ်ရက်လျှင် ၁၀ တန်အောက်	တစ်ရက်လျှင် ၁၀ တန်နှင့်အထက်	IFC Waste Management Facilities IPPC 2008 Annex 1: 5.1 DK: Environmental Permitting Decree	
၁၀၈	စွန့်ပစ်ရေများအား စုပေါင်းစနစ်ဖြင့် ပြုပြင်သန့်စင်သည့်စက်ရုံ (Waste water treatment plant- centralized system)	-	အရွယ်အစားအားလုံး	IFC Water and Sanitation	
၁၀၉	စွန့်ပစ်ရေနှင့် ရေဆိုးများ စုဆောင်းခြင်း စနစ်တည်ဆောက်ခြင်း	ရေသွယ်မြောင်း အရှည် ၁ ကီလိုမီတာနှင့်အထက် ၁၀ ကီလိုမီတာအောက်	ရေသွယ်မြောင်း အရှည် ၁၀ ကီလိုမီတာနှင့်အထက်	IFC Water and Sanitation	
ရေပေးဝေရေး					
၁၁၀	စက်မှုလုပ်ငန်း၊ စိုက်ပျိုးရေးလုပ်ငန်း	တစ်ရက်လျှင် ကုဗမီတာ	တစ်ရက်လျှင် ကုဗမီတာ	IFC Water and	3600 Water

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	(သို့မဟုတ်) မြို့ပြရေပေးဝေရေးအတွက် မြေအောက်ရေ ဖွံ့ဖြိုးရေးလုပ်ငန်း	၄,၅၀၀ အောက်	၄,၅၀၀ နှင့်အထက်	Sanitation	collection, treatment and supply
အခြေခံအဆောက်အအုံနှင့် ဝန်ဆောင်မှုဖွံ့ဖြိုးရေးလုပ်ငန်းစီမံကိန်း					
၁၁၁	အများပြည်သူကိုထိခိုက်စေနိုင်သောရေကန်၊ မြစ်၊ ချောင်း၊ တူးမြောင်းများ၊ စိမ့်မြေ၊ ရွှံ့ညွှံမြေ၊ ရေဝပ်မြေများ မြေဖို့ခြင်း စီမံကိန်း	ဟက်တာ ၅၀ အောက်	ဟက်တာ ၅၀ နှင့်အထက်		
၁၁၂	ဆည် (သို့မဟုတ်) ရေလှောင်တမံများ	တမံအမြင့် ၁၅ မီတာအောက် သို့မဟုတ် ရေလှောင်ဧရိယာ ဟက်တာ ၄၀၀ အောက်	တမံအမြင့် ၁၅ မီတာ နှင့်အထက် သို့မဟုတ် ရေလှောင်ဧရိယာ ဟက်တာ ၄၀၀ နှင့်အထက်		
၁၁၃	သင်္ဘောသွားလာရေး (ကုန်စည်နှင့် ခရီးသည် ပို့ဆောင်ရေးအတွက် ရေယာဉ်များ ပြေးဆွဲခြင်း၊ ပြုပြင်ထိန်းသိမ်းခြင်း)	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Shipping	
၁၁၄	ဆိပ်ကမ်းတည်ဆောက်ခြင်း (ကုန်ပစ္စည်းတင်ဆောင်ရန်နှင့် ခရီးသည် ပို့ဆောင်ရေးယာဉ်များဆိုက်ကပ်ရန် ဆိပ်ကမ်း၊ ဆိပ်ခံတံတား၊ ကုန်လှောင်ရုံ)	ဧရိယာ ၂၅ ဟက်တာအောက်	ဧရိယာ ၂၅ ဟက်တာနှင့်အထက်	IFC Ports, Harbours and Terminals	
၁၁၅	ဆေးရုံတည်ဆောက်သည့်စီမံကိန်း	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး	IFC Health Care Facilities	
၁၁၆	ဂေါက်ကွင်း	၉ ကျင်းကွင်း	၁၈ ကျင်းကွင်း		

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၁၁၇	အထူးစီးပွားရေးဇုန်၊စက်မှုဇုန်၊တည်ဆောက်ရေးနှင့် ဖွံ့ဖြိုးရေးစီမံကိန်း	-	အရွယ်အစားအားလုံး		
၁၁၈	ဟိုတယ်နှင့် ခရီးသွားဖွံ့ဖြိုးရေးလုပ်ငန်း	အခန်း ၈၀ နှင့်အထက် အခန်း ၂၀၀ အောက် အသုံးပြုဧရိယာ စတုရန်းမီတာ ၄,၀၀၀ နှင့်အထက် ၁၀,၀၀၀ အောက် သို့မဟုတ် အသုံးပြုဧရိယာ ဟက်တာ ၂၀ နှင့်အထက် ဟက်တာ ၅၀ အောက်	အခန်း ၂၀၀ နှင့်အထက် အသုံးပြုဧရိယာ စတုရန်းမီတာ ၁၀,၀၀၀ နှင့်အထက် သို့မဟုတ် အသုံးပြုဧရိယာ ဟက်တာ ၅၀ နှင့်အထက်	IFC Tourism and Hospitality Development	
၁၁၉	သုသန်တည်ဆောက်ခြင်း(မြေမြှုပ်ရန်၊ မီးသင်္ဂြိုလ်ရန်နှင့် အခြားပုံစံများ)	အရွယ်အစားအားလုံး			
၁၂၀	အခြားကြီးမားသော မြို့ပြတည်ဆောက်ရေးလုပ်ငန်းများ (မြစ်ရေ၊ ပင်လယ်ရေထိန်းနံရံ တည်ဆောက်ခြင်း၊ ကမ်းလွန် ပင်လယ်ရေတားဆီးခြင်းလုပ်ငန်း)	အရှည် ၂ ကီလိုမီတာ အောက် သို့မဟုတ် ဧရိယာ ၂၅ ဟက်တာအောက်	အရှည် ၂ ကီလိုမီတာ နှင့်အထက် သို့မဟုတ် ဧရိယာ ၂၅ ဟက်တာနှင့်အထက်		
၁၂၁	သောင်တူးခြင်း	တစ်နှစ်လျှင် ကုဗမီတာ ၁၀,၀၀၀ နှင့်အထက် ကုဗမီတာ ၂၀၀,၀၀၀ အောက်	ကုဗမီတာ ၂၀၀,၀၀၀ နှင့်အထက်		
၁၂၂	မြစ်ကြောင်းထိန်းသိမ်းခြင်း(ရေမျက်နှာပြင်ထိန်းချုပ်ခြင်း၊ ရေထုထည်ထိန်းချုပ်ခြင်း)		အရွယ်အစားအားလုံး		

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
ပို့ဆောင်ရေး					
၁၂၃	ရထားပို့ဆောင်ရေး (ရထားပို့ဆောင်ရေးလုပ်ငန်းအတွက်အခြေခံအဆောက်အအုံများဖြစ်သော ရထားလမ်းဖောက်လုပ်ခြင်း၊ ပြုပြင်ထိန်းသိမ်းခြင်း၊ နှင့် ရထားပို့ဆောင်ရေးလုပ်ငန်းများ)	အရှည် ၅ ကီလိုမီတာ အောက်	အရှည် ၅ ကီလိုမီတာနှင့်အထက်	IFC Railways	
၁၂၄	လေဆိပ်နှင့်လေယာဉ်ပြေးလမ်း တည်ဆောက်ခြင်း	လေယာဉ်ပြေးလမ်း မီတာ ၂၁၀၀ အောက်	လေယာဉ်ပြေးလမ်း မီတာ ၂၁၀၀ နှင့်အထက်	IFC Airports EBRD	
၁၂၅	တံတား၊ မြစ်ကူးတံတားကြီးများ တည်ဆောက်ခြင်း	~~၁၈၀ နှင့်အထက်~~ ~~သို့မဟုတ်~~ ~~တန် ၆၀ နှင့်အထက်~~ အရှည် ၁၈၃ မီတာနှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		ဆောက်လုပ်ရေးဝန်ကြီးဌာန
၁၂၆	တောင်ကြားဖြတ်တံတားတည်ဆောက်ခြင်း	အရှည် ၀.၈ ကီလိုမီတာနှင့်အထက် ၁၀ ကီလိုမီတာအောက်	၁၀ ကီလိုမီတာနှင့်အထက်		
၁၂၇	အဝေးပြေးလမ်းမအသစ်ဖောက်လုပ်ခြင်း သို့မဟုတ် လမ်းတိုးချဲ့ခြင်း	အရှည် ၁၀ ကီလိုမီတာနှင့်အထက် ၅၀ ကီလိုမီတာအောက်	၅၀ ကီလိုမီတာနှင့်အထက်	IFC Toll Roads	
၁၂၈	ဥမင်လိုဏ်ခေါင်းဖောက်လုပ်ခြင်း	အရှည် ၁ ကီလိုမီတာအောက်	အရှည် ၁ ကီလိုမီတာနှင့်အထက်		
၁၂၉	လမ်းများတည်ဆောက်ခြင်း (ပြည်ထောင်စု၊ တိုင်းဒေသကြီး/ပြည်နယ်/ ခရိုင် နှင့် မြို့ပြလမ်းမများ)	အရှည် ၅၀ ကီလိုမီတာနှင့်အထက် ၁၀၀ ကီလိုမီတာအောက်	၁၀၀ ကီလိုမီတာနှင့်အထက်		

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
၁၃၀	လမ်းများ အဆင့်မြှင့်တင်ခြင်း (ပြည်ထောင်စု၊ တိုင်းဒေသကြီး/ပြည်နယ်/ခရိုင် နှင့် မြို့ပြလမ်းမများ)	အရှည် ၅၀ ကီလိုမီတာနှင့်အထက်	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
၁၃၁	တစ်စိတ်တစ်ပိုင်း (သို့မဟုတ်) တစ်ခုလုံး ပါဝင်သော အမျိုးသားအဆင့်၊ ဒေသအဆင့် ကာကွယ်ထားသည့်နေရာ၊ သမိုင်းအမွေအနှစ် (သို့မဟုတ်) ယဉ်ကျေးမှုအမွေအနှစ်ဒေသ (သို့မဟုတ်) ရှေးဟောင်းနေရာ (သို့မဟုတ်) ဒေသ အာဏာပိုင် တို့၏ ရှားပါးသော မြေယာရှုခင်း (သို့မဟုတ်) ထိန်းသိမ်းရေးနယ်မြေကိုသုံးစွဲသည့်စီမံကိန်း	-	အရွယ်အစားအားလုံး		
၁၃၂	ကြီးမားသောအမြန်သယ်ယူပို့ဆောင်ရေး လုပ်ငန်းတည်ဆောက်ခြင်းများ Construction of Mass Rapid Transport Projects	အရွယ်အစားအားလုံး	IEE လုပ်ငန်းစဉ်အရ EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		
သတ္တုတူးဖော်ရေးနှင့် ထုတ်လုပ်ရေးလုပ်ငန်း					
၁၃၃	မြစ် သို့မဟုတ် ပင်လယ် မှ ကျောက်တုံး၊ ကျောက်စရစ်၊ သဲများ ထုတ်ယူခြင်း	တစ်နှစ်လျှင် ကုဗမီတာ ၁၀၀၀ နှင့်အထက် ၅,၀၀၀ အောက်	တစ်နှစ်လျှင် ကုဗမီတာ ၅,၀၀၀ နှင့်အထက်		
၁၃၄	ဆောက်လုပ်ရေးလုပ်ငန်းအတွက် ကုန်ကြမ်းပစ္စည်းများ ထုတ်ယူခြင်း (ထုံးကျောက်၊ သင်ပုန်းကျောက်၊ သဲ၊ ကျောက်စရစ်၊ ရွှံ့စေး၊ ဂေါတန်ကျောက်၊ ဖဲလ်စပါး၊ သဲကျောက်၊ သလင်းကျောက်၊ ထုကျောက်တုံးကြီးများ	တစ်နှစ်လျှင် ကုဗမီတာ ၁၀၀,၀၀၀ အောက်	တစ်နှစ်လျှင် ကုဗမီတာ ၁၀၀,၀၀၀ နှင့်အထက်	IFC Construction Materials Extraction	

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	ထုတ်ယူခြင်း				
၁၃၅	အပေါ်ယံမြေလွှာမှ ကျောက်မီးသွေးတူးဖော်ထုတ်လုပ်ခြင်း	တစ်နှစ်လျှင် တန် ၁၀၀,၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၁၀၀,၀၀၀ နှင့်အထက်	IFC Mining	
၁၃၆	မြေအောက်မှ ကျောက်မီးသွေး တူးဖော်ထုတ်လုပ်ခြင်း	တစ်နှစ်လျှင် တန် ၁၀၀,၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၁၀၀,၀၀၀ နှင့်အထက်	IFC Mining	
၁၃၇	အပေါ်ယံမြေလွှာမှ စက်မှု တွင်းထွက် ~~လုပ်ငန်းသုံး~~ ကုန်ကြမ်း (Industrial Mineral) ~~ပစ္စည်းများ~~ တူးဖော်ခြင်း	တစ်နှစ်လျှင် တန် ၇၅,၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၇၅,၀၀၀ နှင့်အထက်	IFC Mining	
၁၃၈	မြေအောက်မှ စက်မှုလုပ်ငန်းသုံး ကုန်ကြမ်း ပစ္စည်းများ တူးဖော်ခြင်း (မီးခဲကျောက်၊ နှမ်းဖတ်ကျောက်၊ ကြွေမှုန့်၊ ဖော့စဖိတ်၊ ယမ်းစိမ်း၊ ဆား၊ ကန့် စသည်များ)	တစ်နှစ်လျှင် တန် ၁၀၀,၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၁၀၀,၀၀၀ နှင့်အထက်		
၁၃၉	အပေါ်ယံမြေလွှာမှသံသတ္တု၊ သံမဟုတ်သော သတ္တုနှင့်အဖိုးတန်သတ္တုများထုတ်ယူခြင်း ~~(မီးခဲကျောက်၊ နှမ်းဖတ်ကျောက်၊ ကြွေမှုန့်၊ ဖော့စဖိတ်၊ ယမ်းစိမ်း၊ ဆား၊ ကန့် စသည်များ)~~	တစ်နှစ်လျှင် တန် ၅၀,၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၅၀,၀၀၀ နှင့်အထက်		(သတ္တုတွင်းဝန်ကြီးဌာန)
~~၁၃၆~~	~~အပေါ်ယံမြေလွှာမှ သံသတ္တု၊ သံမဟုတ်သော သတ္တုနှင့် အဖိုးတန်သတ္တုများ ထုတ်ယူခြင်း (သက်နုကျောက်ရိုင်းများအပါအဝင်)~~	~~တစ်နှစ်လျှင် တန် ၅၀,၀၀၀ အောက်~~	~~တစ်နှစ်လျှင် တန် ၅၀,၀၀၀ နှင့်အထက်~~		(သတ္တုတွင်းဝန်ကြီးဌာန)
~~၁၃၇~~	~~မြစ်ချောင်းနှင့် ရေဝပ်စရိယာ နုန်းမြေများမှ~~	~~တစ်နှစ်လျှင် တန် ၅၀,၀၀၀~~	~~တစ်နှစ်လျှင် တန် ၅၀,၀၀၀~~		သတ္တုတွင်းဝန်ကြီးဌာန

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	~~ရွှေ၊ အခြားသတ္တု သို့မဟုတ် ကျောက်မျက်များ ထုတ်ယူခြင်း~~	~~အောက်~~	~~နှင့်အထက်~~		၏ ၂၈-၃-၂၀၁၂ ရက်စွဲပါ အမိန့်ကြော်ငြာစာအမှတ် ၂၆/၂၀၁၂ ဖြင့် ထုတ်ပြန်တားမြစ်ထား
၁၄၀	တွင်းထွက်သတ္တု အရိုင်း ထုတ်လုပ်ရေး စီမံကိန်း (ဓာတုပစ္စည်းသုံးစွဲခြင်းမပြု)	ရွှေသတ္တုအသေးစား ထုတ်လုပ်ခြင်း၈က ၂၀ အောက် ရွှေမှအပ အခြား ဓာတ်သတ္တုများ အသေးစား ထုတ်လုပ်ခြင်း ၈က ၅၀ အောက်	အရွယ်အစားအားလုံး ရွှေသတ္တုအသေးစား ထုတ်လုပ်ခြင်း ၈က ၂၀ နှင့် အထက် ရွှေမှအပ အခြား ဓာတ်သတ္တုများ အသေးစား ထုတ်လုပ်ခြင်း ၈က ၅၀ နှင့်အထက်		
၁၄၁	တွင်းထွက်ပစ္စည်းသတ္တုရိုင်းပြုပြင်သန့်စင်ခြင်း စီမံကိန်း (ဘေးအန္တရာယ်ရှိဒြပ်ပစ္စည်း နှင့် ဓာတုပစ္စည်းများသုံးစွဲခြင်း မပြု)	သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေများအရ သတ်မှတ်သည့် ဓာတ်သတ္တုအသေးစား ထုတ်လုပ်ခြင်း	ထုတ်လုပ်မှု ကုဗမီတာ ၅၀,၀၀၀ နှင့်အထက် ဓာတ်သတ္တု အကြီးစား ထုတ်လုပ်ခြင်း		
၁၄၂	ဘေးအန္တရာယ်ရှိ ဓာတုပစ္စည်းများသုံးစွဲ၍ တွင်းထွက်သတ္တုပစ္စည်းအရိုင်းထုတ်လုပ်ခြင်း နှင့် ပြုပြင်သန့်စင်ခြင်း	- ရွှေသတ္တုအသေးစား ထုတ်လုပ်ခြင်း၈က ၂၀ အောက် ရွှေမှအပ အခြား ဓာတ်သတ္တုများ အသေးစား ထုတ်လုပ်ခြင်း ၈က ၅၀ အောက်	အရွယ်အစားအားလုံး ရွှေသတ္တုအသေးစား ထုတ်လုပ်ခြင်း ၈က ၂၀ နှင့် အထက် ရွှေမှအပ အခြား ဓာတ်သတ္တုများ အသေးစား ထုတ်လုပ်ခြင်း ၈က ၅၀ နှင့်		

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
			အထက်		
၁၄၃	ကျောက်တူးဖော်ခြင်း (llmenite, rutile, zircon and monazite)	တစ်နှစ်လျှင် တန် ၅၀,၀၀၀ အောက်	တစ်နှစ်လျှင် တန် ၅၀,၀၀၀ နှင့်အထက်		
~~၁၄၂~~	~~အရည်ဖျော်ချခြင်း (In situ Leaching)~~		~~အရွယ်အစားအားလုံး~~	~~IFC Mining~~	နည်းစဉ်အား သုံးစွဲခြင်းမရှိပါ။ (သတ္တုတွင်းဝန်ကြီးဌာန)
၁၄၄	သတ္တုတူးဖော်ခြင်း	သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေများအရ သတ်မှတ်သည့် ရွှေသတ္တုအသေးစားထုတ်လုပ်ခြင်း၏က ၂၀ အောက် ရွှေမှအပ အခြားဓာတ်သတ္တုများ အသေးစားထုတ်လုပ်ခြင်း ၏က ၅၀ အောက်	သတ္တုတွင်းဥပဒေ၊နည်းဥပဒေများအရ သတ်မှတ်သည့် ရွှေသတ္တု အသေးစားထုတ်လုပ်ခြင်း ၏က ၂၀ နှင့်အထက် ရွှေမှအပ အခြားဓာတ်သတ္တုများ အသေးစားထုတ်လုပ်ခြင်း ၏က ၅၀ နှင့်အထက်		
၁၄၅	ကျောက်မီးသွေးတူးဖော်ထုတ်လုပ်ခြင်း	သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေများအရ သတ်မှတ်သည့် ကျောက်မီးသွေးအသေးစားထုတ်လုပ်ခြင်း	သတ္တုတွင်းဥပဒေ၊နည်းဥပဒေများအရ သတ်မှတ်သည့် ကျောက်မီးသွေးအကြီးစားထုတ်လုပ်ခြင်း		
၁၄၆	~~မြာဓာတ်~~ သဲဆပ်ပြာ (Soda Ash) ~~တူးဖော်~~ ထုတ်လုပ်ခြင်း	သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေများအရ သတ်မှတ်သည့် အသေးစားထုတ်လုပ်ခြင်း	သတ္တုတွင်းဥပဒေ၊နည်းဥပဒေများအရ သတ်မှတ်သည့် အကြီးစားထုတ်လုပ်ခြင်း		(သတ္တုတွင်းဝန်ကြီးဌာန)
၁၄၇	ဆား ~~ကျောက်~~ တူးဖော်ခြင်း	သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေ	သတ္တုတွင်းဥပဒေ၊နည်းဥပဒေ		(သတ္တုတွင်းဝန်ကြီးဌာန)

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
		များအရ သတ်မှတ်သည့် အသေးစားထုတ်လုပ်ခြင်း	များအရ သတ်မှတ်သည့် အကြီးစားထုတ်လုပ်ခြင်း		
၁၄၈	ထုံးကျောက်တူးဖော်ခြင်း	သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေ များအရ သတ်မှတ်သည့် ထုံးကျောက်အသေးစားထုတ်လုပ်ခြင်း	သတ္တုတွင်းဥပဒေ၊နည်းဥပဒေ များအရ သတ်မှတ်သည့် ထုံးကျောက်အကြီးစားထုတ်လုပ်ခြင်း		
၁၄၉	သတ္တုတူးဖော်ရန်ခွင့်ပြုချက်ပေးထားသည့် ဒေသအတွင်းတွင်းထွက်ပစ္စည်းများတူးဖော်ခြင်း	-	ဟက်တာ ၂၅၀ နှင့်အထက်		
~~၁၄၉~~	~~ဘိလပ်မြေစက်ရုံအတွက် သတ္တုပစ္စည်းအားလုံး တူးဖော်ခြင်း~~	~~သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေ များအရ သတ်မှတ်သည့် အသေးစားထုတ်လုပ်ခြင်း~~	~~သတ္တုတွင်းဥပဒေ၊နည်းဥပဒေ များအရ သတ်မှတ်သည့် သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေ များအရ သတ်မှတ်သည့် အကြီးစားထုတ်လုပ်ခြင်း~~		(သတ္တုတွင်းဝန်ကြီးဌာန)
၁၅၀	ရေးဟောင်းနယ်မြေ၊ ရေးဟောင်းသုတေသန အရင်းအမြစ်များ၊ ရေးဟောင်းအထိမ်းအမှတ် များအဖြစ်သတ်မှတ်ထားသည့်သမိုင်းဆိုင်ရာ အရင်းမြစ်များ (သို့မဟုတ်) ဥယျာဉ်များ၊ ကမ္ဘာ့အမွေအနှစ်စာရင်းတွင် ပါဝင်သော ကမ္ဘာ့ အမွေအနှစ်နေရာများနှင့် နီးကပ်သည့် ရေဝေရေလဲ ဒေသ၊ ပင်လယ်၊ သစ်တော နယ်များ၊ ရေတိမ်ဒေသများ ထိန်းသိမ်းရေး ကွန်ဗင်းရှင်းအရစိမ့်မြေနေရာနှင့်ဒေသများ	-	အရွယ်အစားအားလုံး		

စဉ်	ရင်းနှီးမြှုပ်နှံမှုစီမံကိန်းအမျိုးအစား	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ပြုလုပ်ရန်လိုအပ်သည့် အရွယ်အစား	ကိုးကားချက်	အပြည်ပြည်ဆိုင်ရာ စက်မှုလုပ်ငန်းအမျိုးအစား စံ သတ်မှတ်ချက်
	တွင်တည်ရှိသောသတ္တုတူးဖော်သည့်စီမံကိန်းများ				
၁၅၁	ဖောက်ခွဲပစ္စည်းများသုံးစွဲသည့်သတ္တုတူးဖော်ခြင်းစီမံကိန်း များ	သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေများအရ သတ်မှတ်သည့် ရွှေသတ္တုအသေးစား ထုတ်လုပ်ခြင်း ၎က ၂၀ အောက် ရွှေမှအပ အခြားဓာတ်သတ္တုများ အသေးစားထုတ်လုပ်ခြင်း ၎က ၅၀ အောက်	ရွှေသတ္တုအကြီးစား ထုတ်လုပ်ခြင်း ၎က ၂၀ နှင့် အထက် ရွှေမှအပ အခြား ဓာတ်သတ္တုများ အကြီးစား ထုတ်လုပ်ခြင်း ၎က ၅၀ နှင့် အထက်		
~~၁၅၂~~	~~အခြားသတ္တုတူးဖော်ရေး စီမံကိန်းများ~~	~~သတ္တုတွင်းဥပဒေ၊ နည်းဥပဒေများအရ သတ်မှတ်သည့် အသေးစားထုတ်လုပ်ခြင်း~~	~~သတ္တုတွင်းဥပဒေ၊နည်းဥပဒေများအရ သတ်မှတ်သည့် အကြီးစားထုတ်လုပ်ခြင်း~~		
၁၅၂	သစ်တောနယ်မြေအတွင်း သတ္တုတွင်း ဥပဒေအရ ခွင့်ပြုထားသည့် သတ္တု တူးဖော်ထုတ်လုပ်ခြင်း	အရွယ်အစားအားလုံး	ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းက EIA ပြုလုပ်ရန် အကြံပြုထားသည့် စီမံကိန်းအားလုံး		

Appendix 1

Requirement Projects for IEE and EIA

No	Type of Investment Projects	IEE	EIA	Reference	Remarks
Basic Building and Service Development Projects					
111	Can be damaging to the public pool, river, stick, Canals, Wetlands, clay soil, Ease lands to the ground water project	Less than 50 hectares	50 hectares and above		
112	Dam or dams (Reservoirs)	Below the dam height of 15 meters or Less than 400 hectares of water reservoirs	Dam height of 15 meters or Reservoir area of over 400 hectares		
113	Port Setup for Ships (Harbors) (Carrying goods and passengers transport dock port, jetty, warehouses)	An area of less than 25 hectares	An area of 25 hectares and above	IFC Ports, Harbours and Terminals	
114	Hospital building project	all sizes of project	According IEE process is recommended EIA for the project	IFC Health Care Facilities	
115	Golf Course	9-hole pitch	18-hole pitch		
116	Special Economic Zone, industrial, construction and development	-	all sizes of project		
117	Hotels and tourism development	An area of over 4,000 square meters less than 10,000 or Over an area of 20 hectares and 50 hectares under	An area of 10,000 square meters and above or Area 50 hectares and above	IFC Tourism and Hospitality Development	
118	Building cemetery (to bury cremated, and other formats)	all sizes of project			
119	Other large urban construction (Rivers, sea vessel wall construction, offshore inhibition)	Less than 2 km in length or An area of less than 25 hectares	2 km in length and above or An area of 25 hectares and above		
120	Sand dug	10,000 cubic meters per year and above Less than 200,000 cubic meters	200,000 cubic meters and above		

No	Type of Investment Projects	IEE	EIA	Reference	Remarks
121	River conservation (surface water control, volume control)		all sizes of project		
122	Airport and runway construction	Runway less than 2,100 meters	Runway 2100 meters and above	IFC Airports EBRD	
123	Bridge, Building bridges over the river	Length of 183 meters and above	According IEE process is recommended EIA for the project		MOC
124	Interim bridge construction	Length of 0.8 km and above Less than 10 km	10 km and above		
125	New highway construction or expansion	Length of 10 km and above Less than 50 km	50 km and above	IFC Toll Roads	
126	Tunnel construction	Less than 1 km in length	1 km in length and above		
127	Construction of roads (national, regional / state / district and urban roads)	between the Length of 50 km and 100 km	100 km and above		
128	Roads upgrade (national, regional / state / district and urban roads)	Length of 50 km and above	According IEE process is recommended EIA for the project		
129	Consisting of whole or partial national level, Regional level protected area, Legacy or heritage area, or ancient landscape of rare or local authorities, land or conservation land use planning		all sizes of project		
130	Construction of Mass Rapid Transport Projects	all sizes of project	According IEE process is recommended EIA for the project		

Appendix 3: ADB Rapid Environmental Assessment (REA) Checklist – Roads and Highways

Rapid Environmental Assessment (REA) Checklist

Instructions:
ညွှန်ကြားချက်များ

(i) The project team completes this checklist to support the environmental classification of a project.
(၁) စီမံကိန်းအဖွဲ့သည် စီမံကိန်း၏ပတ်ဝန်းကျင်ဆိုင်ရာအမျိုးအစားသတ်မှတ်ခြင်းကိုပိုင်းဝန်းကူညီရန် **ဤစစ်ဆေးစာရင်းအား ပြည့်ပြည့်စုံစုံစာရင်းပြုစုရန်လိုအပ်သည်။**

(ii) This checklist focuses on environmental issues and concerns.
(၂)ဤစစ်ဆေးစာရင်းသည်ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဆိုင်ရာထုတ်ပြန်ချက်များနှင့်အယူအဆများအပေါ်၌အာရုံစိုက်စဉ်းစားမည်ဖြစ်သည်။

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.
(၃) လျော့ပေါ့ပေးခြင်းအခြေအနေမပါဘဲ ယူဆ၍ မေးခွန်းများကိုဖြေပါ။ အလားအလာရှိသော အကျိုးသက်ရောက်မှုများကို သတ်မှတ်ရန် ရည်ရွယ်သည်။ တစ်စုံတစ်ရာ ကြိုတင်မျှော်မှန်းခဲ့သော လျော့ပေါ့ပေးခြင်းအခြေအနေ တိုင်းတာခြင်းများ ဆွေးနွေးရန် ဝေဖန်ချက်အပိုင်းကို အသုံးပြုပါ။

Country/Project Title:
နိုင်ငံ/ စီမံကိန်းအမည်

Screening Questions **စီစစ်ခြင်းမေးခွန်းများ**	**Yes**	**No**	**Remarks** **ဝေဖန်ချက်**
A. Project Siting **စီမံကိန်းတည်နေရာ** Is the project area adjacent to or within any of the following environmentally sensitive areas? စီမံကိန်းဧရိယာသည် အောက်ဖော်ပြပါ ပတ်ဝန်းကျင်ထိန်းသိမ်းကာကွယ်သော အထိအခိုက်မခံသည့် ဧရိယာများနှင့် နီးကပ်ခြင်း (သို့) တစ်စုံတစ်ရာအတွင်း ရှိလား ?			
▪ Cultural heritage site ယဉ်ကျေးမှုဆိုင်ရာအမွေအနှစ်နေရာ			
▪ Protected Area **ကာကွယ်ထားသောဧရိယာ**			
▪ Wetland စိုစွတ်သောကုန်းမြေ			
▪ Mangrove ဒီရေတော			
▪ Estuarine မြစ်ဝ			
▪ Buffer zone of protected area **ကာကွယ်ထားသည့်နေရာ၏ကြားခံနယ်မြေ**			
▪ Special area for protecting biodiversity ဇီဝမျိုးကွဲကာကွယ်ပေးခြင်းအတွက်အထူးဧရိယာ			
B. Potential Environmental Impacts **အလားအလာရှိသော ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုဆိုင်ရာအကျိုးသက်ရောက်မှုများ**			

Screening Questions **စီစစ်ခြင်းမေးခွန်းများ**	**Yes**	**No**	**Remarks** **ဝေဖန်ချက်**
Will the Project cause… စီမံကိန်းအကြောင်း			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries? သမိုင်း/ယဉ်ကျေးမှုနှင့်ဆိုင်သောဇရိယာများတွင် ပိုင်နက်ကျူးလွန်ခြင်း၊ လမ်းတာတမံများ၏ရှုခင်းကိုရုပ်ပျက်ဆင်းပျက်ဖြစ်စေခြင်း၊ ဖြတ်ညှပ်ခြင်း၊ဖြည့်ခြင်း၊ ကျောက်ကျင်းမှတူးဖော်ခြင်းများ ?			
▪ encroachment on precious ecology (e.g. sensitive or protected areas)? အဖိုးထိုက်တန်သောဝန်းကျင်ဗေဒပညာရပ်အပေါ်တွင်ဝင်ရောက်စွက်ဖက်ခြင်း (ဥပမာ- အထိအခိုက်မခံသော (သို့) ကာကွယ်ထားသောဇရိယာများ)?			
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site? လမ်းများတွင်ရေလမ်းများဖြတ်သန်းခြင်းဖြင့်လမ်းများ၏ရေမျက်နှာပြင်အလှည့်ကျ ဖြစ်ပေါ်ခြင်း၊ဆောက်လုပ်ရေးနေရာ၌ မြေဆီလွှာတိုက်စားမှုတိုးလာ ခြင်းဖြင့် ချောင်းများအတွင်း၌အနည်တိုးလာခြင်းအကျိုးဆက်ဖြစ်ပေါ် နေခြင်း?			
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction? နုန်းမြေဖြစ်ပေါ်မှုကြောင့် ရေမျက်နှာပြင်အရည်အသွေး အခြေအနေဆိုးရွား လာခြင်းနှင့် ဆောက်လုပ်ရေးတွင်အလုပ်သမားအခြေပြုသောစခန်းများ၌ဓာတုဗေဒပစ္စည်းများ အသုံးပြုခြင်းမှ သန့်စင်သောဖြုန်းတီးမှုများဖြစ်စေခြင်း?			
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing? နိုင်လွန်ကတ္တရာခင်ခြင်းမှဓာတုဗေဒပစ္စည်းများနှင့် ဖြတ်ညှပ်ခြင်း၊ ဖြည့်ခြင်းအလုပ်များ ၊ကျောက်ဆောင်များဖိနေခြင်းကြောင့် ဒေသတွင်းလေထုညစ်ညမ်းမှုများတိုးလာ ခြင်း?			
▪ 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? ရုပ်ဝတ္ထုကြောင့် ကျန်းမာရေးလုံခြုံစိတ်ချမှု နှင့်ပတ်သက်၍စွန့်စားမှုများနှင့်ခုခံနိုင်မှုအားနည်းခြင်း စီမံကိန်းတည်ဆောက်မှုဆောင်ရွက်နေစဉ်အတွင်းနှင့်စီမံကိန်းတည်ဆောက်ခြင်းအတောအတွင်းလည်း ရောင်ခြည်ဗေဒဘေးရန်အန္တရာယ်နှင့် ဇီဝဗေဒနှင့်ဆိုင်သော၊ ဓာတုဗေဒပစ္စည်းများ?			
▪ noise and vibration due to blasting and other civil works? လေပြင်းတိုက်ခြင်းနှင့်အခြားမြို့ပြနှင့်ဆိုင်သောအလုပ်များကြောင့် ဆူညံခြင်းနှင့်တုန်ခါမှုများဖြစ်ပေါ်ခြင်း?			
▪ dislocation or involuntary resettlement of people? လူတို့၏အနေအထားမကျခြင်း (သို့)ဆန္ဒမပါသောနေရာရွှေ့ပြောင်းမှု?			
▪ dislocation and compulsory resettlement of people living in			

Screening Questions **စီစစ်ခြင်းမေးခွန်းများ**	**Yes**	**No**	**Remarks** **ဝေဖန်ချက်**
right-of-way? လူတို့၏အနေအထားမကျခြင်းနှင့် လမ်းပိုင်မြေ (right-of-way) အတွင်း နေထိုင်သူများအား မဖြစ်မနေနေထိုင်မှုရွှေ့ပြောင်းခြင်း?			
▪ disproportionate impacts on the poor, women and children, IndigenousPeoples or other vulnerable groups? ဆင်းရဲနွမ်းပါးသောသူများအပေါ်တွင် အချိုးအစားမကျနမှုများ၊ အမျိုးသမီးနှင့်ကလေးများ၊တိုင်းရင်းသား လူမျိုးများနှင့်အခြားဒဏ်ရာရစေနိုင်သောအဖွဲ့များ?			
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress? စီမံကိန်းဇရိယာအတွင်း ၌မသင့်လျော်သော အခြေအနေများနှင့် ပတ်သက်၍အခြား လူမှုရေးဆိုင်ရာ အယူအဆများ၊ တစ်နည်းဆိုသော် အသက်ရှူခြင်းနှင့်ဆိုင်သောပြဿနာများနှင့် ကြောင့်ကြစိတ်အခြေ အနေများဖြစ်နိုင်သည် ?			
▪ hazardous driving conditions where construction interferes with pre-existing roads? အွန္တရာယ်များသောမောင်းနှင်ခြင်းအခြေအနေများ			
▪ 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? ဆောက်လုပ်ရေး စခန်းများနှင့် အလုပ်နေရာများ၌မိလ္လာ၊ရေဆိုးနုတ်စနစ်မကောင်းမွန်မှုနှင့် အစိုင်အခဲ စွန့်ပစ်ပစ္စည်းများဖယ်ရှားခြင်း ၊ အလုပ်သမားများမှဒေသခံလူထုသို့ (STI နှင့် HIV/AIDSကဲ့သို့သော) တစ်နေရာမှတစ်နေရာ-တစ်ယောက်မှတစ်ယောက်-သို့ကူးစက်နိုင်သောရောဂါများဖြစ်နိုင်ခြင်း?			
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents? ထိုသို့ ခြင်များနှင့် ကိုက်ဖြတ်တတ်သောသတ္တဝါများယာယီပေါက်ဖွားခြင်းကြောင့် ၎င်းတို့မှတဆင့် ရောဂါကူးစက်စေနိုင် ?			
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials? ယာဉ်အသွားအလားတိုးလာခြင်းနှင့်ပတ်သက်၍မတော်တဆမှုများ များလာခြင်း၊ အဆိပ်ဖြစ်စေသော ပစ္စည်းများက မတော်တဆဖြစ်စေရန် ဦးဆောင်ခြင်းလား?			
▪ increased noise and air pollution resulting from traffic volume? ▪ ယာဉ်သွားလာမှုများမှဆူညံခြင်းနှင့်လေထုညစ်ညမ်းမှုအကျိုးဆက် ဖြစ်ပေါ်မှုများတိုးလာခြင်း			
▪ increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road? ဆီ၊ အမဲဆီနှင့် ထင်းအစအနများမှ ရေထုညစ်ညမ်းတိုးလာခြင်းနှင့် ကုန်လမ်းသွားယာဉ်များ လမ်းအသုံးပြုခြင်းမှ အခြားပစ္စည်းများ			
▪ social conflicts if workers from other regions or countries are hired?			

Screening Questions **စီစစ်ခြင်းမေးခွန်းများ**	**Yes**	**No**	**Remarks** **ဝေဖန်ချက်**
▪ အကယ်၍အခြားအရပ်ဒေသ သို့ နိုင်ငံမှ ဌားရမ်းထားသော အလုပ်သမားများနှင့် လူမှုရေး ဆိုင်ရာပဋိပက္ခများ ?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)? စီမံကိန်းတည်ဆောက်နေစဉ်နှင့်ဆောင်ရွက်နေစဉ်အတွင်း လူဦးရေများပြားခြင်းသည် လူမှုအဆောက်အအုံနှင့်ဝန်ဆောင်မှုများတွင် ဝန်ပိစေခြင်းကို ဖြစ်စေနိုင်သည်။			
▪ 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? ရပ်ရွာအခြေပြုကျန်းမာရေးစောင့်ရှောက်ရေး ၊သယ်ယူပို့ဆောင်ရေး၊ သိုလှောင်ရေး နှင့် /သို့မဟုတ် ပေါက်ကွဲစေတတ်သောပစ္စည်းများဖြန့်ဖြူးခြင်း။ တည်ဆောက်ခြင်းနှင့် ဆောင်ရွက်နေစဉ်အတွင်းထင်းနှင့်အခြားဓာတုဗေဒပစ္စည်းများ?			

Proposed Categorization (please check):
အဆိုပြုထားသောအမျိုးအစားများ

	Category **အမျိုးအစား**	**Description** **ဖော်ပြချက်**	**Requirement** **လိုအပ်ချက်**
[ ]	Category A.	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. ၄င်းသည်အရေးပါသည့်ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာအကျိုးသက်ရောက်မှုအတွက် ကောင်းကျိုးမပြုသော၊နဂိုအတိုင်းပြန်မဖြစ်နိုင်သော ကွဲပြားခြားနားသော သို့မဟုတ် နမူနာမရှိသော ။ **ဤ**အကျိုးသက်ရောက်မှုများသည် ရုပ်ပိုင်းဆိုင်ရာအလုပ်များတွင် လိုက်နာရန်တည်နေရာများ၊ သို့မဟုတ် အသုံးအဆောင်များ ထက်ကြီးမား**၍ အကျိုး သက်ရောက်နိုင်သည်။**	EIA
[ ]	Category B	A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category Aprojects. 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. အကယ်**၍** အလားအလာရှိသော အကျိုးသက်ရောက်မှုမရှိသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ အကျိုးသက်ရောက်မှုများသည် စီမံကိန်းအမျိုးအစား A ထက် အကျိုးသက်ရောက်မှုလျော့နည်းလျှင် အဆိုပြုထားသောစီမံကိန်းသည် အမျိုးအစား Bအဖြစ်ခွဲခြားသည်။**ဤ**အကျိုးသက်ရောက်မှုများသည်နေရာတိကျမှု၊၄င်းတို့ထဲမှအနည်းငယ်သည် နဂိုအတိုင်းပြန်မဖြစ်နိုင်ကြပေ။လျော့ပေါ့တိုင်းတာခြင်းအများစုတွင် စီမံကိန်းအမျိုးအစား Aအတွက်အလွယ်တကူပို**၍**လျင်မြန်စွာဒီဇိုင်းရေးဆွဲနိုင်သည်။	IEE
[ ]	Category C	A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. အကယ်**၍ဖြစ်နိုင်ဖွယ်ရှိသော ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ အကျိုးသက်ရောက်မှု မရှိလျှင် အဆိုပြုထားသောစီမံကိန်းသည် အမျိုးအစား Cအဖြစ်ခွဲခြားသည်။**	Review of environmental implications

[ ]	Category FI	A proposed project is classified as category FI if it involves investment of ADB funds to or through a financial intermediary (FI) အကယ်၍အာရှဖွံ့ဖြိုးမှုဘဏ်၏ ရန်ပုံငွေရင်းနှီးမြှုပ်နှံမှု သို့မဟုတ်ဘဏ္ဍာရေးဆိုင်ရာ ကြားဝင်ဆောင်ရွက်သူ ပါဝင်ခဲ့လျှင် အဆိုပြုထားသောစီမံကိန်းသည် အမျိုးအစား FIအဖြစ် ခွဲခြားသည်။	ADB SPS paras. 65-67

A Checklist for Preliminary Climate Risk Screening
ကနဦးဘေးအန္တရာယ်ရှိသောရာသီဥတုထိခိုက်မှုအတွက်အမည်စာရင်းစီစစ်ခြင်း

Screening Questions **စီစစ်ခြင်းမေးခွန်းများ**		**Score** **ရမှတ်**	**Remarks**[1] **ဝေဖန်ချက်များ**
Location and Design of project **တည်နေရာနှင့်စီမံကိန်းပုံစံ**	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides? ရေကြီးခြင်း၊မိုးခေါင်ခြင်း၊မုန်တိုင်းထန်ခြင်း၊မြေပြိုခြင်းကဲ့သို့သော သက်ဆိုင်သည့်အဖြစ်အပျက်များနှင့်ပတ်သက်၍ပြင်းထန်သောရာသီဥတုအခြေအနေများအပါအဝင် (သို့မဟုတ်၄င်းတို့၏အစိတ်အပိုင်းများ)သည် စီမံကိန်း၏ ဖြစ်ဖွယ်ရှိသော လမ်းကြောင်း သို့မဟုတ် နေရာလား?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)? စီမံကိန်းပုံစံ (ဥပမာ-တံတားများအတွက်ရှင်းလင်းခြင်း)တွင်မိုးလေ ဝသနှင့်ဇလဗေဒဆိုင်ရာသတ်မှတ်ချက်ဘောင်များ (ဥပမာ-ရေမျက်နှာပြင်၊ မြစ်ရေစီးဆင်းမှု၊ လေတိုက်နှုန်းစသည်ဖြင့်)ထည့်သွင်းစဉ်းစားရန် လိုအပ်နိုင်လား?		
Materials and Maintenance **ပစ္စည်းများနှင့်ထိန်းသိမ်းစောင့်ရှောက်ခြင်း**	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)? ရာသီဥတု၊ လက်ရှိနှင့် ရှေ့ဖြစ်လာနိုင်မည့်ရာသီဥတုအခြေ အနေများ(ဥပမာ-ရေခိုးရေငွေ့ လွှမ်းမိုးခြင်း၊ နွေရာသီနှင့် ဆောင်းရာသီရက်များအကြား အပူချိန် ကွဲပြားခြားနားခြင်း၊ လေတိုက်ခြင်း နှင့်ရေခိုးရေငွေ့ မိုးလေဝသနှင့်ဇလ ဗေဒဆိုင်ရာ သတ်မှတ်ချက်ဘောင်များသည် စီမံကိန်းတစ်ခုလုံး၏ ထွက်ရှိမှုကိုကျော်လွန်၍ ရွေးချယ်ထားသော စီမံကိန်း၏ ထည့်သွင်းမှု သည်အကျိုးသက်ရောက်ဖွယ်ရှိသည်။(ဥပမာ - ဆောက်လုပ်ရေး ပစ္စည်းများ)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ? ရာသီဥတု၊ လက်ရှိနှင့် ရှေ့ဖြစ်လာနိုင်မည့်ရာသီဥတုအခြေ အနေ များနှင့် သက်ဆိုင်သည့်အစွန်းရောက်အဖြစ်အပျက်များသည် စီမံကိန်း၏		

[1] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

	ထွက်ရှိမှုထိန်းသိမ်းစောင့်ရှောက်ခြင်း(အစီအစဉ်တကျလုပ်ခြင်းနှင့် ကုန်ကျခြင်း)ကို အကျိုးသက်ရောက်ဖွယ်ရှိနိုင်လား?		
Performance of project outputs စီမံကိန်း၏ထွက်ရှိမှု ပြုလုပ်ဆောင်ရွက်ခြင်း	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time? ရာသီဥတု၊ လက်ရှိနှင့် ရှေ့ဖြစ်လာနိုင်မည့်ရာသီဥတုအခြေ အနေ များနှင့် သက်ဆိုင်သည့်အစွန်းရောက်အဖြစ်အပျက်များသည် ၄င်းတို့၏စီမံကိန်းပြုလုပ်ဆောင်ရွက်ခြင်းတလျောက်အကျိုးသက်ရောက် ဖွယ်ရှိနိုင်လား?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High):_____

Other Comments: _____
_____
_____
_____

Prepared by: _____

Appendix 4: Sample Outline of an Environmental Impact Assessment (EIA) Report

A typical EIA report contains the following major elements. The substantive aspects of this outline will guide the preparation of EIA 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.

Appendix 5: Sample Outline of an Initial Environmental Examination (IEE) Report

A typical IEE report contains the following major elements and may have a narrower scope than an EIA depending on the nature of the project. The substantive aspects of this outline will guide the preparation of IEE 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.

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.

Appendix 6: Sample Outline of an Environmental Audit Report

An environmental audit is an instrument to determine the nature and extent of all environmental areas of concern at an existing facility, including i) compliance of existing facilities and operations with relevant laws and regulations, and applicable SR1 requirements; and, ii) the nature and extent of significant adverse environmental impacts, including contamination of soils, surface and ground water, and structures as a result of historical activities.

An environmental audit report typically includes some or all of the following items, although not necessarily in the order shown.

A. Executive Summary - A concise discussion of all environmental areas of concern, recommended mitigation measures and their priority, the cost of mitigation, and a schedule for compliance.

B. Facilities Description - A concise description of the project facilities, including both past and current operations, focusing on aspects or components with potential environmental impacts.

C. Regulatory Setting - Tabular summary of host country national, local and any other applicable environmental and occupational health and safety laws, regulations, guidelines, environmental permits, licenses, and policies as they may directly pertain to the facilities.

D. Audit and Site Investigation Procedure - Brief overview of the approach used to conduct the audit. A discussion of the records review, site reconnaissance, and interview activities; a description of the site sampling plan and chemical testing plan; a description of field investigations, environmental sampling and chemical analyses and methods.

E. Findings and Areas of Concern - Detailed discussion of all environmental areas of concern, including summary of complaints from residents living in the project area. The areas of concern should be discussed in terms of both existing facilities and operations and contamination or damages due to past activities, including the affected media and its quality and recommendations for further investigation and remediation. Areas of concern should be prioritized into one of three categories: immediate action; mid-term action; and long-term action.

F. Corrective Action Plan, Costs and Schedule (CAP) - For each area of concern, provide specifics on the appropriate corrective actions to mitigate the areas of concern and why they are necessary. Indicate priorities for action. Provide estimates of the cost of implementing the corrective actions and a schedule for their implementation. Schedules should be recommended within the context of any planned capital expenditure for the facility. Each site CAP should be formatted as a table with columns for area of concern, corrective action, priorities, schedule, and cost estimates.

Annexes - These should include references, copies of interview forms, any details regarding the audit protocol not already included, and data obtained during the audit but not included directly above.

Appendix 7: Sample Outline of an Environmental Management Plan (EMP)

It is sometimes advantageous to prepare a 'stand-alone' EMP (e.g. when the EMP must be updated after the EIA is approved; when the EMP is part of contractor documents). In these cases, the following format may be of use:

A. Introduction - A concise description of the project, environmental review process, and status of EMP development, implementation and/or revision (as relevant)

B. Environmental Impacts and Risks, and Mitigation Measures

1. **Environmental Impacts and Risks** - Identifies and summarizes anticipated significant adverse environmental impacts and risks.

2. **Mitigation Measures** - 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.

3. **Other Mitigation Plans (if relevant)** - Provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

C. Environmental Monitoring

1. **Monitoring Program** - 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.

2. **Reporting and Follow-up** - Describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

D. Implementation Arrangements

1. **Implementation Schedule** - Specifies the implementation schedule showing phasing and coordination with overall project implementation.

2. **Institutional Arrangements** - Describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures. May include one or more of the following 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.

E. Budget - Estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan (see sample budget template, below).

Sample EMP Budget

Items	Cost	Lead Agency	Description
1. Environmental Mitigation Measures			
e.g. Water Pollution Control		e.g. Local Health and Sanitation Department	e.g. Fees for provision of temporary toilets and sewage collection and disposal for worker camp
Other			
2. Environmental Monitoring			
Mitigation Compliance Inspections		e.g. Independent Research Center	e.g. Cost for undertaking site visits, preparing monitoring reports
Point Source Emission Monitoring			
Ambient Monitoring			
Other			
3. Capacity Building, Other			
Mitigation Design		e.g. Design Institute	e.g. Ecological and other surveys, detailed mitigation design and planning
Training and Capacity Building			
Other			
4. Contingency			
5. Total			

F. 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.

Annexes - As relevant, including other mitigation plans.

Appendix 8: Sample Impact Assessment and Mitigation Matrices

Impact assessment and mitigation matrices may be useful in assessing potential project impacts and risks, and developing mitigation and compensation measures. Two examples are presented, a simplified form, and a more detailed form. These are examples only, and can be adapted as necessary.

Sample 1: Simplified Impact Assessment and Mitigation Matrix

Project Stage	Project Activity	Potential Environmental Impacts	Proposed Mitigation Measures	Institutional Responsibilities	Cost Estimates
Pre-Construction Phase					
Construction Phase					
Operation and Maintenance Phase					

Sample 2: Detailed Impact Assessment and Mitigation Matrix

Phase/ Activities	Potential Impacts	Significance of Impacts*				Mitigation Measures	Residual Negative Impacts		Responsible Agency	Est. Budget
		Direction (- / +)	Magnitude (L / M / H)	Probability (L / M / H)	Duration (S / M / L)		Impacts	Compensation Measures		
Environmental Issues Associated with Project Siting / Preconstruction										
Siting Activities	e.g. Resettlement, encroachment into critical habitats, agrosystems, etc									
Environmental Issues Associated with Project Construction										
Construction Activities	e.g. Hydrology, water quality, air quality, noise, biodiversity (flora, fauna, critical habitats), natural resources, pollution discharges, worker safety and health, etc									

Environmental Issues Associated with Project Operation										
Operation Activities	e.g. Hydrology, water quality, air quality, noise, biodiversity (flora, fauna, critical habitats), natural resources, pollution discharges, worker safety and health, etc									
Other items as required (e.g. Emergency Response Procedures)										

*Impact Significance Direction, Magnitude, Probability and Duration Coding (Indicative examples only)

Parameter / Code **Definition**

Predicted Impact Direction

- = Negative — Impact is unfavorable, and will cause a reduction in the value or quality of environmental and social resources

+ = Positive — Impact is favorable, and will cause an increase in the value or quality of environmental and social resources

Predicted Impact Magnitude

L = Low — Above typical background conditions or concentrations, but within established / accepted protective standards

or:

Causing no detectable biological, social or economic parameter changes

M = Moderate — Considerably above background conditions or concentrations or established / accepted protective standards, but below established criteria or scientific effects thresholds associated with potential adverse effects

or:

Causing detectable biological, social or economic parameter changes, but within the range of natural variability

H = High — Above established criteria or scientific effects thresholds associated with potential adverse effects

or:

Causing (a) detectable change(s) in biological, social or economic parameters that is outside the range of natural variability

Predicted Impact Probability

L = Low — Less than 10% likelihood of occurring over the duration of the impact

M = Moderate — Between 10% and 90% likelihood of occurring over the duration of the impact

H = High — More than 90% likelihood of occurring over the duration of the impact

Predicted Impact Duration

S = Short — Effects are significant for less than one year

M = Medium — Effects are significant for one to ten years

L = Long — Effects are significant for greater than ten years

Appendix 9: Sample Monitoring Templates

Monitoring involves measuring, tracking, evaluating and reporting compliance with action items and outcomes specified in the EMP. An effective system will include performance indicators or targets that can be tracked over defined periods. Provided below are sample templates that may be utilized (and adapted as needed) to assist in designing environmental monitoring programs.

1. Mitigation Compliance Inspection Monitoring

Project Phase	Mitigation	Compliance Inspection Activities	Location	Frequency	Responsibility	Budget
Pre-construction						
Construction						
Operation						
Closure						

2. Point Source Emission Monitoring

Project Phase	Mitigation	Monitoring					Location	Frequency	Responsibility	Budget
		Parameter	Sampling and Analysis Method	Result	Standard	Comparison with Standard				
Pre-construction										
Construction										
Operation										
Closure										

3. Ambient Monitoring

Project Phase	Mitigation	Monitoring					Location	Frequency	Responsibility	Budget
		Parameter	Sampling and Analysis Method	Result	Standard	Comparison with Standard				
Pre-construction										
Construction										
Operation										
Closure										

Appendix 10: Sample Site Environmental Compliance Inspection and Monitoring Form

Provided below is a sample form which may be utilized (and adapted as needed) to record the results of a compliance inspection or source or ambient monitoring at a project site.

Project : _____ **Implementing Agency** : _____

Sub-Project : _____ **Monitoring Agency** : _____

Location : _____ **Enforcement Agency** : _____

Date : _____ **Contractor(s)** : _____

Reporting Period : _____ **Implementation Phase:** Preconstruction / Construction / Operation

1. Contractor(s)

Contractor(s) Environmental Awareness	**Yes / No**	**Actions Required**	**Contractor Response / Comment**
Contractor(s) aware of mitigation requirements?			
Contractor(s) have a copy of EMP?			

2. Mitigation Compliance Inspection

Impact / Mitigation Measure (From EMP)	**Mitigations Implemented** (Yes, No)	**Mitigations Effective?** (1 to 5)*	**Impact Observed / Location**	**Action Required**	**Contractor Response / Comment**	**Endorsed by:**	
						Implementing Agency	Monitoring Agency

* Mitigation Effectiveness Rating Criteria (Indicative examples)

1. Very Good (all required mitigations implemented)
2. Good (the majority of required mitigations implemented)
3. Fair (some mitigations implemented)
4. Poor (few mitigations implemented)
5. Very Poor (very few mitigations implemented)

3. Emission Discharge Monitoring (if relevant)

Parameter	Date / Location	Measured by	Monitoring Equipment	Result	Standard	% Exceedence	Action Required	Contractor Responses / Comments	Endorsed by:	
									Implementing Agency	Monitoring Agency

4. Ambient Monitoring (if relevant)

Parameter	Date / Location	Measured by	Monitoring Equipment	Result	Standard	% Exceedence	Action Required	Contractor Responses / Comments	Endorsed by:	
									Implementing Agency	Monitoring Agency

5. Environmental Incidents During Reporting Period (if relevant)

Environmental Incidents (accidents, spills, complaint)	Date / Location	Reported by	Description / Location	Action Taken	Further Action Required	Endorsed by:	
						Implementing Agency	Monitoring Agency

6. Summary of Actions Required and Follow-up (if relevant)

Action Required	Timeframe (e.g. within one week)	Responsible Parties	Follow-up (to be completed if inspection/monitoring indicates actions are required)
			Required Action Taken:
			Effectiveness:
			Further Action Required?:
			Prepared by: **Date**

Inspection Completed by:_____ **Date:**_____

Signature:

Notes:

Attachments:
(e.g. laboratory reports, photographs)

Appendix 11: Sample Grievance Intake Form

A grievance redress mechanism is a process for receiving, evaluating and addressing project-related grievances from affected people at the level of the project. Except in the simplest cases, a grievance mechanism typically includes a procedure for receiving grievances, recording/documenting key information (e.g. the name of the individual or organization; the date and nature of the complaint; any follow up actions taken; the final decision on the complaint; how and when relevant project decision was communicated to the complainant; and whether management action has been taken to avoid recurrence of community concerns in the future), and responding to the complainants in a reasonable period of time.

Grievance Intake Form

Name of Project: _____

Project ____ welcomes complaints, suggestions, comments and queries regarding the project implementation and its stakeholders. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing "(CONFIDENTIAL)" above your name.

Thank you.

Contact Information:				
Name			Gender	□ Male □ Female
Home Address			Age	
			Phone No.	
City/Province			Email	

Complaint/Suggestion/Comment/Question Please provide the details (who, what, where and how) of your grievance below:

How do you want us to reach you for feedback or update on your comment/grievance?

Portion to be filled in by the staff:

Date received:	
Received through:	__ In person __ mail __ email __ fax __ phone __ sms
Name of staff who receive comment/ complaint	
Position of staff:	
Type of Grievance:	
Remarks	
of staff	

Update on the case:

Date:	Update

Appendix 12: Sample Outline of Environmental Assessment and Review Framework

A. Introduction - This section briefly describes the project, its subprojects, and/or its components, and explains why the environmental assessment and plans of some subprojects and/or components cannot be prepared before project approval.

B. Assessment of Legal Framework and Institutional Capacity - This section assesses the adequacy of the applicable national and local laws, regulations, and standards on environmental assessment and management, including applicable international environmental agreements. This section clarifies the objective and relevant principles governing subproject and/or component preparation and implementation. This section also assesses the adequacy of the borrower's/client's institutional capacity in implementing national laws and Asian Development Bank (ADB) requirements and identifies capacity development needs.

C. Anticipated Environmental Impacts - This section provides information on project activities to be supported, and their anticipated impacts on the environment.

D. Environmental Assessment for Subprojects and/or Components - The section provides a plan for carrying out environmental assessment and planning for subprojects and/or components, including requirements and schedules for (i) screening and classification; and (ii) preparation of environmental assessments and environmental management plans (see ADB SPS Annex to Appendix 1). This section may also outlines specific environmental criteria to be used for subproject selection, for example, exclusion from environmentally sensitive areas or negative lists for procurement.

E. Consultation, Information Disclosure, and Grievance Redress Mechanism - This section establishes a framework for ensuring meaningful consultation with affected people during project preparation and implementation. It discusses information disclosure arrangements, including disclosure of subproject EIAs to be prepared under this framework. This section also discusses arrangement for addressing grievances.

F. Institutional Arrangement and Responsibilities - This section specifies the responsibilities and authorities of the borrower/client, ADB, and government agencies in relation to the preparation, submission, review, and clearance of environmental assessment reports of subprojects and/or components. This section estimates the staffing requirements, and recommends a capacity development program, where necessary. It also provides the cost estimates for implementing the environmental assessment and review framework, and budgetary requirements.

G. Monitoring and Reporting - This section specifies monitoring and reporting arrangements, including mechanisms and report submissions to ADB, appropriate to the project.