



# Environmental Safeguard Document

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Environment Assessment and Review Framework  
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## Proposed Multitranche Financing Facility Islamic Republic of Afghanistan: Energy Sector Development Program

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Asian Development Bank

**ENERGY SECTOR DEVELOPMENT PROGRAM**

**ENVIRONMENTAL ASSESSMENT AND REVIEW FRAMEWORK  
(EARF)**

**JULY 2008**

**DA AFGHANISTAN BRESHNA SHERKAT**

## LIST OF ACRONYMS

ADB	Asian Development Bank
DABS	Da Afghanistan Breshna Sherkat
EA	Environmental Act
EA	executing agency
EARF	environmental assessment and review framework
EIA	environmental impact assessment
EMA	external monitoring agency
EMP	environmental monitoring plan
ESU	Environment and Social Unit
FI	financial intermediary
IEE	initial environmental examination
IUCN	International Union for Conservation of Nature
MEW	Ministry of Energy and Water
MFF	Multitranches Financing Facility
NEPA	National Environmental Protection Agency
NGO	non-government organization
NOC	no-objection certificate
PMU	Project Management Unit
RRP	Report and Recommendation of the President
SEIA	summary environmental impact assessment
SIEE	summary initial environmental examination
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development

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## **Environmental Assessment and Review Framework**

### **A. Introduction**

#### **1. Background**

1. The Islamic Republic of Afghanistan (Afghanistan), with Da Afghanistan Breshna Sherkat (DABS) as the executing agency (EA), is requesting the financial assistance of the Asian Development Bank (ADB) to implement the Energy Sector Enhancement Investment Program (the Program). Finance will be provided through a multitranche financing facility (MFF) comprising discrete subprojects to be implemented sequentially over 5 years indicatively under three tranches. The Program includes physical and non-physical subprojects. Subprojects in Tranche-1 with physical investments with potential impacts on the environment are (i) transmission line from Kunduz to Taloquan, (ii) distribution system development of Kunduz, (iii) distribution system development of Baghlan, (iv) Baharak Hydropower development, and (v) operation and maintenance of North East Power System (NEPS) 220 kV. Similar types of subprojects are envisaged to be included in the subsequent tranches.

#### **2. Environmental Assessment and Review Framework**

2. This Environment Assessment and Review Framework (EARF) was prepared by DABS to guide the preparation of Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA), summary IEE (SIEE) and summary EIA (SEIA) for subprojects under the Program in a fashion fitting the requirements of Afghan requirements and the ADB's safeguard policies. This EARF outlines provisions, procedures, and institutional requirements for preparing/implementing IEE and SIEE for Category B subprojects, and EIA and SEIA for Category A or Category B-sensitive subprojects. The Project Management Unit (PMU) of DABS assisted by experts engaged through the management and implementation consultants will be responsible for the preparation of such environmental safeguard documents as per this EARF.

### **B. Review of Afghanistan Policy and ADB Requirements**

3. The subprojects will be screened, classified, and assessed based on ADB's Environmental Assessment Guidelines (2003) and Government of Afghanistan's Administrative Guidelines for Preparation of Environmental Impact Assessments, March 2007 (Version Draft - 2), as part of the Afghan Environment Act, 2005, and be reviewed and approved by ADB.

#### **1. Afghanistan Policy**

4. The Government of Afghanistan has approved and adopted the first-ever environmental framework law in the year 2005, i.e. Environmental Act, 2005, with an aim to include and address the environmental issues in the process of development. Subsequently, an independent agency i.e. National Environmental Protection Agency (NEPA) has been setup in the year 2005 for environmental governance in the country. NEPA has overall responsibility to address policy and legal issues as well as environmental management in the country in coordination with other related departments. NEPA reports directly to the Office of the President.

5. NEPA in coordination with other government officers and external agencies is in the process of drafting environmental regulations and guidelines for the environmental management

in the country. Presently, there are following environmental regulations, guidelines and policies in Afghanistan:

- (i) Environmental Law, 2006, Islamic Republic of Afghanistan;
- (ii) Interim Environmental Impact Assessment Regulations, NEPA, Islamic Republic of Afghanistan;
- (iii) Administrative Guidelines for the Preparation of Environmental Impact Assessments, March 2007 (Draft -2): National Environmental Protection Agency (NEPA), Islamic Republic of Afghanistan; and
- (iv) Environmental Impact Assessment Policy – “An Integrated Approach to Environmental Impact Assessment in Afghanistan”, August 2006, National Environmental Protection Agency (NEPA), Islamic Republic of Afghanistan.

6. **Environment Act, 2005:** The Environment Act (EA), Afghanistan's first-ever environmental framework law, was approved by the Afghan Cabinet in December 2005. The Act contains the tailor-made legal frameworks needed to sustainably manage Afghanistan's natural resources and to rehabilitate its damaged environment. The Act also clarifies institutional responsibilities and contains the compliance and enforcement provisions required to allow the Government of Afghanistan to effectively enforce the legislation. The law is a fundamental prerequisite to enable NEPA to fulfill its mandate. The primary objectives of the Act are to:

- (i) Improve livelihood and protect the health of humans, fauna and flora;
- (ii) Maintain ecological functions and evolutionary process;
- (iii) Secure the needs and interests of present and future generations;
- (iv) Conserve natural and cultural heritages; and
- (v) Facilitate the reconstruction and sustainable development of the national economy.

7. The EA was developed by NEPA with the support and technical advice of UNEP as well as IUCN and international experts over a period of two years. UNEP also facilitated an extensive national consultation process on the draft act with all national stakeholders (ministries, parastatals, civil society organizations) as well as other interested parties (UN agencies, ADB, World Bank, IUCN, USAID). UNEP is supporting NEPA in the development of the subsequent regulations to the EA (particularly in the fields of environmental impact assessment, integrated pollution control and compliance and enforcement), and of the institutional processes and systems required to adequately and effectively implement the EA.

8. **Administrative Guidelines for Preparation of Environmental Impact Assessments, March 2007 (Version Draft -2):** The guidelines are in draft form and have been prepared by NEPA in coordination with UNEP. The purpose of guidelines is to provide guidance to proponents while undertaking development project that may have a potential impacts on the environment. The guidelines also provide guidance on how public should be consulted and defines the roles and responsibilities of various stakeholders in the process.

9. **Environmental Impact Assessment Policy – “An Integrated Approach to Environmental Impact Assessment in Afghanistan”, August 2006:** NEPA with the assistance from UNEP has developed the EIA Policy of Afghanistan. The policy stipulates energy sector guidelines to the project proponents to integrate EIA in the process of development and the procedures to address environmental consequences and involve necessary institutions in the process of project implementation. The policy is yet to get green signal from Cabinet (Ministry of Justice) before it gets statutory status for project proponents.

10. **Interim Environmental Impact Assessment Regulations, NEPA (Draft 2.3):** These regulations govern the process of environmental impact assessment in Afghanistan on an interim basis pending the establishment of the EIA Board of Expert in terms of Article 20 of the Environmental Law and issuing of final regulations. These regulations provide the detailed process of EIA and list the projects into category A and B based on potential impacts. In accordance with the article 13(1) of the environmental law, these regulations apply to following prohibited activities:

- (i) Category A activities, set out in Schedule I of the Regulations, are the activities likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented, and impact to energy sector area than the sites or facilities subject to the physical works of the activity;
- (ii) Category B activities, set out in Schedule I of the Regulations, are the activities likely to have significant adverse impacts on human environments or environmentally sensitive areas that are less adverse than those of Category A activities, and are site specific and in most instances not irreversible;
- (iii) Any activity that is likely to have significant adverse impact on the environment of an area that has been determined by NEPA to be an environmentally sensitive area; and
- (iv) Any other activity that is likely to have a significant adverse impact on the environment and which is determined by NEPA to be a prohibited activity.

## 2. ADB Requirement

11. On the other hand, ADB's Environmental Assessment Guidelines, 2003 provide a holistic approach for the user for integration of environmental considerations in ADB's operations. It provides project categorization and procedures to undertake the environmental impact assessment based on significant potential impacts. ADB categorizes projects into category A, B, C and FI based on significance of likely impacts. The categorization criteria are:

- Category A Projects with potential for significant adverse environmental impacts: An Environmental Impact Assessment (EIA) is required to address significant impacts,
- Category B Project judged to have some adverse impacts – but of lesser degree and /or significance than category A. An Initial Environmental Examination (IEE) is required to determine whether or not significant environmental impacts warranting an EIA or likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report,
- Category C Projects unlikely to have adverse impacts: No EIA or IEE required, although environmental implications are still reviewed,
- Category FI Projects are classified as category FI - if they 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 subprojects will result in significant impacts.

## **C. Environmental Assessment Requirements**

### **1. Environmental Criteria for Subproject Selection**

12. Considering the potential environmental impacts of the future subprojects, with specifics below in this Framework detailing the relevant ADB and Afghanistan requirements and regulations, the following criteria will be adopted for selection of the future subprojects:

- (i) The subprojects shall only involve activities that follow all the government regulations.
- (ii) The subproject should not involve activities located in or near the core zone or, as much as possible, the buffer zone of designated wild-life sanctuaries, national parks, and other protected areas.
- (iii) The subproject should as much as possible not involve activities located in or near area that is ecologically sensitive and significant as recognized by the Government or any area that is internationally significant (such as protected wetland designated by the Wetland Convention).
- (iv) The subproject should as much as possible not include any stretch that passes through any cultural heritage designated by the Government or by international agencies such as UNESCO.

### **2. Environmental Assessment Requirements**

13. Based on the Government and ADB's Environmental Policy 2002, subprojects will be subject to the following requirements:

- (i) Requirement for environmental assessment of each subproject depends on its potential impacts. Based on these potential impacts, a subproject will be classified in accordance with the Government's and ADB's environmental assessment guidelines, using the ADB's rapid environmental assessment.
- (ii) For each category "A" subproject, an Environmental Impact Assessment (EIA) including Environmental Management and Monitoring Plan (EMP) is required. For each category "B" subproject, an Initial Environmental Examination (IEE) including EMP is required.
- (iii) A subproject will be categorized as an "A" subproject if the subproject:
  - (a) requires a complex mitigation measure, which needs to be prepared through an in-depth assessment of the impacts and detail study to prepare mitigation measures;
  - (b) will generate impact to the ecologically sensitive area, particularly if the subproject (a) passes through or is located less than 100 meter from any designated wild-life sanctuaries, national parks, other sanctuaries, botanical garden or area of international significance (e.g. protected wetland designated by the Wetland Convention), or (b) passes through any cultural heritage designated by UNESCO; and
  - (c) involves establishment of by-pass or new alignment, passing through any ecologically sensitive areas (hilly mountainous, forested area, wetlands, nearby estuarine, or other important ecological function areas).
- (iv) Other subprojects with physical investments that do not fall under the above classification are classified as "B" subprojects.

## D. Institutional Arrangement and Responsibilities

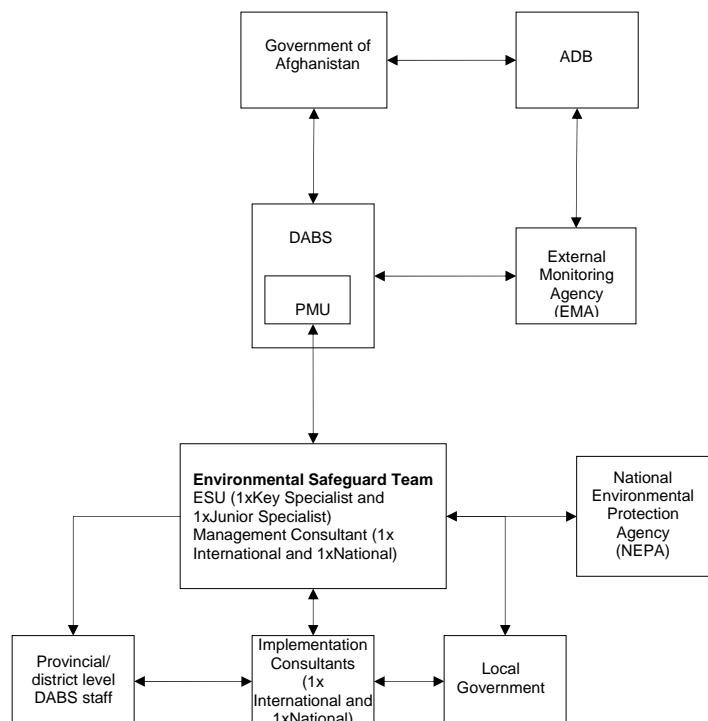
### 1. Institutional Arrangement

14. The environmental assessment and review procedure described in this EARF involves distinct processes, dynamics and different agencies. The agencies involved in the planning and implementation of resettlement and rehabilitation program are DABS as the EA and the Provincial and District governments. The PMU with the support of the management consultant and the implementation consultant will co-ordinate all activities related to the preparation, implementation and monitoring of the environmental management. All activities will be coordinated with the relevant local government agencies and community *shura* in which the subprojects will be implemented.

15. The National Environmental Protection Agency (NEPA), as an independent institutional entity, is responsible for coordinating and monitoring conservation and rehabilitation of the environment. NEPA will appoint an EIA Board of Experts to review, assess and consider applications and documents submitted by the proponent. Acting on the advice of the EIA Board of Experts, NEPA shall either grant or refuse to grant a permit. A permit granted will lapse in the event that the proponent fails to implement the Project within three years of the date of which the permit was granted. NEPA should also be consulted if complicated issues arise during construction and operation stages.

16. The institutional arrangement for the planning and implementation of environmental management will be structured as depicted in **Figure 1** below.

**Figure 1: Institutional Arrangement for Planning and Implementation of Environmental Safeguards**



## **2. PMU's Responsibilities**

17. DABS will be responsible for the following:

- (i) Prepare an environmental screening checklist and classify the subprojects;
- (ii) Based on the environmental classification of the subprojects, prepare the terms of reference to conduct an IEE or EIA study;
- (iii) Hire an environmental consultant to prepare an IEE or EIA report, including an EMP, and SIEE or SEIA for public disclosure;
- (iv) Undertake an initial review of the IEE and SIEE or EIA and SEIA;
- (v) Submit the IEE or EIA and SIEE or SEIA report and the review form to ADB as part of the approval of subproject and for public disclosure via ADB's website as required by ADB's policy;
- (vi) Obtain Government permits, clearances and Non-Objection Certificate (s) (NOC), as necessary;
- (vii) Ensure that all regulatory clearances are obtained before starting civil works for the subproject;
- (viii) Submit to ADB all the required clearances/certificates obtained from the relevant Government authorities;
- (ix) Ensure that the required mitigation measures during construction are included in the bidding document;
- (x) Ensure that contractors have access to the EIA or IEE and EMP report of the subproject;
- (xi) Ensure that an environmental management plan, including all proposed mitigation measures and monitoring programs, are properly implemented;
- (xii) Monitor the implementation of environmental management plan and present it in the environmental monitoring report;
- (xiii) In case unpredicted environmental impacts occur during project implementation, provide and implement an environmental emergency program;
- (xiv) In case a subproject needs to have its scope changed or its environmental classification reconfirmed, review it to determine whether a supplementary IEE or EIA study is required. If it is required, prepare the terms of reference for undertaking a supplementary IEE or EIA and hire an environment consultant to carry out the study;
- (xv) Submit the semiannual report on social and environmental compliance and implementing the Environmental Management Plan (EMP), including implementation of an environmental emergency response program for spills of hazardous materials or chemical, as relevant, to the NEPA in Afghanistan and to ADB; and
- (xvi) Ensure that adequate public consultation be undertaken with affected groups and local NGOs.

## **3. ADB's Responsibilities**

- (i) Review the IEE or EIA report as a basis for the subproject's approval;
- (ii) Publicly disclose the SIEE and SEIA via ADB's website;
- (iii) Monitor the implementation of the EMP and due diligence as part of overall project review mission; and
- (iv) If required, provide advice to DABS in carrying out its responsibilities to implement the EMP for this Program.

## **E. Environmental Monitoring Plan**

18. A tentative Environmental Management Plan (EMP) has been prepared based on ADB Guidelines as presented in the Annex. The EMP will be updated as subprojects are identified and new tranches are prepared. The basis for preparation of the EMP is as follows:

- (i) To define the environmental management principles and guidelines for the design, construction and operational phases of the subprojects.
- (ii) To describe practical mitigation measures that must be implemented at all subproject sites to prevent or mitigate negative environmental impacts.
- (iii) To establish the roles and responsibilities of all parties involved in the implementation of environmental controls.

19. Detailed budgets for environmental monitoring will be prepared for each subproject by the EA. The budget will be included in the overall cost estimates for subprojects. The EA will keep advance provisional budget in its annual plan for environmental management.

## **F. Public Disclosure**

20. DABS should ensure that ADB be given access to undertake environmental due diligence for all subprojects. However, DABS has the main responsibility for undertaking environmental due diligence and monitoring the implementation of environmental mitigation measures for all subprojects. The due diligence report as well as monitoring reports on implementation of the environmental management plan needs to be documented systematically and be available to the public, if requested.

21. DABS and ADB agree that in disclosing the environmental document to the public, (i) DABS is responsible for ensuring that all environmental assessment documentation, including the environmental due diligence and monitoring reports, are properly and systematically kept as part of an DABS project-specific record; (ii) all environmental documents are subject to public disclosure, and therefore be made available to public; (iii) for category-A and B-sensitive subprojects, the SEIA/SIEE will be disclosed to the public through ADB's websites 120 days before civil works start. The SEIA/SIEE has to be reviewed by ADB before it is disclosed to the public; and (iv) DABS will ensure that public consultations, particularly with project affected persons, are undertaken adequately during the IEE/EIA preparation process for the future subprojects.

## Tentative Environmental Monitoring Plan (EMP)

### Construction Phase

Issue	Potential Impact	Mitigation Measures	Implementing Agency	Monitoring Agency
<b>Natural Environment</b>				
<i>Soil and Materials</i>				
Soil erosion	High suspended solid contents of river, drainage failure, inundation of farmland, and mud flows	<ul style="list-style-type: none"> <li>• On hill slopes and other potentially erosion prone areas along the embankment, appropriate vegetation which checks soil erosion will be planted.</li> <li>• On sections with cut and fill, mild slopes will be maintained and planted with appropriate vegetation.</li> <li>• Design consideration will include protection using retaining structures such as gabions.</li> <li>• Appropriate earth compaction and runoff designs will be incorporated in construction of access roads, diversion weirs and along the transmission lines.</li> <li>• Borrow pits and quarries will be redeveloped as per standard procedure.</li> </ul>	Contractor	PMU
Degradation of borrow areas	Loss of topsoil and scars on landscape	<p>Rehabilitation of quarries and borrow sites will be undertaken immediately after excavation to prevent soil erosion. Redevelopment will include:</p> <ul style="list-style-type: none"> <li>• regarding slopes to minimize erosion,</li> <li>• replacing stockpiled soil cover,</li> <li>• replanting grass, shrubs, and trees,</li> <li>• installing sediment runoff control devices</li> </ul>	Contractor	PMU
Excess material	cut Soil dumping: if improperly designed, loss of agricultural land and impaired view.	<ul style="list-style-type: none"> <li>• All surplus earth and stones will be re-used to a maximum extent in constructing access roads, embankments of headrace, tailrace canals and other civil works.</li> <li>• Cut and fill managed according to design specification. Locations, drainage and coverings will be finalized during detailed design stage.</li> <li>• Spoil plan will be developed showing the fill location and rehabilitation of these locations.</li> </ul>	Contractor	PMU and NEPA
Topsoil	Loss of topsoil	<ul style="list-style-type: none"> <li>• Loss of topsoil will be avoided by stripping and storing topsoil prior to construction.</li> <li>• The topsoil (15cm or so) will be kept and refilled after excavation is over to minimize the impact on productive lands.</li> </ul>	Contractor	PMU

<b>Issue</b>	<b>Potential Impact</b>	<b>Mitigation Measures</b>	<b>Implementing Agency</b>	<b>Monitoring Agency</b>
<b>Water</b>				
Construction of weir/ dam and other structures in rivers	flood, inundation, mudflow, pollution, and adverse effects on runoff flow pattern	<ul style="list-style-type: none"> <li>Ensure design includes prevention of flooding during closing of rivers and canals. Side drainage structures will be incorporated in design to divert the stream water at construction sites.</li> <li>Earth and stones will be properly disposed of so that they do not block rivers and streams, resulting in adverse impact on water quality and flow regime.</li> <li>All necessary measures will be taken to prevent impeding cross drainage at rivers/ streams and canals or existing irrigation and drainage systems.</li> </ul>	Contractor	PMU
Siltation	Adverse effects on channel stability Damage on river banks	<ul style="list-style-type: none"> <li>Increasing coverage of open surface area by planting grass and creepers so that washing away of materials from sloped surfaces would be reduced to a significant extent.</li> <li>Sediment barriers will be included in the design to prevent siltation at construction sites.</li> <li>Construction materials containing fine particles, e.g. limestone will be stored in an enclosure such that sediment laden water does not drain into the soil.</li> </ul>	Contractor	PMU
<b>Solid Waste and Hazardous Materials</b>				
Solid waste from contractor's yard and construction camps	Contamination from solid waste	<ul style="list-style-type: none"> <li>All construction materials will be reused, recycled and properly disposed of. All worn out parts, equipment and empty containers must be removed from the site to a proper storage location designated by PMU.</li> <li>Solid waste and garbage will be collected in bins and disposed of daily, according to a brief and basic waste management plan prepared by the contractor and approved by PMU, prior to the commencement of civil works.</li> <li>There will be no site- specific landfills established by the contractors. All solid waste will be collected and removed from the work camps and disposed of in local waste disposal sites</li> </ul>	Contractor	PMU, NEPA
Sewerage in contractor's camps	Contamination from sewerage	<ul style="list-style-type: none"> <li>Prior to initiating the work the contractor will present a simple sewerage management plan to the PMU for approval</li> <li>Sewerage to be discharged into soak pits or municipal sewers and construction camps to be located away from rivers.</li> <li>Septic tanks must be provided at each construction campsite</li> <li>All work sites to be equipped with latrines. All toilet facilities will be located at least 300 m from water sources or existing residence.</li> </ul>	Contractor	PMU
Storage of toxic, and flammable chemicals	Harmful and toxic chemicals (paints, fuel and lubricants, oils and explosives	<ul style="list-style-type: none"> <li>Stored in designated sites. Vehicle maintenance and refueling will be confined to areas in construction sites designed to contain spilled lubricants and fuels. Spill waste will be disposed at approved disposal sites, according to NEPA requirements.</li> </ul>	Contractor	NEPA, PMU

<i>Issue</i>	<i>Potential Impact</i>	<i>Mitigation Measures</i>	<i>Implementing Agency</i>	<i>Monitoring Agency</i>
<b>Air Noise and Vibration</b>				
Emission from construction vehicles and equipment	Health hazard to workers and close by residents.	<ul style="list-style-type: none"> <li>Vehicles and machinery used for construction are to be regularly maintained. Idling of engines will be discouraged.</li> </ul>	Contractor	NEPA, PMU
Dust/ Odor	Air pollution	<ul style="list-style-type: none"> <li>Dust control by frequent water spraying of construction sites and exposed earth surfaces; use of vehicle covers, vehicle and equipment well maintained. A spraying schedule will be prepared to serve as the basis of a dust control program.</li> <li>Vehicles delivering materials to and from the subproject sites will be covered to reduce spills.</li> <li>Operators will wear dust masks and ear protection.</li> </ul>	Contractor	NEPA, PMU
Blasting and scaling of rock	Explosion and noise	<ul style="list-style-type: none"> <li>Blasting will be carried out only with permission of NEPA, using a pre-established schedule. All the statutory laws, regulation, rules etc., pertaining to acquisition, transport, storage, handling and use of explosives will be strictly followed, with blasting taking place preferably during mid-day hours. The timing will be made available to the local people with in 500m of the blasting site in all directions, depending on the total charge used.</li> <li>Where possible blasting mats will be used to reduce noise levels when blasting is carried out.</li> </ul>	Contractor	PMU, NEPA
Noise from construction activities	Noise pollution	<ul style="list-style-type: none"> <li>All equipments shall fulfill noise control requirements of the project. Special attention shall be given to regular maintenance of construction equipments for their best working condition.</li> <li>Construction activities will be scheduled to avoid school and late night hours.</li> <li>When construction takes place within 500 m from villages or within 150 m from sensitive areas such as health centers, construction will be stopped from 21:00 to 06:00 hours. This will reduce nighttime noise levels.</li> </ul>	Contractor	PMU, NEPA
<b>Ecological Environment</b>				
Flora	Minor loss of vegetation	<ul style="list-style-type: none"> <li>A tree cutting and planting scheme will be prepared during the design phase. During the construction phase appropriate training will be provided to the workers and penalty will be imposed for the contractor for cutting down trees for firewood.</li> </ul>	Contractor	PMU, NEPA
	Impact on adjacent trees to transmission lines	<ul style="list-style-type: none"> <li>The transmission line alignment will be selected to avoid trees as far as possible.</li> <li>Where unavoidable only the top of the trees will be trimmed regularly.</li> </ul>	Contractor	PMU
Fauna	Impact on fauna	<ul style="list-style-type: none"> <li>Hunting and fishing will be strictly prohibited</li> <li>Stream crossings that are dry during the work period will be kept unobstructed at all times and the channels will not be altered</li> </ul>	Contractor	PMU

<i>Issue</i>	<i>Potential Impact</i>	<i>Mitigation Measures</i>	<i>Implementing Agency</i>	<i>Monitoring Agency</i>
<b>Socio-economic Environment</b>				
Local road	Loss of access and damage to local roads	<ul style="list-style-type: none"> <li>Local roads around the project area will be maintained during the construction period</li> <li>Local roads around the project area will be repaired to their original condition after completion of the project</li> </ul>	Contractor	PMU, NEPA
Compensation for Land use and trees	Social instability and deforestation	A policy guideline and compensation plan will be prepared during the design phase once the land area and ownership is identified. The compensation plan will outline who is entitled to compensation, what the compensation mechanism will be and the amount paid according to the type and extent of the damages	Contractor	PMU, NEPA,
Community involvement	Stresses in the community	<ul style="list-style-type: none"> <li>Grievance redress committee will be established</li> <li>Labor intensive construction using local residents is recommended.</li> </ul>	Contractor	PMU, NEPA
Religious and cultural places	Social grievances	<ul style="list-style-type: none"> <li>Cultural and religious relics will be protected and respected.</li> <li>Consultations with the local residents will be carried out for civil works close to the religious and cultural sites.</li> </ul>	Contractor	PMU
Increased traffic flow	Social grievances	Measures will be taken to relieve congestion due to traffic jams through coordination between the contractor, PMU and local police.	Contractor	PMU
Worker's health, safety, and hygiene		<ul style="list-style-type: none"> <li>Clean work environment including good drainage around campsites will be provided to avoid creation of stagnant water bodies</li> <li>Provide adequate sanitation and waste disposal facilities at campsites</li> <li>Provide education to the workforce on prevention of communicable diseases, protective measures and disease control</li> <li>Provide construction personnel with required self-protection devices such as safety helmets, belts, air plugs and other protection devices.</li> </ul>	Contractor	PMU, NEPA

### Operation Phase

<i>Issue</i>	<i>Potential Impact</i>	<i>Mitigation Measures</i>	<i>Implementing Agency</i>	<i>Monitoring Agency</i>
Soil and spillage of lubricants	Soil contamination	<ul style="list-style-type: none"> <li>Oil, grease and other lubricants will be safely stored</li> <li>Used lubricants and hazardous chemicals will be disposed of as per the disposal plan prepared during the design phase</li> </ul>	Plant Operator/ DABS	PMU
Wastewater disposal	Soil and water contamination	<ul style="list-style-type: none"> <li>Waste water generated from staff quarters will be discharged into septic tanks or municipal sewerage</li> <li>Water saving technologies such as low volume flush toilets and automatic taps will be incorporated in the staff quarters.</li> </ul>	Plant Operator/ DABS	PMU
Noise	Noise pollution	<ul style="list-style-type: none"> <li>Standard occupational health and safety practices will be adopted to reduce impact of noise to the operators from electromechanical equipment in the powerhouse</li> <li>Dense layer of plantation will be developed around the powerhouse.</li> </ul>	Plant Operator/ DABS	PMU