

**GOVERNMENT OF NEPAL**

**MINISTRY OF LOCAL DEVELOPMENT**

**DEPARTMENT OF LOCAL INFRASTRUCTURE  
DEVELOPMENT AND AGRICULTURAL ROADS  
(DOLIDAR)**

**ENVIRONMENTAL ASSESSMENT AND REVIEW  
PROCEDURES**

**RURAL RECONSTRUCTION AND REHABILITATION  
SECTOR DEVELOPMENT PROGRAM  
ADB TA-4919 NEP**

**(DRAFT)**

**June 2007**

## ABBREVIATIONS ACRONYMS

B.S.	Bikram Sambat ( Nepali Year )
CDC	Compensation Determination Committee
CFC	Compensation Fixation Committee
CFUG	Community Forestry User Groups
COI	Corridor of Impact
CTA	Chief Technical Advisor
DPF	District Participation Framework
EMG	Environmental Management Group
ESMP	Environmental Statement and Management Plan
ID	Institutional Development
MoH	Ministry of Home
MoEST	Ministry of Environment Science and Technology
NPC	National Planning Commission
PDE	Planning and Design Engineer
PPT	Project Preparation Team
PWD	Public Works Directives
ADB	Asian Development Bank
AIDS	Acquire Immune Deficiency Syndrome
B.G.	Building Group
CBO	Community Based Organization
CDO	Chief District Officer
DDC	District Development Committee
DMC	Developing Member Countries
WBDMG	World Bank Department of Mines and Geology
DOLIDAR	Department of Local Infrastructure Development and Agricultural Roads
DOR	Department of Roads
DRCC	District Road Coordination Committee
DTMP	District Transportation Master Plan
DTO	District Technical Office
EA	Executive Agency nvironmental Assessment
EAD	Environmental Assessment Document
EARP	Environmental Assessment and Review Procedures
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management Section
EPA 97	Environmental Protection Act 1997
EPR 97	Environmental Protection Regulation 1997 (amendment 1999)
FGD	Focus Group Discussion
GON	Government of Nepal
IEE	Initial Environmental Examination
IP	Indigenous People
LEP	Labor-Based, Environmentally Friendly, and Participatory Approach
LSGA	Local Self-Governance Act
MOLD	Ministry of Local Development
NGO	Nong-Governmental Organization
PAF	Project Affected Families
PCU	Project coordination Unit
RBG	Road Building Group
RBG	Road Building Group
RD	Regional Department
REA	Rapid Environmental Assessment

ROW	Right of Way
RRP	Report and Recommendation of the President
RRRSDP	Rural Reconstruction and Rehabilitation Sector Development Program
RUG	Road User Committee
SD	Survey Department
SEIA	Summary Environmental Impact Assessments
SIEE	Summary Initial Environmental Examination
ToR	Terms of Reference
VD	Venereal Disease
VDC	Village Development Committee
VRCC	Village Road Coordination Committee

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## I. INTRODUCTION

### A. Background

1. Nepal's economic and social development is inextricably linked to its geography and accessibility. An estimated 50 percent of Nepal's population lives at least four hours walk from the nearest dry-season road where a bus or jeep may transit<sup>1</sup>; and only about 30 percent have access to all-season transport services<sup>2</sup>. Many in these isolated communities rely on foot trails and mule tracks and some in the mountain districts walk several days to reach the nearest dry-season road. Inadequate and inefficient rural transport service, therefore, is a major factor constraining the use of social services and markets by communities, including education, medical facilities and agriculture markets. Economic and social surveys show that children in remote districts are more likely to be malnourished, die before they reach five years of age, and less likely to attend school than children living in more accessible districts<sup>3</sup>. Similarly, per capita incomes are 50 to 65 percent lower in the more remote Far Western Hills and Mountain Districts than they are in the more accessible Terai and Central Hill Districts.

### B. Report Content

2. The objective of this Environmental Assessment and Review Procedure (EARP) is to provide guidelines for environmental assessment for future non-core subprojects in Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP) districts so that during the following three years of the project implementation, the subprojects can be well prepared as the core subprojects in the first implementation phase.

3. For preparation of environmental assessments of future subprojects under Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP), this EARP includes: i) The process to be adopted while preparing environmental reports, ii) the potential environmental impacts that could result from undertaking the Project based on the Initial Environmental Examinations (IEEs) of sample core subprojects; iii) the proposed mitigation measures to avoid the identified impacts; iv) institutional capacity assessment and strengthening arrangements; v) legal framework for environmental assessment, domestic and the Asian Development Bank (ADB) environmental assessment and review procedures; and finally vi) the approaches to be adopted during implementation of the Project in order to ensure that environmental aspects are dealt with in a comprehensive manner.

## II. OVERVIEW OF THE TYPES OF SUBPROJECTS TO BE ASSESSED

### A. Description of the sample core subprojects

4. Detailed feasibility and technical studies including environmental studies have been carried out by RRRSDP. The RRRSDP will carry out five sample core subprojects in five districts. The districts are selected one each from the country's five development regions. The districts and the sample core subprojects have been selected as per the recommendations of the Ministry of Local Development (MOLD), which is the national Executive Agency of RRRSDP from Government of Nepal (GON). Concerned District Development Committees, the

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<sup>1</sup> GON. CBS. 1996. Nepal Living Standards Survey.

<sup>2</sup> ADB. May 2004. Transport Indicators Survey.

<sup>3</sup> Central Bureau of Statistics, GON.

implementing agencies at the district level, in essence, recommended the sample core subprojects,

5. The list of sample core subprojects and their classifications and locations are given below:

**Table1: List of Sample Core Subprojects**

Development Region	Name of the Scheme	Type of Core Subproject	District
Eastern	Bhojpur- Manebhanjyang Section of Bhojpur-Ghodetar Road	Rural Road	Bhojpur
Far Western	Dundhejhari – Tikapur	Rural Road	Kailali
Mid Western	Chandane	Water Supply	Surkhet
Western	Beni – Pakhapani	Rural Road	Myagdi
Central	Kamidanda–Taldhunga	Rural Road	Kavre

**Table 2: Environmental Categorization of the Five Sample Core Subprojects**

No.	Sample Core Subproject	GON's's Procedure			ADB's Prodedure		
		Category	EPR	Approval	Category	EAD	
1	Bhojpur- Manebhanjyang Section of Bhojpur-Ghodetar Road	B	IEE	MOLD approval obtained.	B	IEE	SIEE prepared for RRRSDP
2	Dundhejhari – Tikapur Rural road	B	IEE	MOLD	B	IEE	
3	Beni – Pakhapani Rural road	B	IEE	MOLD	B	IEE	
4	Kamidanda–Taldhunga Rural road	B	IEE	MOLD	B	IEE	
5	Chandane Rural Drinking Water Supply Scheme	C	EIF	MOLD	C	ES	

## **B. ADB Financed Subprojects (Investment Plan)**

6. The RRRSDP will prepare an investment package for the country's rural infrastructure sector with particular emphasis on rural roads as this sub-sector has the highest priority in the Government investment plan for the short-term (for the coming three years). Rural water supply, to a lesser extent will also be included together with a number of other sub-sector (small irrigation schemes, mini-micro-hydroelectric systems etc.) based on a demand-driven signals from the local population in the course of implementation.

7. Based on the feasibility studies of the sample core subprojects, an investment package for the rural infrastructure sector will be prepared under ADB's sector program development approach. The project will enhance rural livelihoods through a social mobilization program, and build the capacity of institutions at central, district and village levels for more effective

management of rural infrastructure. The RRRSDP builds on the experiences and lessons learnt from similar programs in Nepal.

### III. GON AND ADB'S ENVIRONMENTAL ASSESSMENT AND REVIEW PROCEDURES

#### A. GON's Procedures

8. This section describes GON's national environmental legislation and how it encompasses environmental assessment and review through components of the national legislation, regulations and guidelines.

##### 1. Legislation

9. GON gives due consideration to ADB's environmental guidelines and procedures for loan and grant processing. ADB guidelines are given equal importance while carrying out Environmental Impact Assessment for projects using credits and loans from ADB in Nepal. All the projects, be it donor/lender funded or financed by GON, are legally required to comply with environmental procedures as described in Environmental Protection Act 2053 (1997) and Environmental Protection Regulations 2054 (1997). In addition there are several guidelines, safeguard frameworks, working procedures for sector specific projects, such as roads, that are developed and adopted by concerned ministry. These additional guidelines are developed to meet project level environmental mitigation measures and are highly specialized for specific type of projects. All these sector specific guidelines are compatible with national level documents and standards.

#### **Environmental Protection Act 2053 (1997) and Environmental Protection Rules 2054 (1997)**

10. Environmental Protection Act, 1997, (EPA) and Environmental Protection Rules, 1997, (EPR) have been enacted and enforced to prevent or minimize adverse environmental impacts likely to be caused by development activities. According to the EPA 1997, all development projects, including roads, should first be screened using criteria that are based on project type, size, location and cost, stipulated in the Rules to determine the level of environmental assessment required. Small projects that are not expected to cause significant environmental damage, such as rehabilitation of rural roads, are not required to do any environmental assessment. Projects that could result in some environmental impacts are required to conduct Initial environmental examination (IEE) and large projects that can result in major environmental impacts are required to go through an Environmental Impact Assessment (EIA) process.

#### **Other Relevant GON Legislation and Policies**

11. The Interim Constitution of Nepal, 2063: At present, the Interim Constitution of Nepal has been promulgated and is into effect and several articles in the constitution had declared the need to protect the environment and to safeguard the rights of the people.

12. Local Self-Governance Act, 2055 and Local Self- Governance Rule, 2056: The Local Self-governance Act has been enacted to provide greater political, administrative and financial autonomy to local bodies and facilitate community participation at the local level. In accordance

with the Act, local bodies have been formed at three levels: Village Development Committee (VDC) at village level, Municipality at town level, and District Development Committee (DDC) at district level. The Act empowers these local bodies to formulate and implement periodical and annual plans within their own jurisdiction.

13. Explosive Material Act, 2018: If construction activities require the use of explosive, in accordance with the Explosive Material Act 2018, prior approval of the Chief District Officer (CDO) is needed to purchase explosives.

14. Public Road Act, 2031: The Public Road Act is the governing legislation for construction and operation of roads in Nepal. The Act prohibits the construction of permanent structures (buildings) in a defined distance from the rural road, i.e., the road agency has the authority over everything within the right of way (ROW). If road projects temporarily require land and/or other properties during construction, rehabilitation and maintenance, compensation is determined by the DDC. Provisions are also detailed for compensation for the extraction of construction materials.

15. Forest Act, 2049: The use of forestland for rural road project is subject to forest law and regulation. As rural roads pass through different patches of forests and/or privately owned trees the Forest Act and the Forest Rules also become applicable. The road projects need to comply with the provisions of forest law when it requires the use of forestland for road construction.

16. Land Acquisition Act 2034 and Land Acquisition Regulations 2026: The Land Acquisition Act 2034 (1977) and the Land Acquisition Rules 2026 (1969) are the two main legal instruments that specify procedural matters of land acquisition and compensation.

### **GON's Guidelines**

17. Environmental Guidelines: In order to integrate the environmental aspects in development projects and programs, the GON has developed the National EIA Guidelines (1993), a Road Sector EIA Guideline (1997). An environmental Management Guidelines for roads was also developed in 1997 and adopted as environmental policy document by the Department of Roads (DOR) in January 2000. The Guidelines provide guidance to project proponent on integrating environmental mitigation measures, particularly on the management of quarries, borrow pits, stockpiling of materials and spoil disposal, operation of the work camps, earthworks and slope stabilization, location of stone crushing plants, etc.

## **2. Environmental Assessment, Review and Approval Procedures**

### **General**

18. The purpose of this EARP is to establish environmental assessment and review procedures to ensure that RRRSDP meets all the requirements of GON and are compatible and non-controversial with ADB's policy and operational guidelines. It will also help to systematically identify, predict, and evaluate beneficial and adverse environmental impacts of development activities, designing enhancement measures for beneficial impacts, and implement mitigating measures for adverse impacts. The environmental assessment is an integral part of the project identification and feasibility studies, as well as project implementation and operation.

## **Environmental Screening Process**

19. Every subproject proposal to be funded under RRRSDP will undergo an environmental screening process before it is selected for implementation. The screening process will establish the level of environmental assessment required, as well as help RRRSDP project offices to understand environmental issues related to the project before they are considered for implementation and assist in the decision making process. To the extent possible, environmental screening will be done together with technical and economic screening.

## **Environmental Screening Criteria**

20. Screening criteria for road projects that require IEE only as defined by the EPR and ADB guidelines are to be adopted in RRRSDP. The screening procedures and criterion are discussed in detail in section 4.B.

## **Environmental Assessment Process for Subprojects**

21. Once the screening determines the level of environmental assessment that will be necessary, the DDC with necessary support from MOLD, Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR) and Project Coordination Unit (PCU) will commission IEE of subprojects in accordance with GON and ADB requirements and guidelines, which is described in chapter IV.

## **Initial environmental examination**

22. An IEE is carried out to determine whether potentially adverse environmental effects are significant or whether mitigation measures can be adopted to reduce or eliminate these adverse impacts. An IEE requires more in-depth analysis than applied in the screening procedure. Consequently, an IEE involves more time and resources and requires technical input from environmental specialists. Draft Terms of Reference for IEE is presented in appendix 5.

## **B. ADB's Procedures**

### **1. Requirements on Sector Approach Project**

23. RRRSDP is developed under a sector approach modality. Therefore, the subprojects are intended to be small and the likelihood of significant adverse impacts from any one subproject is low. In essence, any subproject requiring EIA will not be eligible for funding under RRRSDP. In compliance with the **ADB Environmental Assessment Guidelines (Manila, 2003)**, the environmental assessment of sector impacts is required to ensure the cumulative impacts of all the known or unknown subprojects and are assessed prior to loan approval. A summary IEE report has been prepared for the RRRSDP which has made an assessment of likely positive and negative cumulative impacts including opportunities for enhancing positive impacts.

24. The second challenge for the environmental assessment and review of sector approach is to provide an efficient mechanism for environmental assessment of each subproject. ADB's requirements for IEE of sample subprojects are also important. The specific results of the sample IEE are very useful in determining the appropriate level of environmental assessment requirements for all subprojects to be financed under the loan.

## 2. Categorization

25. All loans and investments are subject to categorization to determine environmental assessment requirements. Categorization is to be undertaken using Rapid Environmental Assessment (REA), consisting of questions relating to (i) the sensitivity and vulnerability of environmental resources in project area, and (ii) the potential for the project to cause significant adverse environmental impacts. Loans are classified into one of:

- (i) Category A (OM 20)<sup>4</sup>: Projects with potential for significant adverse environmental impacts. An environmental impact assessment (EIA) is required to address significant impacts.
- (ii) Category B (OM 20): Projects judged to have some adverse environmental impacts, but of lesser degree and/or significance than those for category A projects. An initial environmental examination (IEE) is required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
- (iii) Category C (OM 20): Projects unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are still reviewed.
- (iv) Category FI (OM 20): Projects are classified as category FI if they involve a credit line through a financial intermediary or an equity investment in a financial intermediary (FI). The financial intermediary must apply an environmental management system, unless all subprojects will result in insignificant impacts.

26. Most of the subprojects proposed for construction under the RRRSDP will be reconstruction and rehabilitation of rural roads, water supply schemes, irrigation schemes etc. These projects will not have any significant individual or cumulative impacts as has been observed in the IEE reports of sample core subprojects (Four roads and one water supply).

## 3. Basic Environmental Assessment Requirements

27. **Category A.** EIA is required to examine the project's potential impacts, and to recommend an environmentally sound project by comparing all possible alternatives. However RRRSDP projects are categorized under category B.

28. **Category B.** An IEE is required for Category B projects to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report. For Category B projects deemed environmentally sensitive, the Summary Initial Environmental Examination (SIEE) should be submitted to the Board at least 120 days prior to the Board consideration. An IEE report is required to follow the recommended format. A SIEE is required to follow the recommended format in Appendix 3. In addition to the SIEE, IEE will be made available to Board members upon request. The Bank may make the SIEE available to locally affected groups and nongovernment organizations (NGOs), upon request, through the Board Member of the developing member country (DMC) concerned, or through the Bank's Depository Library program, except where confidentiality rules would be violated.

<sup>4</sup> ADB. 2003. *Environmental Considerations in ADB Operations. Operations Manual*, Section 20. Manila

29. **Category C.** No EIA or IEE is required but environmental implications of the project still need to be reviewed and mitigation measures if any should be directly integrated into the project design.

30. **Category FI.** Environmental Assessment of the financial intermediation and equity investments is required. A due diligence assessment of the financial intermediary and its environmental management system is required, except where the subproject involves only small loans with insignificant impacts. In cases where there will be on lending through credit lines, an environmental assessment and review procedures for subprojects are required. The environmental assessment and review procedures are similar to that for sector loans and the requirements for public involvement, information disclosure, and in some cases, clearances by ADB apply.

31. In addition, there is also Category B Sensitive, which is an essentially category B but in sensitive areas and/or involved sensitive environmental issues. Basically requirements for environmental impact assessment for Category B Sensitive projects are similar to Category A, including two rounds of public consultation and 120 days disclosure period.

#### **4. Disclosure and Approval**

32. ADB requires the EIA documents for Category A and Category B Sensitive projects, once prepared, reviewed, accepted and cleared by the ADB staff, and relevant regulatory agencies, be fully disclosed to the public worldwide as well as to the local communities 120 days prior to the Board of Director meeting for review and approval of the projects. All public concerns, queries, comments and objections received within this period should be appropriately and satisfactorily addressed, responded or resolved prior to the Board meeting for final loan approval.

### **IV. SPECIFIC PROCEDURES FOR SUBPROJECTS**

33. The sections below detail the environmental procedures to be followed in selecting, designing, preparing and implementing subprojects in the project area. These procedures include details regarding the authorities and personnel responsible for the compliance of the Project with the EARP and all prescribed environmental guidelines.

#### **A. Responsibilities and Authorities**

34. In RRRSDP, core subprojects have already been identified that are to be implemented in the first phase of the project. The core subprojects have been appraised and approved, and the IEEs have also been conducted. The selection and preparation of future non-core subprojects will primarily be the responsibility of the DDCs with less intensive involvements of the ADB project task team than that in the project appraisal stage. This section describes the various government agencies, project owners, and institutions which will be responsible and/or involved in the project management including future subproject selection and preparation.

##### **1. Executing Agency (EA)**

35. At the national level, Ministry of Local Development (MOLD) has been established as the Executive Agency (EA) to oversee the preparation and implementation of the overall project. The MOLD has an Environmental Management Section (EMS), which is mandated with the

overall environmental responsibility of the ministry. The MOLD is mandated to approve the Terms of Reference (TOR) and IEEs of projects that will be implemented by concerned departments under the Ministry such as DOLIDAR, DDCs and other local bodies such as VDCs and municipalities.

## **2. Implementing Agency (IA)**

36. The District Development Committees (DDC)s will be the implementing agencies for RRRSDP. As the owners or proponents of the subprojects, DDCs, are responsible for screening and ToR preparation, commissioning IEE studies, and carrying out mitigating works. The DDCs will have the responsibility of conducting IEEs and the MOLD will approve them or advice the DDCs on all other discrepancies on IEE process. The DDCs with responsibilities for preparation and submission of IEEs for final approval by MOLD will coordinate between different level of local government, such as Village Development Committees (VDCs), and Wards, organizing or coordinating environmental as built audit, acceptance review, organizing or coordinating environmental monitoring, supervision and examination during project implementation, addressing relevant environmental issues as well. Support from PCU in any aspect of IEE or other technical matters are assured. As most DDCs lack staff with strong environmental expertise and experience, the Project will engage environmental specialist to provide DDCs advisory and technical supports and to train DDC staff whose capacity will be enhanced through on the job training.

37. During the planning phase, DDCs will coordinate with the MOLD, DOLIDAR and PCU to ensure that the project scale and size is as prescribed in the EARP report, and that all recommended mitigation measures proposed for this phase of the operation are incorporated in the design.

38. DDCs will be primarily responsible for the engagement of consultants for conducting an environmental assessment study for each subproject requiring such a study, and as such have the direct responsibility for completion with required quality. The MOLD, DOLIDAR and the PCU will provide guidance to the DDCs in this matter by providing technical guidelines and standard formats.

39. DDCs have the responsibility to undertake necessary activities in future to ensure the following environmental documents completed following required procedures and timings:

- (i) preparation of IEEs for subprojects complying with EPR (1997) and requirements, and in compliance with current ADB Environmental Assessment Guidelines on the preparation of IEEs as well;
- (ii) preparation of Environmental statements for the small sized projects not requiring an IEE.

40. During the construction phase, DDCs will coordinate with the concerned institutions, consultants, contractors and construction supervision companies to implement all mitigation measures and guidelines prescribed in the EARP and the environmental reports and Environmental Management Plan (EMP)s for the particular subprojects. The DDCs will be also responsible for engagement of independent environmental monitoring consultants of the subproject during the construction phase.

41. The Environmental Management Section (EMS) of MOLD and DOLIDAR with necessary support from PCU should coordinate the overall project level monitoring. Considering the resource and capacity constraints of the EMS (MOLD) and DOLIDAR, RRRSDP will finance the monitoring (including use of local consultants) and provide necessary logistic and other support. The monitoring team should be independent of the implementation team, and should submit its report to MOLD, DOLIDAR as well as to ADB. The overall project level environmental monitoring will be carried out preferably during the active construction seasons.

### **3. Government Departments**

#### **Department of Local Infrastructure and Agricultural Roads (DOLIDAR)**

42. The DOLIDAR is the main technically mandated and qualified department of MOLD. DOLIDAR will play a vital role in implementing national environmental policies and legislation at the national as well as at the District level. It is also responsible issuing environmental guidelines; development and enforcing environmental standards and technical standard measures; providing inputs to the MOLD on technical policies and development plans; environmental monitoring, statistics and information; supervising natural resources development and utilization activities; addressing significant environmental issues; follow up on approval process of IEE reports of subprojects and supervising overall subproject activities, etc.

43. Other GON Departments whose timely support and guidance will be important are Department of Roads (DOR), Department of Mines and Geology (DMG), Survey Department (SD), Department of Agriculture etc. just to mention a few.

### **4. ADB Department**

#### **Regional Department (RD)**

44. The process of determining a project's environment category is to be initiated by the RD sector division, which will prepare a REA screening checklist, taking into account the type, size, and location of the proposed project. Since ADB's Public Communications Policy (2005) requires that ADB disclose all monitoring reports received by the Executing Agency, it will be the responsibility of the EA to ensure that such reports are submitted to ADB in a timely manner.

45. Although the relevant ADB departments will ultimately be responsible for ensuring all future non-core subprojects of the fulfilling ADB safeguard policies, the detailed and specific review and recommendation for clearance responsibility for the hundreds of Category B non-core projects during the RRRSDP implementation will be primarily rendered to the MOLD, DOLIDAR, PCU and DDCs. ADB environmental specialists will provide support and assistance as is needed for quality control and quality assurance.

### **B. Environmental Criteria of Subproject Selection**

47. In accordance with the EPA (1997) and EPR (1997), amended (1999), two categories (A and B) are prescribed, mainly based on degrees of projects impacts on environment. Schedule 1 of the EPR lists projects that require IEE and Schedule 2 lists projects that require EIA.

- (i) Category A: Projects with potential for significant adverse environmental impacts. A full environmental impact assessment (EIA) is required to assess, in detailed

- and thoroughly, the positive and negative impacts produced by the projects on environment.
- (ii) **Category B:** Projects with some lesser adverse environmental impacts are categorized as B. An Initial Environmental Examination (IEE) report is required to analyze or specially evaluate the positive and negative impacts by the projects on environment.
  - (iii) ADB must receive and review English versions of SIEEs/Summary Environmental Impact Assessments (SEIA)s. If required ADB will send comments to the PCU within a set period of three weeks.
  - (iv) ADB has the right to request English versions of any IEEs/EIAs.

48. The sensitivity and vulnerability of environmental resources such as forest resources, endangered species, heritage and cultural sites etc. in project area are also considered as categorization criteria, besides the potential for the project to cause significant adverse environmental impacts.

**Table 3: Categorization Directory of Major Road Projects, EPR 1997**

	Category	
SN	(B) IEE	(A) EIA
1	Construction of following roads:  1. District Roads 2. Urban Roads 3. Rural Roads 4. Small access roads	Construction of following roads:  1. National Highways 2. Main Feeder Roads
2	Construction of 1 to 5 km long ropeways.	Construction of more than 5 km long ropeways.
3	Constructing 1 to 5 km long cable car routes.	Construction of more than 5 km long cable car routes
4	Improvement of the standard, rehabilitation, and reconstruction of national highways and feeder roads.	
5	The activities relating to construction of 1 to 5 km long agricultural roads.	

49. Considering the potential environmental impacts of the sample core subprojects, the following environmental criteria will be adopted for the selection of other subprojects.

- (i) Subprojects should not pass through any buffer or core zone of any protected national park, wildlife sanctuary or sensitive wetland.
- (ii) Subprojects preferably should not pass through sample or buffer zone of any ecologically sensitive area as recognized by GON or areas of international ecological significance identified by international convention (e.g. a RAMSAR site).

- (iii) To the extent possible, subprojects should avoid inclusion of any stretch that passes through any area designated for its cultural heritage values by GON or other international agency such as UNESCO.
- (iv) Subprojects requiring EIA by GON regulations and falling under Category A in ADB guidelines will not qualify for RRRSDP funding.
- (v) A road gradient maximum will be considered by the civil engineer(s) responsible for road design in order to reduce probability of slope failure, erosion, and traffic accidents.

## **C. Procedures for Environmental Assessment of Subprojects**

### **1. Preparation of Environmental Assessment Documents (EADs)**

50. An Environmental Assessment Document (EAD) is necessary for each of the recommended subprojects envisaged in the Project. Sample IEEs have been conducted for some core subprojects. Each individual IEEs will identify mitigation measures specific to the terrain of the area where the subproject is proposed, and also to the scale of each operation. The IEE methodology to be applied involves following six steps and they have been adopted from ADB guidelines and GON procedures.

- (i) TOR/Scoping;
- (ii) Publish Public Notice;
- (iii) Field visit and public consultation;
- (iv) Baseline Information and data Collection;
- (v) Impact identification and analysis, and planning and recommendation of mitigation measures;
- (vi) Preparation of an environmental management and monitoring plan.

### **2. Preparation and Approval of IEE Terms of Reference**

51. The EPR 1997 requires that the DDCs prepare a Terms of Reference (ToR) in the format prescribed in Appendix 3 before going ahead with an IEE. The MOLD must approve this ToR. The EPR 1997 ToR format has been adopted for this project. See appendix 5. A review of Nepalese Country Systems for conducting and reporting of IEE's found no significant differences of content between Government of Nepal and ADB requirements. This includes alignment of requirements for public consultation, budgeting mitigation measures and environmental plans (See appendix 5 for sample IEE). Based on this analysis, it is recommended that Nepalese systems be implemented fper beta. Should ADB find any discrepancies/deficiencies in context or process, ADB may request revisions of the said IEE's to the EA.

52. For developing ToR a meeting will be called at the office of the DDC. All relevant stakeholders from the proposed subproject location including NGO's/ Community Based Organizations (CBO)s, if any operating in the area, persons knowledgeable about the area should be invited to participate in the meeting. A list of potentially positive or negative environmental consequences of the proposed subproject, and possible options for the subproject, should be prepared, based on the discussion in this meeting. This should be utilized to formulate the TOR for the subproject.

### **3. Publish Public Notice**

53. The proponent shall inform the VDC/Municipality, or other stakeholders, individual or organizations, concerning the implementation of the project and its impacts through a 15-day notice to be published in a national daily newspaper and notified at VDC/Municipality, DDC, school, hospital/health post etc. Comments and suggestions received through such a notice needs to be included in the IEE report.

### **4. Baseline Information and Data Collection**

54. Baseline information is important reference for conducting IEE. Normally, information is collected from secondary sources or the field investigations. Baseline data are collected for two main purposes. They are:

- (i) To provide a description of the status and trends of environmental factors against which predicted changes can be compared and evaluated in terms of importance; and
- (ii) To provide a means of detecting actual change by monitoring once a project has been initiated.

55. The environmental assessment team will review all readily available information in the light of the concerns raised in the meeting referred to above, as well as considering the formal requirements. This will result in a preliminary summary of the relevant environmental information.

56. Baseline information is collected in terms of:

- (i) Social or Socio-economic Environment
- (ii) Physical Environment
- (iii) Biological Environment
- (iv) Cultural Environment

### **5. Field Visit and Public Consultation**

57. The environmental assessment team will carry out a walk-through field inspection of the subproject site, and collect relevant data. In addition to the observations and measurements made by the environmental assessment team members, information will be collected through a process of consultation after informing the local communities and stakeholders of the proposed operation. Consultation plays a very important role in the environmental assessment process. All relevant stakeholders, such as affected communities, any NGOs/CBO's, local bodies, and knowledgeable persons will be consulted.

58. Different governmental agencies, community organizations are part of public consultation and information dissemination processes of EARP. DDCs assume prime responsibilities to carry out public consultation and information dissemination. VDCs are responsible to mobilize community members and encourage their active participation in consultation and information dissemination processes. Where VDCs lack capacity, DDC will hire consultants or local NGOs to help VDCs mobilize community members and carry out

consultation and information dissemination. Among other community groups, Road User Committee (RUGs) and Road Building Groups (RBGs) are strongly encouraged to participate in consultation and information dissemination processes, to ensure that they understand all protective measures to be taken for road building and maintenance.

## **6. Impact Identification, Analysis, Planning and Recommendation of Mitigation Measures**

59. The environmental assessment team will analyze and interpret all information gained through the previous steps. This will result in the identification and assessment of the following:

- (i) Subproject impacts: these are impacts generated by subproject activities, or other activities directly induced by the subproject.
- (ii) Receptors of impacts: these are the environmental components, setting or features, and living or non-living entities in the subproject area.
- (iii) Mitigation measures: The team will then recommend appropriate and cost-effective measures to mitigate the adverse consequences, and at the same time to enhance the positive impacts.

60. The environmental assessment team will prepare a report incorporating all the work and findings. Both ADB and GON have almost similar formats for the IEE report. The Project will adapt the domestic IEE report in such a manner that it appropriately covers all information sought by the ADB. In this way, a single report will satisfy the needs of both.

## **7. Prescribe Mitigation Measures**

61. Mitigation measures should be designed to maximize project benefits and minimizing undesirable impacts. A wide range of mitigation measures may be proposed, but the following are relevant to most rural infrastructure development projects.

- (i) Consideration of project alternatives in terms of scale, technology used, location, alignment, design and time schedule to minimize impacts;
- (ii) Introduction of compensatory measures to restore, rehabilitate damaged resources; and
- (iii) Introduction of corrective and preventive measures such as bioengineering and slope protection.

## **8. Environmental Management Plan (EMP)**

62. A matrix detailing the recommended mitigation measures for each of the identified impacts will be formulated, along with the persons and institutions responsible for the monitoring of each impact.

63. Environmental monitoring is necessary during both the construction and operation phases. Monitoring is done to ensure the use of appropriate practices, record the environmental impacts, and provide feedback to improve the infrastructure quality.

## **9. IEE Report Preparation and Approval**

64. Upon completion of IEE report, a copy will be sent to PCU for further action needed, if any, by ADB. If the IEE is acceptable to ADB, it will be submitted to MOLD with all the necessary documents. The MOLD can provide an approval or can recommend further information to be included in the IEE. Upon submission after satisfactory inclusion of all the comments, the MOLD can approve the IEE within 21 days of submission.

#### **10. Information Disclosure**

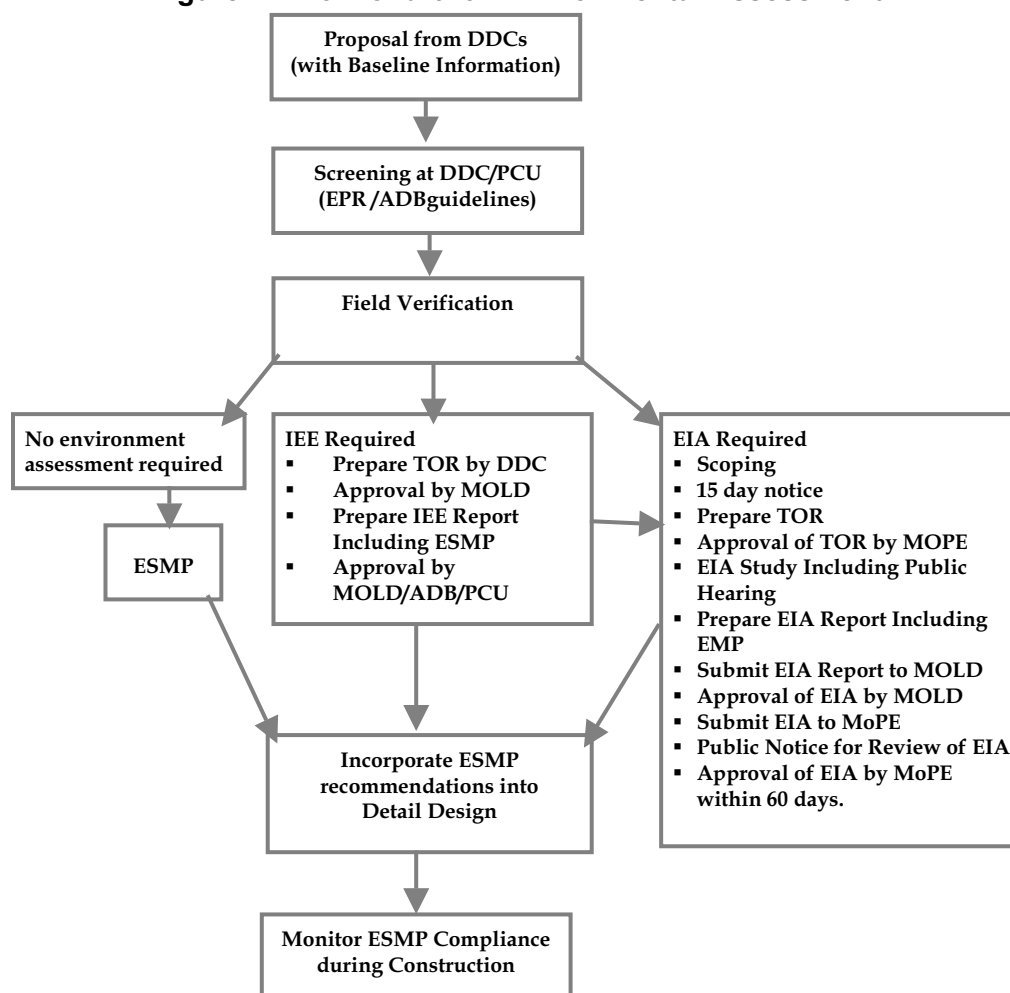
65. Environmental assessment reports for both GON and ADB projects are accessible to interested parties and the general public. The SIEE reports are required to be circulated through the depository library system and on the ADB web site. The full IEE reports are also made available to interested parties on request. ADB's "120 day rule" requires that for Category B sensitive projects, an SIEE is made available to the general public at least 120 days before ADB's Board of Directors considers the loan, or in relevant cases, before approval of significant changes in project scope or subprojects. To facilitate the required consultations with project-affected groups and local NGOs, the information on the project's environmental issues will be provided in a form and language accessible to those being consulted.

66. The proposed consultation enlisting types of activities and procedure that should be carried out in each project phase, as well as who should be responsible for each activity is presented in a table in annex - 6.

#### **11. Subprojects with no Significant Impacts**

67. For the subprojects which have no significant impacts, including the rehabilitation and upgrading of irrigation schemes, small water supply schemes and protection from soil and river training subprojects, impacts during the implementation are only likely to arise during their construction phase. Hence, we mainly concern the construction phase of these subprojects, and all impacts pertaining to the construction phase will be listed together, followed by the recommended mitigation measures. This report is recorded as Environmental Statement report.

**Figure 1: Flow Chart for Environmental Assessment**



#### **D. Potential Impacts and proposed Mitigation Measures for RRRSDP**

68. All of the sample core subproject specific appraisals and IEEs have already been completed in accordance with the environmental legislation of GON and the ADB's environmental guidelines. During this EARP preparation, all core subproject specific IEEs, have been thoroughly studied as a samples to establish likely impacts and mitigation measures.

##### **1. Environment Friendly Construction Approach**

69. The Labor-Based, Environmentally Friendly, and Participatory Approaches (LEP) construction approach: The LEP approach has evolved over several years of experience as the technically, environmentally and socially appropriate method for constructing rural roads in hill and mountain areas of Nepal. As the name "Labour-based, Environmentally-friendly and Participatory" implies:

- (i) labour, hand tools and small equipments are used for construction and not large equipment;
- (ii) the natural environment is conserved as much as possible; and
- (iii) local interests and opinions are incorporated into the design and implementation of the schemes.

The main technical features of the LEP approach are:

70. Road alignment: As part of the construction process, emphasis to the careful selection of the horizontal and longitudinal alignment prior to the start of the construction phase. As a rule of thumb, the alignment of the road should be chosen such that the centre line is close to the surface of the hill slope resulting in low cut slope.

71. Balancing cut and fill: RRRSDP will encourage and emphasize planning and design of subprojects aiming to have cut and fill balanced. A complete balance of cut and fill may not always be practical or possible in which case excess spoils will be placed in pre-identified and approved safe tipping sites.

72. Blasting: In general, blasting will not be allowed during construction. As much as possible, rocky portions need to be avoided by choosing an alternative alignment. If rocky areas cannot be avoided, then technologies other than blasting can be used (i.e. drilling, heating and cooling, and rock cutting). In exceptional cases only, when there is no other option, controlled blasting may be permitted. However it must meet the following conditions: there must be independent technical justification proving that all the possible routes have been explored; it must be a limited section only; it must be proved that there are no other technical options. The controlled blasting must be performed by a separate, skilled team only (not by the users).

73. Appropriate structures: Structures will be built on the basis of actual need determined on site, rather than on prepared designs. Standard drawings are used as the basis for choice of structure type, which should always be the lowest cost option that will serve the function required. For example, dry stone walls are favored over gabions, and gabions over concrete masonry; and scuppers are favored over hume pipe culverts.

74. Bio-engineering: RRRSDP will integrate the use of vegetation in combination with simple civil engineering structures such as gabion walls and simple drains to give the best overall slope protection and shallow stabilization.

75. Local labor: Under the LEP approach, unskilled and semi-skilled works such as earthworks, simple retaining structures, minor cross-drainage structures and side drainage will be carried out by local people formed into Building Groups (BGs). Other works, requiring skilled inputs and/or use of specialized equipment, will be carried out by local contractors.

76. Decentralization and the process approach: In line with GON policy, the institutional arrangements for the RRRSDP are decentralized. DDCs will be the Implementing Agencies, the project owners. Most of the subproject investments will be selected by the DDCs. They will progressively be identified, appraised and approved through a decentralized and participatory process managed by the DDCs, but in accordance with defined selection criteria. However, there will be a crucial project management role for DOLIDAR: facilitating, supervising and approving key decisions; overall management, co-ordination and reporting; provision of guidance; technical support and training.

## 2. Environmental Review

77. Detailed field investigations were carried out by environmental and social specialists in sample core subprojects to identify environmental impacts. These were supplemented by field based consultations that were carried out at these sites by expert environmental consultants. The consultations identified potential environmental impacts and perceptions of the affected communities about the subproject's benefits and impacts. On the basis of these consultations, it appears that subprojects will have no major environmental impacts, for the following reasons:

- (i) Almost all of the sample core subprojects consist of reconstruction or rehabilitation of existing roads except extension and rehabilitation of one rural water supply scheme. Therefore, there will be minimal adverse impacts, such as loss of land, damage to local infrastructure, loss of vegetation, and slope cutting, that are related to opening up of new tracks.
- (ii) Hill roads often suffer from problems related to slope failures and erosion. In the case of RRRSDP, the project will improve existing areas with unstable slopes, using protection structures and bio-engineering and it will use labor-based technology which will minimize damage to fragile slopes.
- (iii) In the Terai, almost all the proposed roads are intended to be north-south roads. The potential for flood damage is less in these roads than east-west roads. Furthermore, as some of the north-south roads also function as embankments, the roads will assist in flood control.
- (iv) All roads will have Environmental Management Plans which have been prepared during the IEE stage of the subprojects.
- (v) Local communities will be involved in road construction as well as monitoring.

78. There appears to be broad consensus among people consulted to provide assistance (i.e. voluntarily donate land) and participate in the project. In many roads, particularly those constructed by local communities or DDCs, there are local users groups that can be mobilized to assist in community level monitoring. In cases where such groups are not present, they can be formed. Local communities believe that there will be very little, if any; adverse environmental impacts and many expect the project to improve environmental conditions caused by existing roads. These mainly include poor drainage conditions in the Terai and unstable slopes in some areas in the hills. They also view improved accessibility resulting from the project to improve their standard of living.

## 3. Impacts and Mitigation Measures

79. Environmental consequences: Undesirable social and environmental consequences generally resulted from road development and particularly observed in the rural areas are summarized in the following paragraphs. Wherever applicable, these issues should be addressed during planning, construction and operation of the RRRSDP. Many of the environmental issues are inter-related. For example, soil erosion may be caused by various factors acting alone or in combination. The issues are described under separate headings for clarity but should be viewed in totality so that inter-linkages become apparent.

80. Approach: Balancing cut and fill and other construction methods and practices that incorporate soil and vegetation conservation aspects are desirable. The road construction approach should give due consideration to the above aspects and use precautionary and

mitigation measures wherever possible. For this, the LEP process has been recommended for the implementation of the subprojects.

81. Instability, landslide and soil erosion: Instability, landslide and soil erosion are the major environmental impacts associated with road construction in Nepal. This is particularly so in the hilly and mountainous terrain and is mainly a problem in weak and vulnerable geological areas. The problem generally results from interaction between water flow and soil, both of which are disturbed by road construction. The situation gets worse if vegetation is also cleared. Fresh cut slopes and embankments are relatively more vulnerable to landslides and soil erosion, particularly due to improper water management in the vicinity. During the construction period, instability, landslides and soil erosion problems may result because of:

- (i) Steeper cut and fill (embankment) slopes and their construction qualities
- (ii) Haphazard disposal of construction spoils
- (iii) Unsuitable locations of quarry sites and borrow pits
- (iv) Rash quarrying and borrowing activities
- (v) Construction carried out in rainy season without proper water control and drainage facilities; and
- (vi) Improper construction methods which leave soils exposed unnecessarily, etc.

82. During the operational phase, the instability, landslides and soil erosion result not only from the road and its structures but also from the activities of road neighbors. The common causes of the problem are:

- (i) Deficiency of or improper drainage structures,
- (ii) Modification of water paths leading to concentrated flows (may also be caused by blocked ditches),
- (iii) High gradient in cut or fill slopes, and
- (iv) Cleared areas which have been left without re-plantation.

Improperly disposed construction spoil may worsen this situation.

83. Soil erosion: There are many instances of ploughing the road reserve for cultivation to the very edge of road which make the land susceptible to erosion and landslides. Similarly, water leaking from the irrigation canals located near the road or from the irrigated land adjacent to the road, mining of soil (for mud plastering of houses) and stone from road slopes, destruction of vegetation due to animal grazing, fodder collection (mowing), slash and burn cultivation in road corridors and road reserves, etc. may also result in landslides and soil erosion.

84. These problems may be avoided by choosing the right alignment, reducing the area of ground clearance, re-plantation in the slopes promptly and their routine maintenance, controlling speed and volume of water flows, etc. Construction practices that are sensitive to and incorporate soil conservation aspects are necessary. The practice should encourage protection of trees and vegetation in the road vicinity and re-vegetation of cut slopes as soon as possible. There should be minimum destruction to the vegetation in the right-of-way. The quality of 'cut and fill' mode of construction and the drainage structures is important in this regard.

85. Encroachment into forest and disturbance to wildlife: A road that passes through forest areas takes up forest land and may disturb the activities of the wildlife. There is a high chance

of occupying forest areas by a rural road as rural road development expects land contribution without compensation. Road may contribute to increased hunting and poaching of wildlife as it provides easier access to its habitat. It may restrict movements and breeding of the wildlife, alter/destroy the existence of habitat. Accessibility made easier by road may also cause pressure on and encroachment to the forests (national parks, wildlife reserve areas, community forests, religious forests, private forests, etc.). Activities of the work-force that create pressure on the forest and forest resources include firewood collection and hunting birds/animals. With the roads, the forests become easily accessible and render animal grazing, firewood collection, hunting, timber export, etc. easier. This can lead to increased timber cutting (legal or illegal) and illegal collection and export of medicinal plants. All these factors may cause significant deforestation and degradation of the forests.

86. Measures that may be employed to avoid/minimize such pressures are the establishment of barriers to control entrance to forest areas, strict enforcement of environmental work-code, reduction of human dependency on forest or forest resources, supply of alternate energy such as kerosene, bio-gas, micro-hydropower, etc. Similarly, preparation of land-use plan that incorporates environmentally sensitive locations of at least the environmental influence corridor and strict adherence to the same can help to preserve the forest and wildlife.

87. Disruption to natural drainage system: Construction of roads may modify the overland (surface) flow patterns causing no flow or reduced flow in some natural channels and high/concentrated flow (floods) in the others. The actions that result in such modifications are diversion of or obstruction to the natural drainage system. In many cases, the speed of water flow may be increased. Road may also disrupt or alter sub-soil drainage, for example, road cut may intersect water-table. Interruption of sub-surface flow may be indicated by the seepage on the exposed road-cut surfaces. This may cause significant changes in the sub-surface flow leading to reduction in/drying-up of local spring flow or may cause instability in the cut slope. Road drainage and excavation can lower the water table, while embankment and structures can raise the water table by restricting the natural flow.

88. Flow regime: The changes in flow of surface water and ground water may lead to a variety of consequences like increased bank-cuttings, inundation of areas which were normally not inundated (flooding), creating water-logging in some areas, non-availability of water in other areas, scouring and siltation of streams, instability, erosion, deterioration of soil and vegetation, loss of water for drinking and agriculture use, etc. These changes in turn can have substantial effects on natural vegetation, fish, wildlife and human. These chain effects extend well beyond the immediate vicinity of the road.

89. Road drains: Some common problems likely to be encountered in RRRSDP are termination of road drains on agricultural land which gets damaged by silt and gravel deposits, creation of new water bodies in the borrow pits, and flooding of farms and settlements because of inadequate number of culverts and their improper placing (particularly in Terai and in the upstream side of the embankments). It is, therefore, advisable that natural drainage patterns be left undisturbed as far as possible. Whenever it is necessary, appropriate mitigation measures and drainage works such as flow reduction measures, settling basins, intercepting drains, energy dissipaters (like cascade), etc. be provided. A well-designed road drainage system can also improve the surrounding environment by retaining water for human and nature benefits or by reducing floods or/and by draining out the unhealthy stagnant water.

90. Effects on water quality: Uncontrolled construction activities such as cutting and filling, disposal of construction waste and spoil, erosion and soil movement due to road construction activities like quarrying and borrowing, etc. cause increase in turbidity/silt content of streams and rivers. Improper sanitation of workers or local inhabitants may also pollute water, particularly drinking water sources. Surface water may be polluted by road run-off containing oil, grease, lubricants and other chemical spills. Other water pollution sources include wastewater generated by the new activities (hotels, industries, settlements) and bad sanitation practices (open field defecation, discharging wastewater into water bodies, dumping solid wastes into or near to the water bodies) etc. Typical effect of water pollution could be health hazards to the downstream water users. Water may become unfit for bathing, drinking, animal consumption, irrigation, etc. or effect on fish and other aquatic life. Increased silt content could also cause unnecessary sediment deposition in downstream which causes the rising of river beds resulting floods in downstream areas.

91. Air and noise pollution: Air pollution due to vehicle emission and noise are generally not major issues in rural roads since the traffic volume is extremely low. However, the dust raised and blown by vehicles may significantly pollute the air in the areas adjacent to construction sites or earthen/gravel roads. Direct effects of dust could be health hazards to road workers, residents adjacent to road and/or interference on plant/crop growth in the vicinity. Careful management of construction sites, storage of construction materials, management of road surface and simple dust control measures like water sprinkling in sensitive places can reduce this problem. At densely populated areas low cost bituminous surfacing may be used to control dust nuisance problems.

92. Implication on public health: Stagnant water bodies created due to road construction such as borrow-pits and quarries may become breeding sites for disease vectors. This may contribute to increase in number and type of disease vectors and incidence of water-related infectious diseases. Increased movements of people (from or to outside) may introduce new diseases to the area (particularly, communicable diseases like Tuberculosis, Venereal Disease (VD), Acquired Immune Deficiency Syndrome (AIDS), etc.).

93. Dust control: Dust raised by construction activities and blown by air may pose health risks to the workers and inhabitants near the road alignment. Construction practice should employ dust control practices/measures and construction activities should be scheduled taking this into account.

94. Public health: Gathering of people and contact among them may lead to transmission of various infectious/communicable diseases. Regular health check-ups help to detect and control transmission of such diseases. Timely and appropriate landscaping, filling and draining of stagnant water can avoid or reduce chances of water-borne infectious diseases.

95. Cultural and historical areas: historic sites may be threatened by road construction and associated works such as quarrying. It can destroy the sites or alter their character. Road may result in illegal occupation or encroachment of the culturally and historically important areas (temples, shrines, shattal/pati, religious sites, mela/jatra sites, caves, graveyards, forts, palaces, etc.) or the land belonging to these sectors. On the other hand, the increased accessibility may attract visitors to these areas which encourage better use, care and conservation of the same. Road development works should, wherever appropriate, include measures to protect such sites.

96. Induced roadside development and road neighbors' activities: Road attracts people to migrate to roadside (from outside the area or local people). It may lead to development of new settlements or old settlements may become larger. Temporary houses or sheds built during the construction period may become permanent and continue to be used during the operation period also. Road generally stimulates ribbon settlement along its alignment. Establishment of industries, increase in commercial activities like general shops, lodges, hotels, liquor shops, etc. may lead to the increase (or in some cases decrease) in land values (adjoining and others). Operation of road may bring about changes in the agricultural practices, productivity, crop-variety, etc. and land-uses (increase in built-up areas, decrease in agricultural areas, forest areas, etc.), farmers' livelihood and may also encourage tourism. The induced changes are not necessarily limited to the immediate vicinity of the road route. Both positive and negative social and environmental consequences are possible from such changes.

97. Undesirable activities: Some of the undesirable activities of road neighbors are over-grazing of roadside, unauthorized and inappropriate collection of firewood/fodder/mowing from road reserve and vicinity, cultivation without terracing in the immediate vicinity of road, cultivation to the very edge of terraces or cut slopes, uncontrolled quarrying of stone and clay from the road cut slopes, poor construction and maintenance of irrigation canals causing water to seep into road slopes and slash and burn cultivation in road vicinity.

98. Social disharmony: Road construction activities may cause damage or increase risks to the communities living in the right-of-way or in the vicinity. Special precaution is required at the time of construction if such risk is unavoidable. Location of and activities at construction camps may also create problems and conflicts. Where construction camps are necessary, the sites should be properly located from social point of view and they should be carefully managed. The activities of workers living in the camp or working in the project may create social conflicts. To avoid conflicts, alcohol consumption and other socially unacceptable activities should be controlled. Adequate efforts should be made to maintain social harmony and co-operation among the workers and local residents. Other social issues during construction are payment to the workers/labors (in time and adequately); protection, improvement and integration of approach trails and tracks, chautaras, etc. to the road as special features; road-side new income generation activities (tea-stalls, liquor shops, aggregate production, etc.); fate of traditional activities (cultivation, portering) etc.

99. Economic activities: The introduction of rural road leads to increased land values and more intensive land-use, especially for lands adjacent to the road. This may cause shift in ownership or rights of resource use from poorer to wealthier classes. Changes in the agricultural practices may have negative effects on local nutrition levels. The increased mobility can result in the spread of diseases and pests. The road will have effects on traditional means of transportation such as animal drawn carts, mules, porters, etc. which in turn can affect the people surviving from such means.

100. Aesthetic qualities: A road can be visually attractive or unsightly depending on its physical layout within the surrounding landscape and how far the attention is given to detailed designs, road-side planting and maintenance. Road can result in landscape distorted by cuts, quarries, slides, etc. These will lead to depreciation and loss of scenic values and sites, view points, etc. Road induced activities may lead to the generation and mismanagement of wastes (solid and liquid) in the roadsides and create scars on the landscape. Proper and controlled disposal of construction wastes and use of good-house-keeping are some ways which can help maintain good aesthetic qualities. Construction of road may cause loss of or encroachment to

unique geological and geographical sites, natural beauty spots and scenic sites and sites of scientific interests.

101. Safety issues associated with road works and traffic: Construction of road involves occupational health and safety risks. Accidents may occur during the construction and operation of roads causing injuries or loss of property and life. Some common reasons for accidents in rural road works include unsafe excavation, collapse of trenches, injuries from unsafe tools/equipment, lack of protective clothing, debris falling from hill slopes, inappropriate disposal of construction wastes, etc. Similarly, traffic operation may result in accidents because of careless driving, inadequate traffic signs, inappropriate road standards and designs, natural disasters, etc.

102. Repair and maintenance aspects: Quite often, rural road suffers from lack of proper attention to the road surface, road structures, drainage structures, environmental mitigation measures and general repair and maintenance. The maintenance of constructed roads is extremely important to prevent long-term negative environmental impacts.

#### **4. Capacity Building for Review Procedures**

103. As most of the DDCs do not have sufficient staff with strong environmental backgrounds, the Project may require inputs from an environmental specialist<sup>5</sup> for each district in the district implementation support team, and extensive capacity building for environmental assessment and management will be carried out throughout this project. Various trainings will have to be carried out for communities, VDC, DDC, contractors and other relevant project staffs. With regard to the environment Specialist – training programmes relating to required monitoring activities at the sub-project level, detailed in the EMP sections of the IEE will be provided. The training programmes will also be targeted such that they will accommodate programmes which also seek to create awareness towards the importance of environmental management at the sub-project level amongst the district level implementation staff, GoN and other concerned stakeholders. Each person will be given a general orientation course on environmental management and the principles to be followed under RRRSDP will be the main focus of the training program. Depending on the technical ability and the responsibility of the persons, they will be given detailed engineering training on bio-engineering, slope stabilization and road alignment or training on how to recognize environmental issues, prepare environmental management plans and monitor environmental impacts.

104. To address environmental management capacity constraints and to meet the environmental requirements of the project, and to contribute to capacity building, the RRRSDP will:

- (i) Finance the costs of conduct of IEEs (if local consultants are utilized) and of environmental monitoring, including logistics and support costs.
- (ii) Through the PCU Consultants, will provide capacity-building and awareness-raising support that will also demonstrate how the private sector can be used to fill capacity gaps. The consultants will provide a substantive input, by qualified and experienced domestic personnel, to: (i) assist in developing practical environmental guidelines, methodologies and institutional mechanisms as part of the Project Procedures Manual; (ii) advise DOLIDAR and the DDCs on environmental screening of all proposed subprojects; (iii) provide training and advisory support to the DDCs for the

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<sup>5</sup> This is not a Government staff position. Specific details of District Level Technical Implementation support and Central Implementation Support Consultants are provided in Appendix 8 and 9 of the RRP.

preparation and conduct of IEEs; (iv) assist the EMS of MOLD in the review of IEE reports; (v) provide advice to DOLIDAR in checking the environmental compliance of subprojects and supplementary investments approved by the DDCs; (vi) support the organization, conduct and reporting of environmental monitoring; and (vii) organize awareness-raising activities and training to strengthen environmental management capacities in the VDCs, DDCs and DOLIDAR including MOLD.

## **5. Central Support**

105. At the central level, a project coordination unit (PCU) to support the project will be established to represent RRRSDP and to function as the day to day working and management arm of the RRRSDP. The PCU will play a vital coordination role both during project preparations and implementation and ensure smooth communications with the MOLD, DOLIDAR, DDCs and other project stakeholders. As the concerned and supportive wing of RRRSDP, the PCU coordinate and facilitate the overall responsibility for safeguarding the environment, throughout the project feasibility study, preparation and implementation stages, as well as its overall responsibility for management of the development program itself.

106. MOLD/DOLIDAR will appoint an environmental officer in the PCU. In addition, within the PCU, the central implementation support consultant team will have environmental management/environmental engineer to support MOLD and DDCs at the central and district levels respectively. The PCU takes the specific responsibility for technical support to DDCs in environmental preparation, supervision, monitoring and enforcement of mitigation measures including review of environmental performance during project implementation. In particular, PCU will have the following specific responsibilities in its environmental aspects of operation during the implementation stage:

- (i) Provide inputs in subprojects identification and implementation with regard to environmental and social considerations.
- (ii) Submit environmental monitoring reports to ADB every six months. The environmental monitoring reports should clearly describe progress towards achieving mitigations, identify environmental issues that need to be resolved, and propose recommendations to resolve the issues."
- (iii) Confirm subproject environmental categorization, and corresponding environmental documentation requirements, in consultation with the concerned environmental authorities, and in accordance with the relevant ADB guidelines and GON regulatory requirements, which are described in this EARP.
- (iv) Facilitate engagement of consulting firms as requested by DDCs in preparation for environmental impact assessment documents to comply with the relevant regulatory requirements and ADB safeguard policies.
- (v) Review completed IEEs for subprojects. As the regulatory review and approval will be the responsibility of the MOLD, the review by this group will be essentially to ensure the documents meet the ADB requirements and guide and assist the documents revision and improvement until it completely meets the ADB requirements.
- (vi) Supervise the actual implementation of environmental mitigation measures prescribed in the IEE during the project construction stage, through site visits, inspection tours, receiving and responding public concerns and complaints and review reports from contractors and DDCs and DTOs.
- (vii) Facilitate engagement of independent environmental monitoring institutions to support DDCs to carry out the environmental monitoring programs outlined in the

- project EMP. The PCU will also be responsible for review the monitoring reports and responding to any recommendations made in the monitoring reports.
- (viii) Initiate corrective actions and additional mitigation measures to those proposed in the EMP as may be needed during the project construction phase, in responding site supervision, monitoring and/or public complaints.
  - (ix) Communicate and coordinate among project stakeholders mainly MOLD, DOLIDAR, DDCs, other relevant government agencies, professional teams/consultants, contractors, construction supervision companies, project communities, the general public as well as ADB, on environmental matters and advise MOLD/DOLIDAR senior management for policies, actions, programs and requirements to ensure the impacts of the project be minimized and project activities in full compliance with regulatory standards, and ADB safeguard policies.
  - (x) Organize and coordinate project completion, environmental acceptance inspections and review in accordance with relevant domestic regulatory requirements.
  - (xi) Conduct other tasks as may be requested by MOLD, DOLIDAR, and DDCs or as may be recommended by ADB or as may be needed by the project for environmental protection.

107. Capacity building and institutional strengthening for MOLD, DOLIDAR and DDCs in general and EMS of MOLD in particular are critically important for the success of environmental management. Many of the responsibilities and functions listed above go far and beyond the standard requirements for DDCs for their regular annual projects. This is because; the DDCs will have to be thoroughly familiar with the ADB environmental requirements. To strengthen EMS of MOLD and DDCs the following have been proposed:

- (i) Staff the PCU with the most qualified technical staff preferably, environmental engineers. Besides the general environmental impact assessment and environmental management experience for construction projects, the environmental staff of the PCU shall also be experienced with ADB policies, procedures and requirements.
- (ii) Conduct training for the DDC and EMS staff, including but not necessarily limited to classroom training for ADB policies and procedures, study tours to other more experienced PCUs which have successfully managed ADB projects, and attending relevant conferences.

108. In addition, it is proposed that for the first group of non-core subprojects when DDCs start to undertake environmental procedures, PCU environmental specialists will involve in their full capacity. The objective of this process is to identify shortcomings of DDCs so that specific measures can be taken to strengthen DDCs (focused training, engagement of additional consultants, etc.). This process may also help ADB to understand and be satisfied with the ability, experience and knowledge to function independently without minimum ADB direct supervision for preparation and clearance of the remaining non-core subprojects.

## **6. Monitoring and Evaluation**

109. Monitoring is an important element of environmental management. To improve the implementation of mitigation measures, the following activities will be undertaken during environmental monitoring.

- (i) Determine indicators to be used.
- (ii) Collect important and relevant information.
- (iii) Apply quantifiable criteria with respect to prescribed indicators.
- (iv) Conduct objective analysis of the information collected.
- (v) Work out clear conclusions based on above points.
- (vi) Draw rational conclusions and recommend improved mitigation measure to implementing agencies.

110. Types of Monitoring: Monitoring activities for the project are to be divided in three types:

- (i) Pre-Construction and Baseline Monitoring;
- (ii) Construction Phase Monitoring; this is generally sub-divided in two related activities:
  - a) Compliance Monitoring
  - b) Impact Monitoring
- (iii) Operational Phase Monitoring.
  - b) Compliance Monitoring
  - c) Impact Monitoring

111. Pre-Construction Monitoring: In the pre-construction monitoring, it will be necessary to confirm that all procedures regarding land acquisition and compensation have been properly set out and followed, and that the construction mitigation plan is in place. Priorities in this regard will include:

- (i) Verification that the IEE mitigation recommendations relevant to the Contractor's responsibility are incorporated in the tender specifications;
- (ii) Verification that all government permits and approvals are in place prior to construction;
- (iii) Verification that land, property and crop and livestock disturbance compensation valuations have been completed prior to construction;
- (iv) Verification that all the necessary sub-plans within the framework of the Environmental Assessment and Review Procedures have been identified and prepared.
- (v) Verification that all necessary activities regarding the job opportunities, giving priority to the project affected families (PAF)s, have been completed prior to construction and hiring.

112. Baseline Monitoring: The primary concern during this phase will be to collect field data needed to enhance the knowledge of baseline conditions in order to assist in designing and estimating the cost of mitigation measures. Detailed information on the type of materials to be used, material collection site and methodology, design for drainage management, slope/erosion control and disposal of excess construction materials will be collected. Priorities in regard to baseline monitoring include:

- (i) Mapping of Sensitive Areas: Maps of sensitive areas, including protected areas, community forests, settlements and unstable slopes, should be prepared and cross referenced with proposed IEE measures.
- (ii) Survey and Documentation of Existing Agriculture Practices: Further analysis of the crops and livestock practices in the areas to be directly affected by the project is needed. This will provide information on precise measures to minimize

disturbance and loss of cultivated and grazing land, as well as measures to increase agriculture intensity to replace the yield lost from land take.

113. Construction Phase Monitoring: Construction phase monitoring is more comprehensive and multi-faceted. Compliance monitoring will be done by the DDC or a committee formed by the DDC at the local level and by DOLIDAR at the central level to ensure that EMP recommendations are being complied.

114. Impact monitoring will focus on key indicators to assess whether the impacts have been accurately predicted, and whether the mitigation measures are sufficient and effective. The main parameters for measurement will likely include:

- (i) Water bodies at critical areas like crossing of major water bodies;
- (ii) Quality of potable water supply to work camps and affected villages;
- (iii) State of forests, including community forests;
- (iv) Re-vegetation and slope stabilization monitoring;
- (v) Public safety and security monitoring;
- (vi) Health and sanitation monitoring;
- (vii) Status of flora and fauna monitoring;
- (viii) Social impact monitoring;
- (ix) Monitoring disposal areas and hazardous waste dump areas for leaching or run-off; and
- (x) Employment monitoring.

115. Operation Phase Monitoring: The proponent or developer will have the primary responsibility for operation phase monitoring. Same as the construction phase monitoring, there will be compliance monitoring and impact monitoring. The compliance monitoring will focus on determining that the prescribed mitigation and enhancement measures are being carried out.

116. The impact monitoring will again focus on key indicators to assess whether the impacts have been accurately predicted and whether the mitigation measures are sufficient and effective. The main parameters for measurement will likely include:

- (i) Adaptation of resettlement households to their new homes and communities;
- (ii) Quality of potable water supply to workers and affected villages;
- (iii) Reconnaissance forest and land use change monitoring;
- (iv) Community forest monitoring;
- (v) Effects of access and control measures on wild lands, wildlife habitats and wildlife populations;
- (vi) Illegal hunting, trapping and tree felling monitoring;
- (vii) Public safety and security monitoring;
- (viii) Health and sanitation monitoring.

## **7. Auditing**

117. Auditing refers to a general class of environmental investigations that are used to verify past and current environmental performance. The audit will assess the actual environmental impact, accuracy of prediction, effectiveness of environmental impact mitigation and enhancement measures, and functioning of pre-construction, construction and operation phase monitoring mechanisms.

## E. Implementation Arrangement

### General

118. The various stages of the environmental process pertaining to EARP involve more than one government agency, different management levels within each agency, and various other parties, such as, project unit, contractor, local community bodies, and the people themselves. The success of EARP implementation depends heavily on the ability of the project's management personnel, in collaboration with specialists from other agencies, to take appropriate actions throughout the various stages of the entire road development process. The table below identifies the common implementation mechanism that need to be undertaken to ensure successful implementation of the environmental assessment.

**Table 4: EARP Implementation Mechanism For RRRSDP**

SN	Mechanism	Responsibility
1	Defining policy directions for RRRSDP in light of the GON policies and legislation.	MOLD, DOLIDAR
2	Drafting ToR for specific subproject.	Concerned DDC
3	Assembling teams to conduct environmental assessments.	Concerned DDC, with support from DOLIDAR and Project Management Unit (PCU)
4	Ensure internal coordination among different level of authorities within the government agency.	MOLD, DOLIDAR, and DDC
5	Staying up-dated with regulations and developments pertaining to RRRSDP relevance.	DOLIDAR, DDC, PCU
6	Defining priorities for RRRSDP.	DOLIDAR, DDC, PCU
7	Organizing public consultations and participatory processes to ensure environmental assessment obligations.	DDC, PCU, Local NGOs
8	Develop methods and operational tools for environmental awareness at policy, program, and operations level.	DOLIDAR, DDC, PCU
9	Organizing training and information campaigns.	MOLD, DOLIDAR, DDC with PCU

## F. Institutional Arrangement

119. Prime responsibility for IEE process is with DDC. For this purpose, during the implementation of RRRSDP, the District Project Implementation Unit will work under District Technical Office (DTO) to support the project. The DDC will also receive necessary assistance from the PCU of RRRSDP, as well as the Environmental Focal Point at DOLIDAR. During the pre-feasibility stages, the DDC will be responsible for conducting environmental screening. If the subproject requires IEE as per the government regulations, the DDC will conduct the IEE with the help of external consultants and technical support from DOLIDAR and PCU if required. During project implementation, the DDC, with assistance from local communities will monitor the compliance of EMP.

## V. PROCEDURES CONFIRMATION

120. This section is to confirm that environmental assessment and review procedures conforms to ADB's environmental and social safeguard policies, based on the evaluation of the adequacy of the procedures in the context of ADB's environmental assessment requirements and the specific nature of the sector approach. The main characteristic of this sector approach is that a very large number of mostly small scale and relatively simple subprojects are to be identified during the project implementation stage. It is not practical for ADB to review and clear all the IEEs for this large number of subprojects. As such, the primary responsibility for subproject review and approval will be conducted by project PCU. But the process and procedures themselves as well as the standards and quality requirements including categorization and environmental documentation will be the same as if they were reviewed and cleared by ADB.

## VI. STAFFING REQUIREMENTS AND BUDGET

### A. Staffing and Training

121. The primary body responsible for managing environmental affairs in the RRRSDP will be a newly established Project coordination unit at the central level. Its responsibilities are listed in this EARP including providing environmental inputs for subproject identification and analysis of alternatives, project categorization and review and recommendation for clearance. This PCU will be supported by four environmental engineers as shown in Table 5. A full summary of environmental support is summarized in Appendix 8 and 9 of the Report and Recommendation of the President (RRP).

**Table 5: Environmental Support Staffing and Key Qualifications**

No.	Title	Key qualifications
1	Environment Specialist/ (Environmental Engineer)	Proven experience with EIA and IEE procedures. Coordination of multi-disciplinary environmental planning, experiences with ADB funded project preparation and implementation monitoring and supervision, thorough understanding of GON environmental regulations, standards, review and approval procedures, and their applications in capital projects, experience in DDC level projects of GON, excellent communication skills and fluent in both English and Nepali.

122. A competent environmental engineer/ specialist (local consultant, 33 person-months) with rich experience in environmental policy and related GON/ADB requirements will be recruited during project implementation to assist PCU to: (i) review IEEs prepared by the local consultants for all non-core subprojects; (iii) provide guidance to PCU and subproject implementing agencies to ensure the effective implementation of EMPs for all components or subprojects funded under the project; and (iv) provide training.

123. A training program will be designed for the concerned officials and technical persons who will be involved at different stages of project implementation. This program will be finalized in coordination with other training programs and after a need assessment is carried out.

## B. Budget

124. Implementation of the subprojects is the responsibility of the DDCs (IAs) i.e., the concerned Districts. Similarly conformance with the EARP is also the responsibility of the DDCs, including bearing the costs for various environmental tasks. The estimated environmental budget is shown as below:

**Table 6: Environmental Budget**

Items	Unit Cost US\$	Months	Persons /No.	Total US \$
Environmental Officer (consultant) <sup>6</sup>	200	54	1	10,800.00
Environmental Management Specialist (consultants)	3,000	33	1	99,000.00
Environmental Engineers (consultant)	1,000	46	3	138,000.00
District Environmental Specialist (consultant)	500	36	38	684,000.00
Budget for Environmental Assessment	Included in design of subproject	-	-	
Budget for environmental training	Included in CISC			
Bioengineering and other Environmental Mitigation measures	@ 3% of total Construction cost (based on empirical experience)			2,340,000.00 (estimated at \$78M as construction cost)
<b>Total budget for Environmental Inputs<sup>7</sup></b>	-	-	-	<b>3,271,800.00</b>

## VII. CONCLUSIONS AND SUMMARY

125. Among the subprojects, five sample core subprojects have been selected, and four full IEEs, one environmental statement (drinking water scheme) with a SIEE have been completed in accordance with relevant GON and ADB requirements. The SIEE has been endorsed by DOLIDAR. These environmental documents will be a showcase for identification, preparation and execution, including environmental assessment, of further subprojects.

126. The sub projects will be classified as Category B or C in accordance with the GON/ADB criteria. Small schemes, such as drinking water supply schemes, will be classified as Category C on the basis of GON/ADB classifications. Neither EIAs or IEEs will be required but environmental statements for each such subproject will be completed.

<sup>6</sup> Terms of Reference for these positions will be formulated during appraisal but will include generic environmental management and monitoring responsibilities. Including IEE preparation, inputs towards preparation of environmental monitoring reports; training of GoN staff in environmental monitoring etc.

<sup>7</sup> Project costs as reflected in Table 6.2 are constantly being revised the scope of civil works has been reduced hence the reduction in costs reflected and this figure may well change again as we progress in the processing cycle.

127. Impacts pertaining to the construction and operational phases have been initially identified and summarized in this EARP with recommended mitigation measures. Sample IEEs, and SIEE have been conducted for sample core subprojects, which will serve as models to be followed by the DDCs for preparing individual IEEs for future subprojects.

128. The EARP report concludes that environmental capacity of MOLD, DOLIDAR and DDCs should be strengthened to ensure compliance with the recommended environmental assessment and review procedures for future non-core subprojects as stated in this EARP report.

**Recommended Table of Content of IEE (GON)**

<b>Subject Matter Required in IEE Report</b>	
1	Name and address of individual or institution preparing the report
2	Summary of the proposal Objectives of proposal Impacts on land-use Adverse impacts on the environment, impacts on human life, and population pressure Damage to be suffered by local goods or objects Other necessary matters
3	The following matters must be explicitly mentioned in respect to the proposal: Type of proposal If related to delivery, the nature and type of goods to be delivered Proposal's installed capacity and number of hours to be operated Materials to be used (quality and year to be mentioned) Emissions resulting from the implementation of the proposal Energy to be used Manpower requirements Resources required for the implementation of the proposals Detailed particulars of the area where the project is to be implemented Manufacturing processes Details of the technology Other necessary matters
4	Impacts of implementation of the proposal on the environment: Impacts on social, economic, and cultural domain Biological impacts Physical impacts
5	Alternatives for implementation of the proposal
6	Measures to reduce or control the impact of implementation of the proposal on the environment
7	Matters to be monitored while implementing the proposal
8	Other necessary matters
9	Data, maps, photographs, tables, charts, graphs, etc. as required

(Ref.: EPR 1997, Schedule 5)

## **Recommended Format for IEEs, ADB**

ADB. 2003. Environmental Assessment Guidelines. Manila.

### **a. Introduction**

This section usually includes the following:

- purpose of the report, including (a) identification of the project and project proponent; (b) brief description of the nature, size, and location of the project and of its importance to the country; and (c) any other pertinent background information; and
- (ii) Extent of the IEE study: scope of study, magnitude of effort, person or agency performing the study, and acknowledgement.

### **b. Description of the Project**

Furnish sufficient details to give a brief but clear picture of the following (include only applicable items):

- type of project;
- category of Project;
- need for project;
- location (use maps showing general location, specific location, and project site);
- size or magnitude of operation;
- proposed schedule for implementation; and
- descriptions of the project, including drawings showing project layout, and project components. This information should be of the same type and extent as is included in feasibility reports for proposed projects to give a clear picture of the project and its operations.

### **c. Description of the Environment**

Furnish sufficient information to give a brief but clear picture of the existing environmental resources in the area affected by the project, including the following (to the extent applicable):

- Physical Resources: (e.g.) atmosphere (e.g. air quality and climate), topography and soils, surface water, groundwater, geology/seismology.
- Ecological Resources: (e.g.) fisheries, aquatic biology, wildlife, forests, rare or endangered species, protected areas, coastal resources.
- Economic Development: (e.g.) industries, infrastructure facilities (e.g. water supply, sewerage, flood control), transportation (roads, harbors, airports, and navigation), land use (e.g. dedicated area uses), power sources and transmission agricultural development, mineral development, and tourism facilities.
- Social and Cultural Resources: (e.g.) population and communities (e.g. numbers, locations, composition, employment), health facilities, education facilities, socio-economic conditions (e.g. community structure, family structure, social well being), physical or cultural heritage, current use of lands and resources for traditional purposes by Indigenous Peoples (IP), structures

or sites that are of historical, archaeological, paleontological, or architectural significance.

#### **d. Screening of Potential Environmental Impacts and Mitigation Measures**

Using the checklist of environmental parameters for different sector projects, this section will screen out “no significant impacts” from those with significant adverse impact by reviewing each relevant parameter according to the following factors or operational stages. Mitigation measures, where appropriate, will also be recommended environmental problems due to project location, and related to project design, construction, and operations. Potential environmental enhancement measures and additional considerations will also be covered.

#### **e. Institutional Requirements and Environmental Monitoring Plan**

This section should state the impacts to be mitigated, and activities to implement the mitigation measures, including how, when, and where they will be implemented. Institutional arrangements for implementation should be described. The environmental monitoring plan will describe the impacts to be monitored, and when and where monitoring activities will be carried out, and who will carry them out. The environmental management and monitoring costs should also be described.

#### **f. Public Consultation and Information Disclosure**

This section will describe the process undertaken to involve the public in project design and recommended measures for continuing public participation; summarize major comments received from beneficiaries, local officials, community leaders, NGOs, and others, and describe how these comments were addressed; list milestones in public involvement such as dates, attendance, and topics of public meetings; list recipients of this document and other project related documents; describe compliance with relevant regulatory requirements for public participation; and summarize other related materials or activities, such as press releases and notifications. This section will provide of summary of information disclosed to date and procedures for future disclosure.

#### **g. Findings and Recommendations**

This section will include an evaluation of the screening process and recommendation will be provided whether significant environmental impacts exist needing further detailed study or EIA. If there is no need for further study, the IEE itself, which at times may need to be supplemented by a special study in view of limited but significant impacts, becomes the completed environmental assessment for the project and no follow-up EIA will be needed. If an EIA is needed, then this section will include a brief terms of reference (TOR) for the needed follow-up EIA, including approximate descriptions of work tasks, professional skills required, time required, and estimated costs. The Bank’s Environment Guidelines provides a guide for preparing the TOR for different projects.

#### **h. Conclusions**

This section will discuss the result of the IEE and justification, if any, of the need for additional study or EIA. If an IEE, or an IEE supplemented by a special study, is sufficient for the project, then the IEE with the recommended institutional and monitoring program becomes the completed EIA.

## **Recommended Format for SIEEs**

ADB. 2003. Environmental Assessment Guidelines. Manila.

### **A. Introduction (1/2 page)**

This section will include the purpose of the report, extent of the IEE study and brief description of any special techniques or methods used.

### **B. Description of the Project (1/2 page)**

This section will include the type of and need for the project; and project location, size or magnitude, operation, and proposed schedule for implementation.

### **C. Description of the Environment (2 pages)**

This section will include the physical and ecological resources, human and economic development, and quality of life values.

### **D. Forecasting Environmental Impacts and Mitigation Measures (2-4 pages)**

This section will identify "no significant impacts" from those with significant adverse impacts and will discuss the appropriate mitigation measures, where necessary.

### **E. Institutional Requirements and Environmental Monitoring Plan (1 page)**

This section will describe the impacts to be mitigated, and activities to implement the mitigation measures, including how, when, and where they will be implemented. The environmental monitoring plan will describe the impacts to be monitored, and when and where monitoring activities will be carried out, and who will carry them out.

### **F. Public Consultation and Disclosure**

This section will describe the process undertaken to involve the public in project design and recommended measures for continuing public participation; summarize major comments received from beneficiaries, local officials, community leaders, NGOs, and others, and describe how these comments were addressed; list milestones in public involvement such as dates, attendance, and topics of public meetings; list recipients of this document and other project related documents; describe compliance with relevant regulatory requirements for public participation; and summarize other related materials or activities, such as press releases and notifications. This section will provide of summary of information disclosed to date and procedures for future disclosure.

### **G. Findings and Recommendations (1-2 pages)**

This section will include an evaluation of the screening process, and recommendation will be provided whether significant environmental impacts exist needing further detailed study or EIA. If there is no need for further study, the IEE itself, which at times may need to be supplemented by a special study in view of some small significant impacts, becomes the completed EIA for the project and no follow-up EIA will be needed. If further additional study is needed, then this section will include a brief terms of reference (TOR) for the needed follow-up EIA, including approximate descriptions of work tasks, professional skills required, time required, and estimated costs. The Bank's Environment Guidelines provides a guide for preparing the TOR for different projects.

### **H. Conclusions (1/2 page)**

This section will discuss the result of the IEE and justification if any of the need for additional study or EIA. If an IEE or an IEE supplemented by a special study is sufficient for the project, then the IEE with the recommended institutional requirements and monitoring program become the completed EIA.

### Local Level Guidelines for Implementing EARP

Activities	Sub-Activities	Responsibilities	Remarks
1. Project Identification	1. Call Subproject proposals from the DDCs, 2. District Annual Plans/ District Periodic Plans/DTMP as guidelines for roads and other projects 3. Develop criteria tools and formats for project proposals, 4. Select candidate projects and recommend to RRRSDP	1 DOLIDAR 2. DDC 3. RRRSDP	1. Project identification task is multi stage because it needs to come within the criteria of RRRSDP.
2. Project Screening	1. Desk Screening of Project/ Subprojects 2. Verification of desk screening data in field	1. DDC 2. DOLIDAR 5. RRRSDP	1. Checking whether priority roads are prioritized in District Transportation Master Plan (DTMP) or not.
3. Preparation of Database	1. Field data screening, analysis and documentation of the selected subprojects	RRRSDP/ DOLIDAR/ DDC	
4. Implémentation	1. Land Acquisition 2. Compensation 3. Resettlement 4. Réhabilitations 5. Construction	1. Land acquisition Committee 2.3.4. Compensation Determination Committee 5. District Road Coordination Committee (DRCC)/ Village Road Coordination Committee (VRCC)/ RBG Mobilizer	1.2.3.4. Formation of Compensation Committee for Land Acquisition, Compensation and Resettlement program 5. Construction Supervision and procurement
5. Monitoring	1. Construction Monitoring/ Social Impact monitoring	1. MOLD/DOLIDAR/DR CC/ VDC/ NGO/ Community Mobilizer/Consultant	1. Social impact monitoring/Overall benefit monitoring/ Project evaluation and further planning/
6. Evaluation/ Impact assessment	1. Social Impact evaluation 2. Economic evaluation 3. Technical /Environmental impact assessment	1.MOLD/DOLIDAR/ DDC	1.Total input-output evaluation of the project
7. Maintenance	1. Routine maintenance and réhabilitations	1 DDC	1. Mobilization of local resources for sustainability

## Proposed Terms of Reference for IEE

.....(name of the road)..... road improvement

### 1. Introduction

#### 1.1 General

This Terms of Reference (ToR) is prepared to conduct Initial Environmental Examination (IEE) of .....(name of road) ....., in .....(name of district)...district. This is a high priority road in ..... (name of district).....district, and is proposed for investment under RRRSDP.

An IEE of the proposal is necessary in order to assess the environmental consequences of the proposed rural road investment activities and suggest appropriate, practical and site specific mitigation and enhancement measures. The DDC, ..(name of district)....., now wishes to hire a consulting firm to undertake the IEE of the .....

Environment Protection Rules (EPR) 1997 (amended 1998) requires an IEE for the proposed rural road as the estimated investment for the improvement falls within the cost threshold zone for IEE as defined in the Schedule 1 (i.e NRs 10 million to 100 million).

#### 1.2 Proponent

The Local Self-Governance Act (LSGA) empowers the District Development Committee (DDC) in planning and implementation of local infrastructure including local/ rural roads. The proposed road is a top priority in the District Transport Master Plan (DTMP) prepared by the DDC and approved by the District Council. Hence, the DDC owns the road and improvement is also proposed by the DDC. The DDC of .....(name of district) .... district is, therefore, the Project Proponent. Following is the address of the Project Proponent:

Local Development Officer  
District Development Committee  
.....(name of district headquarters)....., ..... (name of district).....  
Nepal.

Telephone: .....(area code).... - .....(telephone number).....

Fax: .....(area code).... - .....(fax number).....

Email: .....(if available) .....

The Department of Local Infrastructure Development and Agriculture Roads (DOLIDAR) will coordinate RRRSDP at the centre. RRRSDP / DOLIDAR will assist the DDC in carrying out the IEE by supporting in preparing IEE ToR and hiring consultant, (wherever applicable); reviewing the IEE Report and in the approval of the IEE Report by the Ministry of Local Development (MOLD).

## **2. Project proposal**

### **2.1 Background**

RRRSDP is to provide beneficiary rural communities with improved and sustainable transport access to economic opportunities and social services. It is hoped that the proposed project will: reduce the proportion of people without all weather road access in participating districts; create rural employment opportunities; and help DDCs pull together resources for rural transport infrastructure development and management.

Under the RRRSDP mechanism, MLD/DOLIDAR will be responsible for facilitation, coordination and monitoring. The DDC will be responsible for managing the implementation of the subprojects. The subproject implementation, in line with the decentralization principle, will adopt bottom-up planning and local participation in every possible way. Maintenance of the subproject will be a high priority: Implementation of civil works follow labor-based technology and LEP approach as applicable by ensuring involvement of local beneficiaries in the planning and implementation of the works. Small contractors as well as community groups (such as Users Committee/Groups or Road Building Groups) will be contracted for appropriate nature of the works.

## **3. Objective and scope**

### **3.1 Objective**

The overall objective of the IEE is to appraise the environmental consequences, both positive and negative, of the proposed subprojects; suggest mitigation and enhancement measures; and prepare management and monitoring plan. More specifically, the objectives are to:

- establish environmental baseline condition of the subproject locality. This will require identification of important environmental features (natural and socio-cultural-economic) located in the subproject locality and document their existing condition, including trend of change.
- identify any environmental problems/ difficulties that are existing now due to the existing road, and assess nature/extent / significance of the problems/ difficulties.
- identify the significant environmental issues/ concerns (physical, biological, and socio-cultural-economic) that can arise from the proposed investment activities.
- predict and assess the significant environmental impacts (adverse and beneficial) due to the subproject activities.
- recommend practical and site specific environmental mitigation and enhancement measures, and
- prepare environmental management and monitoring plan for the subproject in consultation with the community.

### **3.2 Scope**

The consultant scope of the work includes the following sectors of environment in the subproject locality/ corridor, typically within 1.5 km on both sides of the proposed road for improvement. The IEE should consider the likely environmental consequences that may arise as a result of the proposed subproject during the construction as well as operation periods.

- a. Physical / chemical environment
- b. Biological environment
- c. Socio-cultural and economic environment

a. Physical/ chemical environment

The issues and concerns generally related to physical / chemical environment typically include, but not necessarily limited to;

- slope instability and soil erosion particularly in the hilly terrain due to various activities including slope cutting, spoil dumping, quarrying, concentrated flows due to water diversions and inappropriate drain outfalls.
- disruption to natural drainage pattern / hydrology leading to inundation and water-logging, particularly in the Tarai (plain area) and increasing causing flood damage risks.
- degradation of air quality (particularly dust) and increase in vibration/ noise
- change in the quality and/ or quantity of water of water sources or water bodies (e.g. spring, stream, wetland, etc).
- change in land use including development or expansion of road side settlements
- assessment of the potential cumulative environmental impacts due to the construction activity.

b. Biological environment

The issues and concerns generally related to biological environment typically include, but not necessarily limited to;

- loss or degradation of forests and vegetation. This includes all forest areas including protected and conservation areas, state or community or leasehold or private forest.
- impact on wildlife including birds due to loss or degradation of habitat, increased hunting and other form of human pressure. Particularly, impacts on the endangered floral and faunal habitats/ ecology due to increased access to and demands on forests
- impacts on the local ecology and ecological balance/ functions

c. Socio- cultural and economic environment

The issues and concerns generally related to socio-cultural and economic environment typically include, but not necessarily limited to;

- loss or degradation of farm land (khet and bari) and productivity directly or indirectly (such as due to occupation of land, disposal of spoils, diversion of water / drain waters, or disruption of hydrology/ natural drainage, quarrying, burrow pits etc)
- loss or degradation of private properties such as houses, farm sheds, and other structures, crops and fodder / fruit trees
- impact on community infrastructure such as irrigation, water supply, schools, health post, trail and trail bridges,
- impacts on cultural, religious and archeological sites
- impacts on social structures, employment opportunities, economy, cultural values
- impacts on health and sanitation

**Major concerns.** Environmental concerns related to the proposed subproject apparent at the stage of ToR formulation are:

- .....
- .....
- .....
- .....
- .....

### 3.3 Tasks

The consultant shall perform the following tasks in accordance with the accepted professional standard and defined procedures. The consultant team will be given an orientation briefing on the subproject and RRRSDP approach immediately after signing the contract. Following this and prior to the start of field work, the consultant will be required to make an inception presentation and plan of the works. The tasks of the consultant include the following:

- Task 1: Conduct walk-through survey along the road and identify the significant environmental features (physical, biological and socio-cultural-economic) located in the influence corridor and likely to be affected by the proposed improvements. . The principle guidelines to be followed are outlined in the Environmental Assessment and Review Procedures prepared under RRRSDP.
- Task 2: Collect necessary information about the significant environmental features in order to establish their present conditions and trend of change.
- Task 3: Collect information about existing environmental problems and difficulties in the road corridor.
- Task 4: Conduct stakeholder consultation including community meetings and meetings with other concerned institutions at the district headquarters (such as DDC team, District Agriculture Office, District Soil Conservation Office, District or /and Ilaka Forest Office, NGOs active in the proposed road corridor, etc) ) to determine that all stakeholder concerns have been addressed.
- Task 5: Analyze the information to confirm the significant positive and negative consequences of the proposed road improvement in the physical/ chemical, biological and socio-cultural-economic environment. Additional aspect of the analysis is to assess the environmental problems and difficulties existing at present, without the proposed improvements.
- Task 6: Alternative analysis. Various options and alternatives of improvement activities for example location and type of structures, technology, and change in alignment in a section, schedule of construction etc as well as no improvement option needs to be analyzed to see the consequences of the improvement.
- Task 7: Identify and recommend appropriate and site specific environmental impact prevention, mitigation and enhancement measures, including cost estimates for these measures. This will include, but not be limited to, (i) engineering codes of practice followed for project design, with particular relevance to environment management; (ii) the construction management practices and environmental management specifications to be followed at the site; (iii) implementation of slope and soil stabilization strategies; (iv) implementation of environmental enhancement measures, such as enhancement of roadside water bodies or common property resources; and (v) overall compliance with adequate environmental, social and health safeguards, during construction. The measures stipulated here will be included in the contractual agreement with the respective contractor..
- Task 8: Prepare environmental management, supervision and monitoring plan for the subproject for both the implementation and operation periods, in close consultation and agreement with the community.

Task 9: Prepare Initial Environmental Examination Report of the subproject for submission to and approval of MOLD.

The IEE team will require to work closely with the DTO staff and DDC in the district.

#### **4. Applicable Acts, Rules and Guidelines**

The IEE study should fulfill or be guided by the requirements and provisions of the following acts, rules and guidelines as applicable.

- i. Environment Protection Act, 1996 and Environment Protection Rules, 1997 (amended 1999)
- ii. Various safeguard frameworks of RRRSDP/ DOLIDAR.
- iii. Batabaraniya Nirdeśika (Nepali; MOLD), 2057
- iv. Environment Assessment PWD Part II Procedural Directives (Chapter 3), 2001
- v. Forest Act, 1992 and Forest Rules 1995
- vi. National Park and Wildlife Conservation Act, 1973 and Conservation Area Management Rules, 1996.
- vii. Local-Self Governance Act, 1999 and Local Self-Governance Rules, 2000
- viii. Land Acquisition Act 1977

#### **5. Approach and Methodology**

The IEE approach, methodology and procedure should generally follow the provisions of the Environment Protection Act and EPR. The methodology approach to be used for conducting the IEE include review of literature, simple survey/ inspections/ observations making simple measurements, discussion with communities and other stakeholders, and IEE team judgment.

a. Literature review: published and unpublished readily available relevant information should be reviewed. The potential sources of information include, but not limited to; topographical maps,

- publications of DDC, District Forest Office, District Soil Conservation Office, District Agriculture Office, District Irrigation Office, District Water Supply Office, District Livestock Services Office, and NGOs
- District Transport Master Plan
- Reports related to subproject (e.g. Environmental Desk Screening Report, and Field Verification Report of the Subproject, subproject request proposal submitted by DDC, any other report related to subproject)

Literature review should result specific checklists of environmental aspects to be studied in the context of the subproject. This will guide the field work.

b. Walk-through survey: The IEE team will walk through along the road alignment visiting the significant environmental features in the probable influence corridor, and make necessary measurements, inspect/ observe and discuss it with the local stakeholders.

c. Focus Group Discussion (FGD): The team will utilize the walk-through visit to conduct consultation with the local communities and organize FGD at different location along the road corridor. The FGD will discuss the environmental sensitivity and concern in the area, importance of environmental features located in the area, present status, present problems or difficulties, potential solutions, and consequences of the proposed improvement of the road.

d. Briefing and debriefing meeting: IEE team will organize initial briefing meeting prior to field visit and debriefing meeting after field visit at district headquarters. The initial briefing meeting will obtain initial information about the potential environmental features

of significant importance, existing problems and potential impact of road improvement. The debriefing will discuss the IEE team's findings from the field visit and potential mitigation and enhancement measures.

e. Group Judgment: The IEE team will work as a group. All sectoral analysis will be discussed in the group to identify inter-linkages and complementarity. The IEE team will use the group judgment as the basic tool to establish the significance of environmental impact, identification and design of potential mitigation and enhancement measures, and preparing EMP of the subproject.

## **6. IEE Report Content**

IEE report shall be prepared as per the format outline in the Schedule 5 of the EPR, 2054 (amended 2055). Executive summary of the IEE should be prepared in Nepali also for use of HMG/N Nepal agencies, DDCs, VDCs, and local stakeholders. The IEE report, whenever applicable, shall be supplemented by maps, graphs, photographs, tables and matrix. Relevant applicable documents and studies prepared by the consultant may be attached as appendix if required so.

## **7. Qualification**

### **7.1 Consulting firm**

The consulting firm should have i) at least 5 years of working experience, ii) conducted minimum of 2 IEEs or 1 EIA (preferably of roads), iii) priority will be given to the firms having in-house qualified staff for the IEEs, iv) priority will be given to those firms having experiences of working in conflict environment.

### **7.2 Manpower**

The proposed expert must have at least Bachelor level of education (preferably Master level) in the relevant field. Training on EIA or IEE of more than 15 days duration would be an asset.

The proposed expert must have at least three years work experience and at least one IEE, preferably of road.

The team leader must be well versed in environmental assessment process and procedures and must have at least five years of work experiences and at least two IEEs or EIAs, preferably of road.

The IEE team shall include the expertise from the following fields:

- Forest and wildlife
- Landslides, slope stability and erosion: in the hilly terrain
- Drainage/ hydrology /flood: in the plain areas
- Road engineering
- Socio-culture-economy

IEE team can typically consist of three persons representing different field of expertise relevant to the environmental issues of the proposed subproject. It is not necessary that an expert is needed in each of the above field; for example expertise related to landslides and erosion may not be necessary in the Tarai (plain area). Similarly presence of the DISC at the district headquarters may drastically reduce the amount of inputs from the road engineering and socio-culture-economy, as the IEE team can benefit from them.

## 8. Duration and reporting requirements

### 8.1 Duration

The consulting service for the proposed IEE shall be of two (2) months period effective from..... An indicative schedule of IEE works is given in Table below.

No.	Activities	Week								
		1	2	3	4	5	6	7	8	9
1.	Public notice publication	↓								
2.	Orientation briefing		↓							
3.	Desk study and Inception Presentation		—							
4.	Consultation and briefing at district Hqrs			↓						
5.	Walk-through survey /community consultations				—					
6.	Collection of recommendations from stakeholders (VDC, School, post office, etc)				—					
7.	Discussion at district Hqrs (debriefing)					↓				
8.	Analysis and interpretation					—				
9.	Draft report preparation						—			
10.	Submission of draft report							↓		
11.	Comments on draft report							—		
12.	Final Report Preparation								—	
13.	Submission of the final report									↓
14.	Approval of the final report									↓

### 8.2 Reporting Requirement

The consultant/ IEE team must prepare and submit the following reports,

- an inception report within ten days of the effective date. This should contain, among other things time, schedule for the IEE works, initial list of potential environmental problems as well as opportunity for the environmental enhancement in the subproject context, and environmental checklist for the use in the subproject.
- initial draft report for review by the DDC and RRRSDP within six weeks of the effective date.
- draft final report for review by the MOLD within a week of the comments received from the DDC and RRRSDP on the initial draft report.
- final report within a week of the comments received from the MOLD on the final draft report.

### Information Dissemination and Community Mobilization

SN	Responsible Party	Activity	Output	Evidence of Participation	Remarks
Pre-Construction					
1	Community mobilizer/ Consultant	<ul style="list-style-type: none"> <li>- Attend community meetings and inform participants of the project</li> <li>- Mobilize community members to help carry out environmental and social screening</li> </ul>	<ul style="list-style-type: none"> <li>- Consultation report, Environmental screening</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of community meeting</li> </ul>	<ul style="list-style-type: none"> <li>- Positive and negative views expressed by participants are recorded</li> </ul>
2	VDC	<ul style="list-style-type: none"> <li>- Mobilize local people, organize or re-organize RUGs and RBGs</li> <li>- Raise broad-based awareness towards the project.</li> </ul>	<ul style="list-style-type: none"> <li>- Community meetings</li> <li>- RUCs/RBGs formed as per the guidelines</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of community meeting</li> <li>- Minutes of RUCs/RUGs meetings</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure broad participation of community members</li> </ul>
3	Local Communities / RUGs and RBGs	<ul style="list-style-type: none"> <li>- Participate in community meetings</li> <li>- Organize themselves into RUGs and RBGs</li> <li>- Identify major issues related to the project.</li> </ul>	<ul style="list-style-type: none"> <li>- Community meetings</li> <li>- RUGs/RBGs</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of community meeting</li> <li>- Minutes of RUCs/RUGs meetings</li> </ul>	<ul style="list-style-type: none"> <li>- RUGs and RBGs must be organized or reorganized as per the guidelines</li> </ul>
Feasibility Study					
4	Community mobilizer/ consultant	<ul style="list-style-type: none"> <li>- Inform community members of positive and negative project impacts</li> <li>- Identify environmental and social impacts</li> </ul>	<ul style="list-style-type: none"> <li>- IEE Report for consideration</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of community meeting</li> </ul>	
5	VDC	<ul style="list-style-type: none"> <li>- Define project impact areas and identify affected population</li> <li>- Organize community meetings</li> </ul>	<ul style="list-style-type: none"> <li>- Community meetings</li> </ul>	<ul style="list-style-type: none"> <li>- Do</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure broad participation of community members</li> </ul>
6	Local Communities / RUGs and RBGs	<ul style="list-style-type: none"> <li>- Participate in community meetings</li> </ul>	<ul style="list-style-type: none"> <li>- Do</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of community meeting</li> </ul>	<ul style="list-style-type: none"> <li>- Community members must understand project impacts.</li> </ul>
Design of Project					
7	Community mobilizer/ consultant	<ul style="list-style-type: none"> <li>- Inform community members of project design and components</li> <li>- Consult community members to develop EMP,</li> </ul>	<ul style="list-style-type: none"> <li>- EMP and other mitigation plans</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of community meeting</li> </ul>	<ul style="list-style-type: none"> <li>- EMP and other impact mitigation plans must be developed</li> </ul>
8	VDC	<ul style="list-style-type: none"> <li>- Organize community meetings</li> <li>- Collect supplementary data to develop socioeconomic profile</li> </ul>	<ul style="list-style-type: none"> <li>- Community meetings</li> <li>- Supplementary data to develop IEE</li> </ul>	<ul style="list-style-type: none"> <li>- Do</li> </ul>	
9	Local Communities/ RUGs and RBGs	<ul style="list-style-type: none"> <li>- Understand project component and mitigation measures to be carried out</li> </ul>	<ul style="list-style-type: none"> <li>- Community meetings</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of community meeting</li> </ul>	<ul style="list-style-type: none"> <li>- RUGs/RBGs must understand mitigation measures</li> </ul>
Project Approval					
10	Community mobilizer/ consultant	<ul style="list-style-type: none"> <li>- Inform communities and VDCs of implementation procedures</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of public hearing</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of public hearing</li> </ul>	
11	VDC	<ul style="list-style-type: none"> <li>- Understand project components, impacts and mitigation measures</li> <li>- Organize public hearing</li> </ul>		<ul style="list-style-type: none"> <li>- Do</li> </ul>	
12	Local	<ul style="list-style-type: none"> <li>- Participate in public</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of group</li> </ul>	<ul style="list-style-type: none"> <li>- Minutes of public</li> </ul>	<ul style="list-style-type: none"> <li>- RUGs/RBGs must</li> </ul>

SN	Responsible Party	Activity	Output	Evidence of Participation	Remarks
	Communities/ RUGs and RBGs	hearing, understand the project and mitigation measures to be implemented - RUCs/RBGs hold group meetings to ensure their members understand mitigation measures to be implemented	meetings	hearing - Minutes of group meetings	understand mitigation measures - All RUGs/RBGs members aware of group meetings
Project Construction					
13	Community mobilizer/ consultant	- Attend community meetings to ensure mitigation measures are implemented - Hear and resolve problems that cannot be solved locally - Keep track of project indirect effects	- Monitoring report	- Minutes of community meeting	- Ensure all are aware of conflict resolution and grievance redress mechanisms
14	VDC	- Monitor implementation of subprojects and the affected population - Hear and resolve conflicts - Keep track of project indirect effects		- Do	- Make sure that project components are not overlooked.
15	Local Communities/ RUGs and RBGs	- Participate in road building process - Understand and implement mitigation measures		- Do	- Capacity building of RBGs
Post-Construction					
16	Community mobilizer/ consultant	- Observe maintenance and compliance norms			
17	VDC	- Monitor direct and indirect impacts of project on community livelihood.		- Do	- All direct and indirect impacts must be recorded in DDC
18	Local Communities/ RUGs and RBGs	- Prepare maintenance contract with DDC		- Do	- RUGs/RBGs must develop strong ownership to the roads built

## Proposals Requiring Initial Environmental Examination

### Schedule-1 (Pertaining to Rule 3)

#### Road Sector

- (1) Construction of the following roads:
  - (a) District roads
  - (b) Urban roads
  - (c) Rural roads
  - (d) Small feeder roads
- (2) Construction of 1 to 5 kilometers long ropeways.
- (3) Construction of 1 to 5 kilometers long cable car routes.
- (4) Construction of major bridges.
- (5) Construction of tunnels.
- (6) Improvement of the standard, rehabilitation and reconstruction of national highways and feeder roads.

#### Drinking Water

- (1) Collection of rain-water in an area of not more than 200 hectares, and use of water sources (springs and wet-lands) located within the same area.
- (2) Surface water sources with not more than 1 cubic ft. safe yield, and supply of not more than 50 percent of the water during the dry season.
- (3) Processing water at the rate of 10 to 25 liters per second.
- (4) Recharging up to 50 percent of the total aquifer for the development of underground water sources.
- (5) Construction of not more than one kilometer long tunnels for carrying water.
- (6) Displacement of not more than 100 persons for operating a water supply scheme.
- (7) Settlement of not more than 500 persons on the upper reaches of water sources.
- (8) Supply of drinking water to a population ranging between 2,000 and 20,000.
- (9) Supply of drinking water to a population ranging between 10,000 and 100,000, and connection of new sources.
- (10) Installation of more than 20 kilometers long electricity transmission lines for pumping or processing water, and consumption of more than one mw of electricity.
- (11) River training and diversion activities over an area of more than one kilometer.

## **Proposals Requiring Environmental Impact Assessment (EIA)**

### **Schedule-2 (Pertaining to Rule 3)**

#### Road sector:

1. Construction of the following roads:
  - a. National highways.
  - b. Main feeder roads.
2. Construction of more than 5 kilometers long ropeways
3. Construction of more than 5 kilometers long cable car routes.

#### Drinking water

1. Collection of rain-water in an area of more than 200 hectares and use of water sources (springs/ wetlands) located within the same area.
2. Surface water sources with more than 1 cft. safe yield, and the use of its entire parts during the dry season.
3. Water processing at the rate of more than 25 liters per second.
4. Recharging of more than 50 percent of the total aquifer for the development of underground water sources.
5. Construction of more than 1 kilometer long water tunnels.
6. Displacement of more than 100 persons for the operation of water supply schemes.
7. Settlement of more than 500 persons on the upper reaches of water sources.
8. Supply of drinking water to a population of more than 20,000.
9. Supply of drinking water to a population of more than 100,000 and connection of new sources.
10. Over mining of biologically or chemically polluted point and non-point sources or underground water sources that may be affected by them.
11. Operation of multi-purpose projects relating to sources of drinking water using sources at the rate of more than 25 liters per second.